The Non-Structuralist Turn in Linguistics

Sino-Tibetan Perspectives and Beyond

Papers in Honor of Randy J. LaPolla

Edited by LU Lin



Geolinguistic Society of Japan



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The Non-Structuralist Turn in Linguistics: Sino-Tibetan Perspectives and Beyond – Papers in Honor of Randy J. LaPolla

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Language is not a fixed system, it is human behaviour, and changes as we engage in it.

— LaPolla 2015

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Randy J. LaPolla

Randy J. LaPolla is a linguist whose work has shaped Sino-Tibetan linguistics and linguistic typology over four decades. He has preserved irreplaceable knowledge of human language diversity while bridging Chinese and English-language intellectual traditions throughout his career. His scholarship combines extensive fieldwork on East and Southeast Asian languages with a non-structuralist approach—one that fundamentally rethinks language not as an abstract formal system, but as meaning-making rooted in cognition, interaction, and context. His publications span descriptive and fieldwork linguistics, typology, pragmatics, historical linguistics, and linguistic theory. This volume celebrates his extraordinary contributions by demonstrating the trajectory from empirical description to a fundamental reorientation of our understanding of what language is. The following biographical sketch traces the path behind that achievement.

Education

1990 — Ph.D. in Linguistics, University of California, Berkeley
1988 — M.A. in Linguistics, University of California, Berkeley
1981–1983 — Post-graduate work in Chinese Linguistics, Peking University, Beijing
1980 — M.A. in Applied Linguistics, State University of New York at Stony Brook
1978 — B.A. in Asian Studies, State University of New York at Stony Brook

Academic Appointments

2023–present — Senior Research Associate, Nanyang Technological University (NTU), Singapore
2021–2023 — Distinguished Professor of Linguistics, Beijing Normal University (Zhuhai Campus)
2013–2015 — Head, Division of Linguistics and Multilingual Studies, NTU
2012–2021 — Professor of Linguistics (courtesy appointment in Chinese), NTU
2012 — National Science Council Chair Professor, Academia Sinica, Taipei
2008–2010 — Director, Research Centre for Linguistic Typology, La Trobe University
2004–2012 — Chair Professor of Linguistics, La Trobe University, Melbourne
2004–2008, 2010–2012 — Head of Linguistics Programme, La Trobe University
1997–2004 — Associate Professor, City University of Hong Kong
1994–1998 — Associate Research Fellow, Institute of Linguistics, Academia Sinica
1990–1994 — Assistant Research Fellow, Institute of History and Philology, Academia Sinica

Honors and Distinctions (selected)

2022 — Elected Honorary Member, Migration Linguistics Unit, Tokyo University of Foreign Studies; Lifetime Member, International Association for Migration Linguistics

2017–2021 — Distinguished Foreign Scholar, Minzu University of China, Beijing

2016 — Singapore Association for Applied Linguistics Lifelong Membership Award (Eminent Scholarship)

2010 — Elected Honorary Member, Linguistic Society of the Philippines

2008–present — Fellow, Australian Academy of the Humanities

2007–2009 — President, Australian Linguistic Society

2005–2015 — Vice Chairman, International Association for Bilingual Studies

2005–2008 — Changjiang (Yangtze River) Scholar, Ministry of Education, P. R. China

Selected Publications

2024 — Ethnolinguistic contact across the Indo-Myanmar–Southwestern China mountains. *Special issue of Asian Languages and Linguistics* 4(2), ed. with Alexander R. Coupe & Hideo Sawada. John Benjamins.

2022 — 〈非结构主义语言学〉(Non-Structuralist Linguistics). *Experimental Linguistics* 11.3: 1–6.

2018 — *Sino-Tibetan Linguistics: Critical Concepts in Linguistics*, 4 vols., ed. Routledge.

2017 — *The Sino-Tibetan Languages*, 2nd ed., co-edited with Graham Thurgood. Routledge.

2015 — *Rawang-English-Burmese Dictionary*, with David Sangdong. Webonary / community print edition.

2009 — 《到田野去——语言学田野调查的方法与实践》 (*To the Field—The Method and Experience of Linguistic Fieldwork*), ed. with Dai Qingxia & Wang Feng. Minzu Chubanshe.

2003 — *A Grammar of Qiang, with Annotated Texts and Glossary*, with Chenglong Huang. Mouton de Gruyter.

1997 — *Syntax: Structure, Meaning, and Function*, co-authored with Robert D. Van Valin, Jr. Cambridge University Press.

For more of LaPolla's classic publications, see the Editorial Notes.

Full bibliography

https://randylapolla.info/publications.htm

Randy LaPolla's Linguistic Vision and the Non-Structuralist Turn in Linguistics

LU Lin (editor)

This volume celebrates Professor Randy J. LaPolla's profound and enduring scholarly impact on linguistics. Over more than four decades, he has fundamentally shaped Sino-Tibetan linguistics, linguistic typology, historical linguistics, fieldwork methodology, and foundational questions about the nature of language. The essays gathered here honor his lasting intellectual influence and the diverse directions in which his ideas continue to shape linguistic research.

1. Scholarly Context and Empirical Background

1.1 The Theoretical Vision

The title of the volume signals a theoretical shift inspired by LaPolla's recent work. In his 2022 article Non-Structuralist Linguistics (published in Chinese)[1], LaPolla calls for a rethinking of linguistic analysis beyond structuralist–formalist models that treat language as a static system disconnected from communicative and cognitive realities. As LaPolla notes, the title pays tribute to Michael Noonan's Non-Structuralist Syntax (1999). Writing as a "sympathetic insider," Noonan defined structuralism's core tenets, namely filtered perception, self-contained structures, discrete categories, a synchronic focus, and the competence/performance divide, and argued that West Coast Functionalists had largely abandoned them while keeping structuralist habits. He showed that commitments to formal modeling, innateness, and universals are logically independent of structuralism itself; at the same time, he observed that the dominant structuralist schools support a strong innateness hypothesis, whereas functionalists lean toward a more empiricist outlook. In response, Noonan proposed a materialist alternative: a perceptual model built on substantively defined categories, a real-time dynamic grammar, and a seamless continuum of form–meaning pairings from concrete words to abstract schemas. Yet LaPolla pushes further, arguing that even Noonan's use of the term *syntax* reflects lingering structuralist habits and fails to capture the truly non-componential, usage-based nature of language. Pointing out that even early constructionist models remained bound by structuralist metalanguages and reductionist habits, LaPolla advocates a more radical

1 See English translation at: https://dlc.hypotheses.org/2825.

reconceptualization: challenging the pervasive "written language bias" and the manufacture of artificial data, he stresses that language is not a system of encoded rules but emergent behavior shaped by cognition, culture, interaction, historical experience, and environmental context.

While departing from these traditions in important respects, LaPolla's perspective nonetheless resonates with long-standing currents in functional and cognitive linguistics: from Dwight Bolinger (1961, 1968, 1976, 1980) and M. A. K. Halliday (1985) to Wallace Chafe (1980, 1987), Talmy Givón (1979), Foley and Van Valin (1984), Joan Bybee (1995, 2006), Ronald Langacker (1987), Michael Tomasello (2003), Adele Goldberg (1995), and William Croft (2001, 2022), these scholars have likewise argued that grammar is not a context-free code but a dynamic, evolving inventory of constructions shaped by communication.

1.2 Academic Background and Scholarly Contributions

LaPolla's background spans both English- and Chinese-language academic traditions. His training in Chinese linguistics began at Peking University in the early 1980s, with teachers such as Tang Zuofan, Guo Xiliang, Ma Zhen, and Ye Feisheng. He then began his PhD in linguistics at the University of California, Berkeley, in 1983, studying with Professors James A. Matisoff, William S-Y. Wang, Robert D. Van Valin, Jr., and Johanna Nichols, and later at Stanford University with Professor Joseph Greenberg. He also studied with Professors Zhang Kun and Zhang Hongnian, leading figures in Chinese historical linguistics, and has played a key role in fostering connections with prominent Chinese Sino-Tibetan scholars, including Professors Zhengzhang Shangfang, Dai Qingxia, and Pan Wuyun. Trained in these dual traditions, he approaches Tibeto-Burman and other Asian languages with humility and deep respect for their structural, cognitive, and cultural diversity, a foundation on which his constructional approach to grammar and his account of meaning-creation in dynamic discourse gradually took shape.

Beyond his own research, LaPolla has built much of the field's shared infrastructure. In addition to co-editing *The Sino-Tibetan Languages* (2003; 2nd ed. 2017) with Graham Thurgood, a widely used reference for researchers and students, he curated *Sino-Tibetan Linguistics: Critical Concepts in Linguistics* (2018), a four-volume, over 1,600-page collection of foundational texts and cutting-edge research that has become an essential resource for scholars of Sino-Tibetan linguistics, typology, and historical linguistics.

The same commitment underlies his long editorial tenure, as Editor of *Linguistics of the Tibeto-Burman Area* (2005–2012), as Deputy Editor (2005–2013) and Co-Chief Editor (2013–2021,

alongside Dai Qingxia) of the *Journal of Sino-Tibetan Linguistics*, and Associate Editor of *Language and Linguistics* (2014–2019), reflecting his sustained dedication to documenting the full breadth of Sino-Tibetan linguistic diversity.

1.3 Sino-Tibetan Scholarship and Empirical Foundations

Building on his early training in Chinese historical linguistics and his deep familiarity with Sinitic varieties, Randy J. LaPolla gradually expanded his focus to the broader Tibeto-Burman branch as well as other Asian languages such as Tagalog, Cambodian, and Vietnamese. His sustained commitment to empirical documentation, rather than the pursuit of universal formal patterns, has made him one of the leading figures in Sino-Tibetan studies, shaping both its descriptive foundation and theoretical direction. Over the past three decades, he has carried out in-depth research on languages such as Qiang and Rawang (Dulong), producing landmark works like *A Grammar of Qiang* (with Huang Chenglong, 2003) and *Rawang Texts* (LaPolla & Poa, 2001), alongside specialized studies on typological, functional, and interactional aspects of grammar.

A cornerstone of his empirical and theoretical output is his investigation of grammatical marking across the Tibeto-Burman family. In a survey of object marking based on 95 grammatical descriptions (1992), he found that in 64 of the 95 languages examined, the patient of a monotransitive clause is often or always marked with the same postposition as the goal or beneficiary of a ditransitive clause, a pattern known in the literature as Primary Object marking. LaPolla argued that this marking is not a syntactic relation but an "anti-ergative" device (1992): it appears only where needed to disambiguate semantic roles, singling out non-actors among potential actors. His companion survey of nominal agentive marking across 151 languages and dialects (1995a) further distinguished systemic from non-systemic ergative marking, the latter functioning simply as a device for disambiguating two potential agents, much like the anti-ergative marking identified in the 1992 survey.

Expanding these insights into broader grammatical domains, LaPolla has consistently advanced a detailed, language-specific, and construction-based approach to linguistic description from his foundational article "Dulong and Proto-Tibeto-Burman" (1987) onward. His subsequent contributions span word order variation (LaPolla 1995b, 2002; LaPolla and Poa 2006), valency-changing constructions (2000), transitivity (LaPolla 2010, 2011; LaPolla, Kratochvíl & Coupe 2011), evidentiality (LaPolla 2003b; Aikhenvald & LaPolla 2007; Tournadre

& LaPolla 2014), inclusive/exclusive pronominal distinctions (2005a), and clause structures (2008, 2017a, 2024). Within word order research, LaPolla and Poa (2006) challenge the traditional assumption of universal categories like "SVO" or "SOV," demonstrating through English, Chinese, and Tagalog that constituent order is determined by distinct language-internal mechanisms, namely discourse principles, information structure, and construction pivots, rather than universal syntactic rules. His work on transitivity makes the same point at the level of the construction: because what grammaticalizes in a language is the construction rather than the individual word, transitivity is itself a constructional phenomenon, and different constructions within the same language may differ in whether they manifest it at all. Even closely related languages therefore present the phenomenon differently: Rawang, with its systematic "transitivity harmony" (2010), contrasts with Qiang, where marking is more optional and context-dependent, illustrating different degrees of grammaticalization and reinforcing his insistence that every grammatical category must be defined within the framework of the individual language. Together, these diverse studies form the empirical backbone of his non-structuralist perspective, demonstrating how structural patterns, transitivity, and argument behaviors emerge dynamically from actual communicative interaction rather than abstract, pre-existing formal templates. In sum, these decades of description across diverse languages, functions, and research directions laid a firm foundation for his later thinking about the nature of language itself.

2. Theoretical Core & Methodology

2.1 Information Structure and Reconceptualizing Grammatical Relations

The first line of that thinking concerns the communicative basis of grammar. One area where this basis is particularly evident, especially in functional traditions, is information structure, which explores how discourse is organized through distinctions such as given/new information, topic/focus, and theme/rheme. From the Prague School (e.g. Mathesius 1929, 1939[1947]) to Halliday (1967, 1970, 1985), Chafe (1976), and Lambrecht (1986, 1987, 1994, 2000), this area has challenged syntax-centered models by showing that linguistic form is shaped by attentional and interactional flow.

LaPolla was an early advocate for the role of information structure in grammar, a perspective that grew out of the discourse-based view of language he had been developing since his doctoral work and that found its fullest early statement in *Syntax: Structure, Meaning, and*

Function (Van Valin & LaPolla 1997). He was also among the first to apply information structure principles to grammatical patterns in Mandarin Chinese and other Asian languages. His paper "The Typology of Focus Structures and Their Effect on Word Order in Chinese" (LaPolla & Poa 2005/2023), the entry "Topic and Comment" (2017c), and his 2019 chapter distinguishing theme–rheme from topic–comment show that clause organization across languages reflects information structure rather than fixed syntactic templates; once conventionalized, such patterns become constructions that form part of the grammar.

Closely tied to this work is LaPolla's more fundamental and sustained engagement: a critique of grammatical relations, a central thread of his theoretical work. His 1990 PhD dissertation, *Grammatical Relations in Chinese: Synchronic and Diachronic Considerations*, began his critique of applying structuralist categories such as "subject" and "object" to all languages. Already in his 1988 paper, "'Subject' and Referent Tracking: Arguments for a Discourse-Based Grammar of Chinese," he demonstrated that such categories as "subject" and "object," as defined in languages like English, are not applicable in the same way to Chinese, which organizes structure and interpretation through entirely different mechanisms. This critique was further developed in a series of influential articles, including "Arguments Against 'Subject' and 'Direct Object' as Viable Concepts in Chinese" (1993), "Pragmatic Relations and Word Order in Chinese" (1995b), "On Grammatical Relations as Constraints on Referent Identification" (2006), "Chinese as a Topic–Comment (Not Topic–Prominent and Not SVO) Language" (2009), and "Notions of 'Subject'" (2017d), with significant impact on international and Chinese scholarship. In "Arguments for a Construction-Based Approach to the Analysis of Sino-Tibetan Languages" (2013) and "Noun-Modifying Clausal Constructions in Sino-Tibetan Languages" (2017a), he develops this critique into an explicitly constructional approach: grammatical relations are to be explained in terms of constructions, not as separate, universal syntactic categories. The perspective is further elaborated in his 2023 chapter in *The Cambridge Handbook of Role and Reference Grammar*: grammatical relations are not universal primitives but construction-specific conventionalized constraints on referent identification, individual means of narrowing down who is doing what to whom, which languages may conventionalize in entirely different ways, or not conventionalize at all. This account also shows the two threads of his thinking to be one: since the function of grammatical relations is referent tracking, the organization of information in discourse and the shape of grammatical relations are two faces of the same communicative problem.

2.2 Methodology, Typological Principles, and Natural Language

LaPolla emphasizes that linguistic description and typological comparison must be grounded in actual language use and empirical facts, rather than abstract structural templates or a structuralist competence/performance divide. Each language possesses its own internally motivated categories and constructions, which should not be forced into cross-linguistic molds based on superficial similarities or formal abstractions. Descriptive criteria must therefore be clearly defined, and their specific functions explicitly stated.

Across his work on typological methodology (2012, 2016, 2017b, 2020), LaPolla, alongside scholars such as Rijkhoff (2002, 2016), Arkadiev (2011, 2017), and Croft (2001, 2016), argues that the true facts of language lie in usage: grammar emerges dynamically from communicative interaction as patterns become conventionalized as exemplars (e.g., the *bǎ* construction in Mandarin Chinese), constraining how speakers achieve their communicative goals through ostension and abductive inference. Typological comparison, then, should focus on recurring usage patterns, internal morphosyntactic realizations, and their underlying causal motivations, rather than on highly abstract "universal" categories that risk obscuring genuine linguistic diversity. This insistence applies to category labels themselves: descriptive categories must be established inductively from the natural data of each language, and labels such as "ablative" or "evidential" are warranted only by a family resemblance in both form and function, not by positing cross-linguistic categories (2016). Comparative categories, on this view, are secondary idealizations, prototypes generalized from language-particular descriptions, rather than molds that individual languages must be made to fit.

Central to a non-structuralist stance is a deceptively simple injunction: trust natural language. This principle reshapes what counts as linguistic data. From this perspective, there is no place for the notion of "ungrammatical": all naturally occurring expressions are part of the system and must be treated as legitimate objects of study. This orientation naturally aligns with the concerns of conversation analysis (CA), where meaning is understood as emerging through interaction, with pragmatics and context playing central roles in shaping linguistic forms.

LaPolla has also consistently encouraged his students to learn from conversation-analytic approaches, emphasizing that naturally occurring discourse offers invaluable insights into how people create and interpret meaning in real time, and how patterns of morphosyntax are shaped through recurrent usage in interaction. This inductive approach, grounded in real discourse, reveals how language operates in authentic communicative settings.

As LaPolla often reminded his students, "Trust natural language use—it is your best teacher." This maxim underscores that we should not impose external judgments on what people actually say, but instead take natural discourse, in all its variety, as the foundation for linguistic analysis.

2.3 Advancing the Non-Structuralist Paradigm

His 2022 essay "Non-Structuralist Linguistics" reaffirms the need to rethink foundational assumptions in linguistic theory. Rather than advancing a single framework, he advocates a paradigm that moves beyond formal categories and structural universals: not only grammatical relations like "subject" and "object," but also the building-block view of language that assumes fixed units. This view, he argues, is reductionist at its core: it breaks language down into its smallest parts and treats syntax, semantics, pragmatics, and phonetics as separate components to be studied in isolation. In its place, he promotes a construction-based approach that takes constructions as its basic units and treats language as a system of form-and-function pairings whose scope extends well beyond morphosyntax to any ostensive act, from sound, pause, gesture, and gaze to bodily orientation, each capable of serving as communication. In this view, language is behavior, not an object: it emerges from communicative interaction and is continually shaped by use.

For LaPolla, non-structuralist linguistics is above all a paradigm shift, a move away from long-standing structuralist-formalist assumptions about what language is. His own contribution to this paradigm is the "Creation of Meaning" theory, and he equally promotes kindred approaches: Halliday's systemic functional linguistics; Integrational Linguistics (Harris 1981, 1998); and William Croft's *Radical Construction Grammar* (Croft also contributes a chapter to this volume). Together they form an open invitation to rethink the nature of language. For the intellectual trajectory of this current, readers may turn to the chapter by Michelle J. E. SIM and Christina H. L. LOW in this volume, "Non-Structuralist Linguistics: Paradigm Change and Continuity from a Kuhnian Perspective."

The "Creation of Meaning" theory, developed over three decades out of his descriptive work on Sino-Tibetan languages (see also 1997, 2003a, 2015), answers a simple yet far-reaching question: how can languages differ so radically, yet all serve everyday communication? The theory views language not as a self-contained code but as context-dependent behavior shaped by interaction, temporality, and shared knowledge. Meaning is not encoded in linguistic forms

but created by the addressee through abductive inference, a kind of reverse causal inference by which we infer a communicator's intention from a purposeful act. Communication is inherently non-deterministic: linguistic forms constrain interpretation rather than transmit meaning, and context is not peripheral but is its foundation.

As LaPolla (2003a) observes, cross-linguistic diversity lies not in what can be said, but in what must be said: each language evolves to meet the communicative expectations and inferential norms of its speakers' cultural cognition. Grounded in deep humility toward linguistic complexity, LaPolla emphasizes that our assumptions about language fundamentally shape both the questions we ask and the methods we use to answer them (LaPolla 2022). This spirit of reorientation informs the title of this volume, The Non-Structuralist Turn in Linguistics, a current rooted in Sino-Tibetan studies with implications that reach beyond linguistics to human behavior and cognition.

3. Legacy & Volume Overview

3.1 Legacy Through Mentorship

Throughout his distinguished career, Professor LaPolla has mentored nearly one hundred students across multiple institutions: Nanyang Technological University, Beijing Normal University, La Trobe University, City University of Hong Kong, and Academia Sinica. This cohort spans doctoral and master's students under his primary, co-, or external supervision, members of postgraduate committees, visiting PhD students, postdoctoral fellows, and undergraduates, including several undergraduate research interns. Taken together, they form one of the largest mentorship networks in Sino-Tibetan linguistics. Many of his former students have since become leading figures in the discipline.

Beyond mentorship, Professor LaPolla has built a prolific and widely recognized international publication record. His academic footprint is especially deep within China, where his Chinese-language articles have amassed substantial readership, citations, and downloads. Two foundational pieces, "Historical Linguistics and Language Typology" (2006) and, with Dory Poa, "The Nature of Communication and Language, and Their Influence on Language Development" (2002), account for a major share of this domestic engagement. This reception attests to his enduring influence on Chinese linguistics, particularly in methodological theory, historical linguistics, and language typology. His major works are now being translated into Chinese under the leadership of his former students, a project that promises to make his

insights more accessible within Chinese academia. A forthcoming volume, *Luó Réndì Yǔyánxué Lùnwén Xuǎn* [Selected Linguistic Papers of Randy J. LaPolla], slated for 2027 publication, exemplifies this collaborative scholarly endeavor.

Beyond the impact of his own publications, LaPolla has, since 2023, played a leading role in launching a major Chinese translation series of foundational Western linguistic works. The Chinese translation of William Croft's *Morphosyntax: Constructions of the World's Languages* (2022), titled *Xíngtài-Jùfǎ: Shìjiè Yǔyán Zhōng de Gòushì*, is forthcoming in 2027. The project has brought together numerous early-career scholars under his guidance, further testament to his dedication to mentoring young linguists. Rather than advocating any single theoretical orientation, LaPolla encourages intellectual exploration and the consideration of diverse perspectives, serving as a vital bridge between Chinese and international linguistic traditions.

3.2 Structure and Scope of the Volume

This volume, titled *The Non-Structuralist Turn in Linguistics: Sino-Tibetan Perspectives and Beyond – Papers in Honor of Randy J. LaPolla*, brings together 22 contributions from scholars across multiple generations and linguistic traditions. Although the papers are arranged alphabetically in the table of contents, the thematic organization presented here, inspired by the book's title, suggests a preferred reading order: one that allows readers to grasp the unfolding thread of this open, still-emerging paradigm and to reflect, along the way, on how they might join the conversation.

The volume opens with an editor's introduction by LU, Lin, outlining LaPolla's intellectual vision and the non-structuralist turn. Most chapters grew out of conversations among LaPolla's former students and colleagues across institutions; a few others were invited by the editor from scholars outside his immediate circle, selected because their work represents the research directions LaPolla has long championed. A natural place to start is the chapter by SIM, Michelle J. E. & LOW, Christina H. L., which traces the origin of "*non-structuralist*" through the Kuhnian scientific revolution and makes the case for a shift to this paradigm now. The chapters that follow take up the "*Sino-Tibetan perspective*" of the title, signaling that paradigm shifts must remain rooted in empirical language use. Papers by COUPE, Alexander R., ATSHOGS, Yeshes Vodgsal (translated by Sangsrgyas Rgyal), SHIRAI, Satoko, and the joint study by SUZUKI, Hiroyuki and TOURNADRE, Nicolas address Tibeto-Burman languages from geolinguistic, typological, cultural, language-contact, grammaticalization, and

evidential perspectives, in keeping with LaPolla's insistence that we describe not only the forms but also account for why they differ. Two further empirical studies, by ANG, Uijin (translated by CHEN, Yifan and Fu-Hsing Su) and SHEN, Ruiqing, focus on Sinitic Min varieties and extend LaPolla's recent work on Min, tracing the rich variation of Min phonology on the basis of extensive data and, in ANG's case, dialect maps. Together these chapters provide new evidence and mechanisms that explain the fruitful variation of Min. Further afield, LI, Meng and GE, Jiaqi examine Hmong–Mien and Lolo–Burmese contact on the basis of fieldwork data. HUANG, Xiyue's study of Cuntou Tuhua (an unclassified Sinitic variety) and QI, Fei's work on Beijing Vernacular are drawn from their PhD dissertations supervised by LaPolla, which advanced his constructional approach to the study of less-studied languages. In their analysis of the data, they further demonstrate the application of the non-structuralist paradigm. This body of work stands as the cornerstone of the volume, directly reflecting LaPolla's research focus and testifying to how deeply his empirical vision has shaped the field.

Building on these descriptions, CROFT, William proposes a simple syntactic annotation system. As he puts it, the chapter carries forward LaPolla's challenge to ask "how much formal structure we need to assume" in order to understand how speakers communicate. HONKASALO, Sami likewise advocates cultural anchoring in descriptive grammar, in agreement with LaPolla's view that language description should not focus on morphosyntax alone, for language is part of culture. The "Beyond" portion of the title finds expression in FISAC BADELL, Taciana (Chinese pedagogy) and NG, Raymond Wai-man (translation), both showing how profoundly LaPolla's view has shaped neighboring fields. SHI, Feng (translated by LI, Yiqi) reflects on the theoretical directions that AI opens for linguistic theory, while YIH, Tsy draws on LaPolla's research to explore how descriptive linguistics and AI can complement each other, an intersection where LaPolla's emphasis on abductive inference proves indispensable. PAN, Wuyun and the joint chapter by LU, Haoming and ZHANG Menghan offer an evolutionary perspective, consistent with LaPolla's conviction that history and migration routes are among the central forces shaping morphosyntax, not peripheral factors. Finally, LUKE, Kang Kwong's conversation-analytic chapter most directly embodies the non-structuralist paradigm, putting into practice LaPolla's long-standing encouragement of descriptive linguists to learn from conversation analysis.

Yet beyond the scholarship, this volume is above all a celebration of the friendships and relationships that have shaped LaPolla's remarkable journey. We are honored to include tribute

papers by two senior scholars who profoundly influenced his intellectual and personal life. Professor DAI, Qingxia, one of the most influential figures of Sino-Tibetan studies in China, contributes "A Treasured Friendship of Forty-Five Years: Memories of Randy LaPolla," which shows his humility and the bond of friendship and mentorship he shares with LaPolla, and stands as the finest testament to LaPolla's role as a bridge between Chinese and international academia. The second tribute is by Professor MATISOFF, James A., one of LaPolla's doctoral supervisors at Berkeley, in "The Inimitable Randy LaPolla," a memoir that attests to LaPolla's solid academic grounding and his teachers' high regard for him. These heartfelt essays remind us that scholarly friendship transcends institutional boundaries, forging bridges across linguistic communities and generations.

A note on form: contributors' names appear in the order and form preferred by each author, and chapter titles retain the capitalization style of the original manuscripts, in keeping with the conventions of their respective languages and scholarly traditions.

We hope this collection honors Randy LaPolla's extraordinary legacy and invite readers to carry this dialogue forward with the same curiosity, generosity, and intellectual courage that have defined his work. For those of us who have had the privilege of learning from him, these pages are, in the end, a simple way of saying thank you.

Closing Reflection

I begin by extending my deepest gratitude to Dr. Dory Poa, our beloved *shīmǔ* (teacher's wife). The intellectual and personal sacrifices she has made have been foundational not only to Professor LaPolla's continued scholarly productivity but also to the learning opportunities available to his students and, by extension, to our entire field. My thanks go to all the authors and translators for their contributions to this volume. I am deeply honored to have had the opportunity to bring together the writings of these scholars. Beyond the authors and translators, I am equally grateful to my editorial colleagues, HUANG Xiyue, Alexander R. Coupe, SHEN Ruiqing, Sangsrgyas Tshering, SIM Michelle J. E., WANG Limei and Yuan-Lin Mickey Yang, whose meticulous work in proofreading and formatting brought this volume to fruition. Special thanks are also due to Hiroyuki Suzuki, whose steadfast support and encouragement since the project's inception have been invaluable; without him, this volume would not have come into being.

As we reflect on Professor LaPolla's character and scholarly influence, his integrity, openness, and enduring impact, we recognize that this work is not a conclusion but an invitation. Like his contributions to linguistics, which continue to shape inquiry across generations, this volume opens new pathways for future scholars, inspiring continued dialogue, rigorous engagement with language as it is actually lived and used, and a commitment to the values that defined Randy's scholarly life: intellectual humility, empirical grounding, and genuine care for the communities whose languages we study.

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珍贵的 45 年友谊之交

——与仁地先生交往的一些回忆[1]

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我与罗仁地先生（Randy J. LaPolla）虽为忘年之交，却是多年的好朋友、老朋友。四十五年来，我们有缘在汉藏语研究事业上互相交流、彼此扶持，经常在国际汉藏语及藏缅语学术研究中切磋砥砺，结下了深厚而珍贵的友谊。我一直以 “仁地” 直呼他，倍感亲切。如今他已到了 “从心所欲” 之年，我要向他祝贺，值此之际，也将往事回忆一并记录，以为纪念。

一、 相识与交往

我与仁地相识于 1982 年。当时，担任北京大学副校长的朱德熙先生为了促进汉语和少数民族语言研究的结合，邀请了时任中央民族学院语文系主任的马学良先生和我们几位年轻教师到北京大学，为中文系师生讲授《汉藏语概论》课，由我负责其中“藏缅语”部分的讲授。这几年在北大上课的经历给我留下很深的印象，我与仁地也正是在这门课上相识的。朱德熙先生在《汉藏语概论》一书的序言中曾回忆道：“这门课于 1982 年开出，以后又于 1983 年、1984 年重开两次，每次都收到很好的效果，很受师生欢迎。”[2]

记得在这门课的第一堂课上，我就注意到前排有一位身着绿大衣的高个子外国留学生，听课非常认真，而且每堂课必到，给我留下了深刻的印象。经过交谈才知道，他是来自美国的留学生，能说一口流利的汉语，对中国的历史、文化、宗教和语言都怀有浓厚的兴趣与深厚的感情。那时课堂上与课堂外与他的交流都给我留下深刻印象。

几年后的 1986 年，我应美国加州大学李讷教授（Charles N. Li）的邀请，赴加州大学圣巴巴拉分校参加 “中国少数民族语言与文化研究” 国际学术会议。仁地也出席了这次会议，我们还在会上共同见到了彼此都深为敬重的李方桂先生。也正是在这次会议上，我才得知他已跟随美国著名语言学家马提索夫（James A. Matisoff）在加州大学伯克利分校攻读博士学位，主修藏缅语专业，由此成为我真正意义上的同行。

戴庆厦. 2026. 珍贵的 45 年友谊之交——与仁地先生交往的一些回忆. In 卢琳（主编）*The Non-Structuralist Turn in Linguistics: Sino-Tibetan Perspectives and Beyond – Papers in Honor of Randy J. LaPolla*《语言学的非结构主义转向：从汉藏语出发——罗仁地教授致敬文集》，1–9. doi: https://doi.org/10.5281/zenodo.23785884

[1] 本文撰写过程中蒙卢琳博士协助，谨致谢忱。

[2] 马学良主编：《汉藏语概论》（第 2 版），北京：民族出版社，2003 年。

会上我们如同老友重逢，喜出望外，十分谈得来。由于他在中国留学多年，对中国朋友怀有深厚感情，总是细心而耐心地帮助和关心与会的中国同行，主动为我们介绍美国的情况和会议的安排，帮助我们克服种种不适应。我去李方桂先生家和张琨先生家拜访时，都是由他开车相送。自此，我们便结交为志同道合的朋友。

到了 1989 年，我应马提索夫邀请，赴美国加州大学伯克利分校访问三个月，参加由马提索夫主持的国家重点项目“汉藏语词源词典与词库”（Sino-Tibetan Etymological Dictionary and Thesaurus，简称 STEDT）。这是一个规模庞大的项目，旨在广泛收集汉藏语词汇，按语义范畴进行分类，以确定同源关系，并在此基础上构拟原始汉藏语词的形式。由于仁地也是该项目的成员，我们有了更多机会在一起讨论藏缅语研究的问题。那时，我们经常在伯克利 Bancroft Way 的工作室里碰面讨论，针对藏缅语的若干具体问题交换看法，分享各自的研究经验。

为了让国际语言学界了解中国语言学家的研究情况与成就，仁地主动将我在中国期刊发表的论文译成英文，比如《景颇语传统诗歌的语言特点》和《我的藏缅语研究》等，还翻译了徐悉艰的相关文章。这些译文均刊发于他担任编委的美国语言学期刊 *Linguistics of the Tibeto-Burman Area*（《藏缅区域语言学》），如 "Characteristics of the Language of Traditional Songs of the Jingpo Nationality"（1987）、"My Work in Tibeto-Burman"（1989）、"On the Languages of the Jingpo Nationality"（1999）、"On the Status of Tones in the Suomo Dialect of rGyarong"（1992）、"On the Origin and Development of Noun Classifiers in Jingpo"（1989）等。

我刚到美国访问的前半个月，只身一人，妻子徐悉艰教授（中国社会科学院民族研究所研究员）因工作原因比我晚到半个月。仁地和他的华裔菲律宾籍妻子潘露莉（Dory Poa）博士（毕业于斯坦福大学，主攻中国文学专业）担心我独自在异国他乡孤单想家，每逢周日都会开车带我去海边或景区游览散心。就这样，我们的友情日益深厚。待悉艰抵达后，我们在伯克利共同访学的几个月里，工作与生活各方面都得到了他们夫妇二人的悉心照顾。短短三个月，却为我们延续至今的友情奠定了坚实的基础。此后我们也常常通信，每一封跨越大洋的书信都弥足珍贵。

之后，1994 年 3 月 26 日至 4 月 27 日，我与徐悉艰应邀赴台湾中央研究院历史语言研究所访问一个月。恰好仁地彼时也受聘于中研院历史语言研究所，从事藏缅语研究，我们因此又有了相聚的机会。除共同参加学术会议外，我们也常在一起交流学术心得。

又过了几年，1998 年 3 月 3 日至 1999 年 3 月 3 日，我受聘于香港城市大学任教一年。巧合的是，仁地彼时也在香港城市大学任教，且比我早到一段时间。他担心我初到香港人生地疏，在我抵港的第二天便登门探望，嘘寒问暖，询问是否有需要帮助之处。任教期间，我们的办公室比邻而居，时常得以促膝长谈。他们夫妇每周都会邀请我们到楼顶的玻璃屋聚餐，或烧烤，或火锅，仁地的学生黄成龙那时也在香港，我们常常一同前往。

这几十年来，由于我们都经常参加国际汉藏语会议，在瑞典隆德、法国巴黎、美

国德克萨斯州、新加坡等地屡屡相聚，得以相互了解彼此的研究动态。我们还共同担任美国语言学期刊 *Linguistics of the Tibeto-Burman Area*（《藏缅区域语言学》）的编委，一起为刊物组稿。每次见面，仁地都会邀请我到他家中品尝中国菜、畅饮中国酒，相处甚欢。他和我们一样，偏爱带辣椒的中国菜，喜欢蘸着辣椒水吃。吃中国菜、喝点白酒、谈谈汉藏语与藏缅语研究的心得体会，成为我们相聚时最难得的乐趣。



图 1：2007 年罗仁地、戴庆厦、马提索夫在第 40 届国际汉藏语言暨语言学会议合影

鉴于仁地在语言学和汉藏语研究领域的杰出贡献，为推动我校语言学学科特别是汉藏语研究的发展，我在 2006 年出任中央民族大学中国少数民族语言文学学院院长期间，推荐仁地受聘为我校访问学者，并推荐他申报教育部“长江学者”项目，两项聘任均获国家批准。此后，他多次应邀来中央民族大学访问讲学，2006 年至 2008 年期间每年来民大两个月，为研究生上语言学前沿课，同时也指导研究生。由于他通晓中文，能够以中文作学术报告，效果很好，与学校语言学师生相处融洽。我校主办的首部《汉藏语学报》（国内外首创）先后聘请他担任编委、副主编及主编，十余年来他积极投身刊物建设，贡献良多。他还热心关注和支持我校的人才培养工作：在新加坡南洋理工大学任职期间，他先后接纳了 14 位中国学生赴该校访学，其中也包括多位中央民族大学的在读博士生。他对所有学生都悉心指导培养，为汉藏语语言学研究人才提供了国际交流的机会与平台。

2021 年，他受聘为北京师范大学珠海校区语言科学研究中心领军人才、特聘教授。之后的 2023 年，他在珠海主持召开了 “田野调查学术讨论会” ，特邀我和徐悉艰出席，我们又有机会在珠海愉快相聚。会议结束后，我与杨晓燕博士还邀请他参加了一场题为《语言研究的一些思考——罗仁地教授与戴庆厦教授对谈记》的访谈。

（载《南开语言学刊》2026 年第 1 期，总第 47 期）



图 2：2023 年罗仁地与戴庆厦在中国珠海合影

四十多年来，我们之所以能够建立起这份珍贵的友谊，根本在于我们都对汉藏语系语言，尤其是藏缅语族语言怀有共同的兴趣，都致力于探索和解开这些语言之谜。共同的学术追求，是我们这份珍贵友谊得以长久维系的根基。



图 3： 2023 年潘露莉、罗仁地、戴庆厦、徐悉艰在中国珠海合影

二、 难忘的印象

下面，我想谈谈仁地给我留下的几个深刻的印象：

2.1 丰厚的语言学与中国语言学研究教育背景

仁地早年便对亚洲语言文化满怀兴趣。1978 年，他获得纽约州立大学石溪分校亚洲研究学士学位；1981 年 9 月至 1983 年 7 月，以研究生身份赴中国北京大学中文系进修汉语与语言学；1988 年获加州大学伯克利分校语言学硕士学位；1990 年获同校语言学博士学位[3]，博士论文题目为 *Grammatical Relations in Chinese: Synchronic and Diachronic Considerations*（《汉语的语法关系：共时与历时考察》）。

这一系列扎实的教育经历，为他日后的学术研究奠定了深厚的基础。尤为值得一提的是，在中国近两年的进修生活使他得以广泛接触中国的语言文化与社会大众，不仅大大加深了他对中国语言文化的理解，更极大地激发了他探索和研究中国语言问题的热情，为他此后长期深耕汉藏语系语言及相关文化研究积累了宝贵的认识基础。回想起 1982 年课堂上那位认真听讲的绿大衣青年，再看他此后走过的求学历程，一切都显得那么自然而然。他由衷热爱中国传统语言文化，乃至在生活习惯、个人爱好和举止风貌上，都带有鲜明的中国特点。我与他相处多年，对此深有体会。

2.2 广泛的国际语言学教学与研究实践经历

从 1980 年起，凭借卓越的学术才能，仁地先后受聘于多个国家的高校和研究机构从事语言学教学与研究工作，这为他深化语言学认知、积累研究经验提供了难得的机会。例如：1980 至 1981 年，受聘于华东师范大学继续教育系（上海），讲授英语（第二语言），在第二语言习得领域积累了丰富的实践经验；1987 年，受聘于加州伯克利大学汉藏语词源词典与词库项目，担任研究助理；1990 至 1998 年，受聘于台湾历史语言研究所、语言学研究所，历任助理研究员、副研究员；1997 至 2004 年，受聘于香港城市大学，担任副教授；2004 至 2012 年，受聘于澳大利亚墨尔本拉筹伯大学，任讲席教授，并兼任语言学项目主任、2008-2012 年任语言类型研究中心主任；2013 至 2021 年，受聘于新加坡南洋理工大学，任教授，并曾担任系主任；2021 至 2023 年，受聘于北京师范大学珠海校区，任领军教授。

由以上经历可以看出，自获得博士学位后，仁地始终受到世界各地著名高校及研究机构的青睐，足迹遍及亚洲、北美洲与大洋洲，持续深耕语言学的研究与教学工作。数十年如一日，他以严谨的治学态度和深厚的学术功底，在不同的学术环境中不断拓展研究视野，积累了极为丰富的跨文化学术经验，成为国际语言学界颇具影响力的学者。

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[3] 编者注：该硕士学位为"non-terminal MA"，即非终结性硕士，系博士课程的组成部分，并非独立学位项目，获得该学位还须满足博士课程的其他相关要求。罗仁地先生于 1985 年完成全部硕士要求，当时未申请学位文凭，至 1988 年方补领硕士文凭。

他所任职的地区，我也曾因参加国际学术会议或受邀讲学而到访。无论是在台北、香港，还是在美国，每到一处，只要与仁地取得联系，他必定第一时间前来相聚，那份真诚与热忱，令人深为感动。每次异乡相聚，仁地夫妇都格外高兴，总热情地邀我们到家中做客，亲自下厨，备几道家常菜，斟一杯小酒。大家围坐一桌，天南地北，谈学术，话往昔，言笑晏晏。那些温馨的场景，至今仍历历在目。

2.3 扎根田野、深入一线的语言学调查精神

仁地历来重视田野调查，始终将其视为语言学研究发展的根基与源泉。他曾多次亲赴中国，深入其主攻方向——羌语支语言的主要分布区四川西部山区，开展实地调查工作。彼时，那些地区交通不便，生活条件艰苦，但这丝毫未能阻挡他探索的脚步。许多年前，我在四川茂县亲眼见到他夫妇二人正在羌族寨子里调查羌语，其妻露莉博士悄悄告诉我，仁地这几天其实一直在发烧，却依然坚持工作，令我深为敬佩。

仁地夫妇对少数民族怀有深厚的感情，爱吃乡亲们做的特色菜肴，喜爱各民族的服饰与习俗，所到田野调查之处都与当地村民结下了真挚的友谊。他们常与我们讲起在民族地区调查时那些难忘的经历，言语间满是温情与眷恋。曾跟随仁地攻读博士学位的黄成龙教授与他感情尤为深厚，师徒二人不仅并肩开展羌语调查与研究，还合著出版了羌语研究专著。寨子里的父老乡亲亲切地称赞他们二人情同父子。如今，黄成龙已成长为国内外知名的藏缅语研究学者，这其中，恩师的言传身教功不可没。

为了加强学界对语言田野调查的重视，我与罗仁地及汪锋于 2008 年合编了《到田野去——语言学田野调查的方法与实践》一书，收获了良好反响。书中我与罗仁地也分别根据各自多年的实践经验撰有文章。正是由于长期深耕田野调查、积累了丰富的实践经验，仁地于 2023 年在北京师范大学任职期间，主持召开了一次以田野调查为主题的国际学术研讨会。长期以来，以田野调查为专题的语言学学术会议在国内外均属罕见，此次会议的成功举办填补了这一领域的空白，在业界引发了广泛关注与积极反响，也进一步推动了学界对田野调查方法与实践的重视与讨论。

2.4 享誉国际、广受认可的学术地位与社会兼职

仁地长期深耕语言学研究，成果卓著，其学术贡献得到了国际语言学界的广泛认可与高度评价。世界各地众多重要学术机构纷纷邀请他担任要职，足见其在国际学界举足轻重的地位。多年来，每次听闻他又受聘于某个重要机构或担任新的学术职务，我都由衷地为他感到高兴，这些认可在我看来实至名归。据我所知，主要有以下几项：当选澳大利亚人文科学院院士（Fellow, Australian Academy of the Humanities，2008 年）；担任澳大利亚语言学会主席（Australian Linguistic Society，2007—2009 年）；担任国际双语学研究协会副主席（Vice Chairman, International Association for Bilingual Studies，2005—2015 年）；担任台湾中央研究院语言学研究所咨询委员会成员（Member, Advisory Committee of the Institute of Linguistics, Academia Sinica，2010—2020 年；2024 年起续任）；担任《汉藏语学报》副主编（Deputy Editor，2005—2013 年）、联合

主编（Co-Editor，2013 年至今）；担任《藏缅语区域语言学》主编（Editor, Linguistics of the Tibeto-Burman Area，2005—2012 年）；担任《语言与语言学》副主编（Associate Editor, Language and Linguistics, Academia Sinica & John Benjamins，2014—2019 年）；担任《历时语言学》国际顾问委员会成员（Member, International Advisory Board, Diachronica: International Journal for Historical Linguistics，2002—2016 年）；担任《语言研究》咨询编委（Consulting Editor, Studies in Language，1997—2014 年）；担任 Brill 濒危及小语种语言与方言书系列编委（Member, Editorial Board, Brill's Endangered and Lesser-Studied Languages and Dialects）；担任濒危语言文献项目评审委员会成员（Member, Review Panel, Endangered Languages Documentation Programme，2010—2012 年）；担任《民族语文》编委会成员（Member, Editorial Board, Minzu Yuwen，2014 年至今）；担任《菲律宾语言学期刊》编辑顾问委员会成员（Member, Board of Editorial Consultants, Philippine Journal of Linguistics）；担任《南开语言学刊》编委（Member, Editorial Board, Nankai Linguistics, 2014 年至今）；担任李方桂汉语语言学会博士论文奖评审委员会成员（Member, Li Fang-Kuei Society Doctoral Dissertation Award Committee）。此外，他还于 2005 年创建并主持藏缅语言学学术电子邮件讨论网（Tibeto-Burman Linguistics Listserv），长期为从事藏缅语研究的学者搭建学术交流与资源共享的平台。身为老朋友，看到这份长长的名单，心中既有骄傲，也有感慨，也深知这背后是他几十年如一日的耕耘与付出。

上述职务涵盖学术院士、学会领导、期刊主编及国际学术顾问等多个层面，这些权威学术机构与重要学术期刊，充分彰显了仁地在国际语言学界所拥有的广泛影响力与崇高学术声望。身兼数职，不仅是国际学界对仁地数十年学术深耕的高度肯定，更意味着仁地始终活跃于全球语言学研究的核心舞台，以实际行动推动语言学知识在更广泛科学领域的传播与普及，对这一学科走向世界、走入公众视野居功至伟。

2.5 中国语言学在国际视野中的重要推动者

仁地中文造诣极深，不仅口语流利如母语者，更得以熟练运用中文撰写高水平的学术论文与专著。早在 1980 年至 1981 年间在湖南铁路学院（全省性夏天培训班）、华东师范大学执教英语；之后 1981 年至 1983 年间，他就在北京大学深造汉语语言学，这些经历使他不仅在语言表层上熟练掌握中文，更从文化深处获得了对汉语及中国少数民族语言的深刻理解与直观感受。在国际汉藏语研究者当中，他是最早一批深入中国西南山区开展田野调查的西方学者之一，早在二十世纪九十年代便已深入羌语支语言和独龙语的田野一线，足迹遍及四川、云南等地的偏远山寨。正是这种亲临其境、躬身实践的田野经验，使他在充分认知语言多样性的同时，也极大促进了国际学界对中国境内语言，尤其是汉语、羌语等，在类型学上的真实特征与独特面貌的准确认识。

尤为可贵的是，仁地持续在国际语言学界的核心舞台上，为汉藏语和东亚—东南亚地区语言发出重要声音。他反复强调，不能盲从以“印欧语”为中心建立起来的框

架与分析方法，不能将这些服务于印欧语言结构的概念范畴，强加于汉藏语及其他东亚、东南亚诸语言之上。早在 1993 年，他便发表了 “Arguments Against ‘Subject’ and ‘Direct Object’ as Viable Concepts in Chinese”（《论“主语”和“直接宾语”不宜作为汉语分析中的可行概念》）一文，系统论证了“主语”“直接宾语”等印欧语法概念在汉语分析中难以适配的原因。自 20 世纪 90 年代开始，他便以客观、实事求是、基于田野调查的经验研究方法，不断强调语言研究应根植于语言事实。30 年后的 2024 年，他依然坚持这一研究思路，发表了 “On the Overlooked Diversity of Clause Structures and Argument Structures in Non-Indo-European Languages”（《论非印欧语言中被忽视的小句结构与论元结构多样性》），进一步从类型学角度呼吁学界尊重非印欧语言自身的事实与逻辑。他还于 2017 年在《光明日报》发表专文《尊重语言事实 提倡科学方法——21 世纪语言学刍议》，面向中国公众与学界呼吁回归语言事实本身。能用中文向中国公众发声，这在西方语言学家中实属罕见，也是他与众不同之处。我们多次在学术会议上就汉藏语问题交换意见，他的坚持始终令我印象深刻。可以说，无论是在理论建构层面，还是在具体语言的描写分析实践中，仁地都为中国语言学在国际视野中的正确定位与健康发展做出了不可替代的贡献，真正实现了理论与实践的深度融合，成果斐然，影响深远。

三、 结语

回首四十五年的交往历程，我与仁地从相识、相知到相惜，一路走来，彼此在学术上相互砥砺，在生活中彼此关怀，结下了这份跨越国界与年龄的深厚友谊。这份情谊之所以珍贵，不仅因为它历经了四十五载岁月的打磨与沉淀，更因为它建立在对中国语言文化共同的热爱与对学术真理共同的追求之上。

仁地虽为西方学者，却以扎实的田野调查、严谨的学术态度和流利的中文功底，为汉藏语研究做出了卓越贡献。更难能可贵的是，他始终秉持着开放包容的学术胸襟，致力于推动中国语言学走向国际舞台，促进中外学术交流与对话。他培养的众多学生，如今已成为学界的中坚力量；他参与主编的学术刊物，为中国语言学成果的国际传播搭建了重要平台；他关于方法论的反复呼吁，提醒着学界回归语言事实本身、尊重语言多样性的学术初心。

如今仁地已年届从心所欲，仍笔耕不辍，思考不息。作为相交四十五年的老朋友，我由衷为他感到高兴和骄傲。在此，我谨以这篇回忆短文，向仁地致以最诚挚的祝贺与祝福——愿他身体健康，学术之树常青，愿我们在共同热爱的语言学道路上，继续携手前行，友谊长存！

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A Treasured Friendship of Forty-Five Years: Memories of Randy LaPolla

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[Abstract] This article is my personal tribute to Randy J. LaPolla, written for his Festschrift in celebration of his academic achievements. I first met Randy in 1982 at Peking University, where he was studying Chinese linguistics as a foreign student, and our friendship has deepened over forty-five years through shared fieldwork, collaborative editing, and repeated encounters at international conferences and institutions across the Asia-Pacific region and North America. Beyond personal recollections, I reflect on five defining qualities that have characterized Randy's scholarly career: his rigorous training in Chinese and Sino-Tibetan linguistics, his extensive international teaching and research experience, his commitment to fieldwork in minority language communities, his prominent standing in global linguistics, and his sustained efforts to represent Chinese linguistic diversity on the international stage — particularly his long-standing critique of applying Indo-European-derived analytical frameworks to Sino-Tibetan and other non-Indo-European languages. I close with a heartfelt tribute to Randy's enduring contributions to the field and to the friendship that has accompanied us both throughout our academic lives.

The Inimitable Randy LaPolla

James A. Matisoff

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When Randy first arrived in the Berkeley linguistics department in the late 1980s, I was a bit confused about his name. First, I asked him whether "Randy" was only a nickname for Randolph. "No," he said, "It's just Randy!" "Well," I said, "but what about LaPolla? Is it pronounced /poya/ meaning 'chicken'?" He laughed and said, "No, that's Spanish — I'm Italian! It's pronounced /polla/!" (The Italian meaning of *polla*, for the curious, is "water source; a spring" — rather more poetic than the Spanish.)

It did not take long for me to realize that this student was exceptional. His impressive knowledge of written and spoken Chinese quickly made him an indispensable member of my STEDT project — the Sino-Tibetan Etymological Dictionary and Thesaurus, which I had begun in 1987 with the aim of producing an etymological dictionary of Sino-Tibetan organized by semantic field. The project maintains a large, publicly accessible lexical database of nearly one million records drawn from over 500 sources, used to identify cognates and reconstruct Proto-Sino-Tibetan. One of the first tasks I assigned Randy was to catalogue all the papers presented at the first 25 Sino-Tibetan conferences — the ICSTLLs, the International Conferences on Sino-Tibetan Languages and Linguistics, which have been held annually since 1968. This task — tedious though it may sound — he undertook with characteristic thoroughness and good cheer, and it laid the groundwork for his deep familiarity with the full scope of the field. Meanwhile he was working on Dulong, a Nungish language also known as Trung, spoken in far north-western Yunnan — fieldwork that yielded his splendid article "Dulong and Proto-Tibeto-Burman," published in *Linguistics of the Tibeto-Burman Area* 10.1:1–43 (1987), a journal I had edited for many years and which Randy himself would later go on to edit in turn. At the same time, he was busy writing his dissertation, submitted in May 1990: "*Grammatical relations in Chinese: synchronic and diachronic considerations*" — a work that would fundamentally reshape the understanding

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of grammatical relations in Sino-Tibetan linguistics. It is a rare thing for a supervisor to see a doctoral student produce scholarship that immediately changes the conversation in the field. Randy did exactly that.

By a happy coincidence, Jackson Tianshin Sun was also a Ph.D. student at Berkeley around this time, working on a group of languages spoken in the Indian states of Arunachal Pradesh and Assam, to which he gave the general name of Tani — a term now universally accepted by Tibeto-Burmanists, replacing the older "Abor-Miri-Dafla." His dissertation, submitted in April 1993, was entitled "*A historical-comparative study of the Tani (Mirish) branch of Tibeto-Burman*." Jackson has since been a distinguished researcher at the Academia Sinica in Taipei for decades. This meant I had the great fortune of supervising two extraordinary young scholars at once — and watching them go on to shape the field in ways I could only have dreamed of.

Between them, Randy and Jackson have been crucial in forging cultural and intellectual links between Asia and Western linguistic research — a bridge that Randy continues to strengthen throughout his career. His role in the STEDT project was indispensable; his command of Chinese sources opened doors that had remained closed to Western scholarship for decades. He has become a crucial link between Chinese and Western linguistic traditions, publishing in both Chinese and English, attending conferences in China regularly, and mentoring a generation of Chinese linguists who now hold positions at major universities across China and Taiwan.

In 1996, I had the great pleasure of accompanying both of them to Kunming, where we all stayed in the same hotel. All three of us worked separately on different Tibeto-Burman languages. This was quite convenient, since our informants (now called language consultants) would come to our hotel for our elicitation sessions!

Randy did not just absorb what I had to teach — he went far beyond it, forging his own path in Chinese historical syntax, Tibeto-Burman morphosyntax, and language documentation. He has become a scholar respected worldwide, and a mentor to a new generation in turn.

At the 50th ICSTLL in Beijing in 2017, I had a proud moment when Randy and Jackson together draped me with a scarf to celebrate my 80th birthday. That was the kind of moment every supervisor hopes for: to see one's students honoring you not out of obligation, but out of genuine affection and shared intellectual kinship.



Photo 1: Left to right: Jackson Tianshin Sun, James A. Matisoff, and Randy J. LaPolla at the 50th ICSTLL, Beijing, 2017

Years later, when friends and colleagues gathered online to celebrate Randy's own 70th birthday, I found myself on the other side of that equation — it was my turn to honor him. I said what I have always felt: that Randy is one of my proudest students, in both character and scholarship. I miss him deeply, and I wish he lived closer to me.

Randy has always worn his erudition lightly. He gives unstintingly of his time and energy helping younger scholars, mentoring a generation of linguists who carry his work forward across China, Singapore, and beyond. His contributions to the field are extraordinary in their breadth and depth: from his groundbreaking fieldwork on Dulong and his theoretical work on grammatical relations in Chinese, to his editorial leadership — including his years editing *Linguistics of the Tibeto-Burman Area* — and his tireless efforts to bridge scholarly traditions that have long operated in isolation from one another.

Beyond his scholarship, Randy is a warm, generous, and fundamentally decent person. He has a ready laugh, a genuine interest in the work of others, and a humility that belies his considerable achievements. He builds institutions and communities — not for his own glory,

but because he believes deeply in the collaborative enterprise of understanding the world's languages.

It has been one of the greatest honors of my career to be his teacher — and to watch him become a teacher to so many others. I look forward to seeing all that he will continue to accomplish in the years ahead. We are all richer for knowing him.

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Reconstructing the History of Southern Min Phonology through Dialect Maps: A Study in Geo-Historical Linguistics

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Abstract: This paper discusses the methodological application of geo-historical linguistics to study the phonological history and development of Southern Min in southern Fujian and Taiwan. Drawing on maps from the *Dialectal Atlas of Southern Min* (Ang 2023a), we intend to analyze the distributional patterns of dialectal varieties across three domains:

(1) Reconstructing the Proto-Southern Min vowel *y using dialect maps.

(2) Tracing the diffusion source of nasalized vowel raising in Southern Min using dialect maps.

(3) Examining the reconstruction of the dialect history of the Zhangzhou accent by inspecting Quanzhou elements in the Yilan dialect of Taiwan.

The first two cases demonstrate the utility of geographical dialectology in reconstructing historical phonology, while the third highlights its feasibility in reconstructing linguistic history.

Keywords: geo-historical linguistics, Southern Min, central vowel, nasalized vowel, linguistic history

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[1] This article was jointly translated by CHEN Yifan (Nanyang Technological University) and Prof. Fu-Hsing Su (National Chiayi University), with editorial oversight by Prof. Fu-Hsing Su. Prof. SHEN Ruiqing (National University of Singapore) offered helpful feedback on the initial draft. Any remaining errors are the translators' responsibility.

1. From Comparative Historical Linguistics to Geo-Historical Comparative Linguistics

The research paradigm of comparative historical linguistics (CHL) entails comparing a group of genetically related languages or dialects, reconstructing their proto-language and formulating proto-forms to account for the evolution of contemporary dialects or documentary dialects. I argue that, with regard to formulating proto-forms and reconstructing linguistic evolution, the plausibility of traditional CHL hinges upon the following conditions:

(1) All key dialectal varieties have essentially been discovered and integrated into the comparative framework.

(2) The reconstructed proto-forms must reasonably account for the developmental trajectory leading from the proto-language to modern dialects.

(3) The reconstructed developmental process must align with the evidence found in historical documents.

(4) The reconstructed developmental process must reflect the spatial distributional patterns of modern dialects.

(5) Interferences from contact-induced and external linguistic changes must be properly ruled out.

Conditions (1) through (3) fall within the purview of comparative linguistics and, indeed represent the limits of what comparative linguistics alone can accomplish. Among them, (1) is precisely the forte of geographical dialectology. In dialectal fieldwork, the greater the number and density of dialectal sites, the more ideal the outcomes to be yielded. While traditional historical linguistics typically compares only a handful of representative dialects, geo-historical linguists maintain that attempting to reconstruct Proto-Min or Proto-Southern Min based on a mere few dialects is simply inadequate. Given that traditional dialectal surveys are neither comprehensive nor web-like, how can one verify that the key varieties have been properly discovered? Thus, investigators can hardly avoid the satirical image of blind men touching an elephant, as they each work on different dialectal fragments. Geographical dialectology, by contrast, essentially employs web-like investigations with a measurable density of geographic sites. The number and comprehensiveness of dialectal varieties it covers will surely surpasses those of traditional CHL. It in turn will generate much more robust credibility.

As for condition (4), it likely represents a weak point in traditional CHL, because historical linguistics usually can only tell us about the proto-forms that undertake a change

versus those that do not. As to the question of what processes the unchanged proto-forms have undergone to become their present-day shapes, it can only appeal to conjecture without empirical evidence alongside. Geo-historical linguistics (GHL) not only serves to elucidate the causal relationship between the proto-language and its contemporary dialects but also, by means of visible linguistic maps, clarifies the very process of linguistic change.

With regard to condition (5), traditional CHL adheres to the language family tree model and emphasizes that the evolutionary process reconstructed must characterize contemporary synchronic dialects that involve from a single proto-language. Consequently, any impurities derived from language contact must be eliminated before the threads of change can be disentangled. GHL, however, recognizes the River System Model by holding that multiple proto-languages, language contact, and dialectical integration are normal in linguistic history (for a detailed discussion, see Ang 2023a, Section 5.1, "Mechanisms and Models of Linguistic Change"). It argues that linguistic history must faithfully reflect the actual process of change. Therefore, the "impurities" engendered by language contact not only must not be excluded, but must also be subject to linguistic stratum analysis to ensure proper data management.

Since the nineteenth century, geographical linguistics and historical linguistics have been running on two parallel tracks, with each persisting in its own course to this day and maintaining little intersection with the other. Formal linguistics has long been the mainstream of the linguistic discipline, while geographical linguistics has remained peripheral as a subfield. As for "geographical-historical linguistics"—which links geographical dialectology with comparative historical linguistics—is an even more peripheral subfield within a peripheral field. Chinese historical linguists have consistently paid scant attention to the accomplishments of geographical linguistics, and, as a result, the true contour of the history of Mandarin Chinese remains rather obscure even nowadays.

This is not to say, however, that historical linguists are unaware of the potential contributions that geographical linguistics could make to their field. What we recognize is that geographical linguistics has not received much attention from scholars and has remained underdeveloped. What it has accomplished are not yet mature enough to be integrated into historical linguistic studies.

Linguist Chao Yuen Ren observed early on that "In principle, linguistic differences seen in geographical space often represent stages of historical evolution. Thus, horizontal differences often correspond to vertical ones. A large part of a language's history is often discernible in the geographical distribution of this language"(Chao, *Language Problems*, 1959: 99).

As historical linguist Trask (1996: 171) points out, "The advent of dialect atlases

revolutionized historical linguistics. Each map, like a snapshot, clearly displays the regional dialectal variation that has accumulated over long periods of time." Shibata (1969: 27) mentions explicitly that geographical linguistics takes the regional varieties of spoken lexicon as its material from which it infers and reconstructs linguistic history.

That being said, the foundation of geographical linguistics lies in fieldwork-based synchronic linguistic research, which requires the collection of extensive and comprehensive dialect data—an endeavor far more labor-intensive than ordinary comparative dialectology. Once collected, the data must then be rendered into maps, a task demanding intricate cartographic techniques that are not typically within the skill set of scholars trained in traditional formal linguistics. The work is onerous, technically demanding, and offers a low return on investment; moreover, the theoretical grounding it requires differs from that of traditional formal linguistics. The barriers are thus formidable, and those willing to undertake such work are few. Traditional historical linguists are all formal linguists by training, and although they may well recognize the manifold contributions geographical dialectology could make to their field, those who can cross the disciplinary divide and personally engage in such research are exceedingly rare. This is indeed a case of "easier said than done."

To incorporate language contact as an object of study is to move beyond the traditional purview of comparative linguistics and into the enterprise of reconstructing "linguistic history"—an enterprise that must be grounded in geographical linguistics. The study of linguistic history is not confined to "proto-language reconstruction"; it must encompass the interference of non-natural change, that is, the factors of contact-induced change. What it reconstructs, therefore, is the entire course of a language's historical evolution and development. In some cases, the historical process can be inferred from the distributional patterns visible on maps, but often this work must be pursued through interdisciplinary research involving history, geography, sociology, and other fields. In this respect, it differs fundamentally from formal linguistics.

In light of the foregoing discussion, historical linguistics must break free from the constraints of formal linguistics and establish a linkage with geographical linguistics. As this interdisciplinary approach has yet to be formally recognized as a distinct subdiscipline, I propose to call this research methodology "geo-historical linguistics." Furthermore, echoing the argument I put forward in Ang (2019a), wherein I advocated dividing "geographical linguistics" in the broad sense into two subdisciplines— "geographical linguistics" and "linguistic geography"— I use the term "historical-linguistic geography" (or "historical geography of language") to refer to the reconstruction of linguistic history through interdisciplinary research involving history, geography, sociology, and related fields.

Geographical dialectology in Japan is quite well developed and has yielded profound insights into the nature of linguistic history research. With regard to the issues discussed above, Munemasa Tokugawa (1993: 57–65) classifies traditional historical comparative linguistics (which may also be referred to simply as "comparative linguistics") under the rubric of "comparative dialectology," while categorizing what this paper terms "geo-historical comparative linguistics" as "dialect geography," and proceeds to compare the differences between the two disciplines. He notes that comparative dialectology emerged first, and that dialect geography was born out of a critical response to its shortcomings. The former emphasizes the systematicity and regularity of language, yet overlooks irregular changes; he argues, however, that it is precisely the study of such irregular changes that constitutes the essence—of dialect geography research. Although the debate between these two schools has a long history, he holds that each has its own strengths and weaknesses, that they complement each other, and that neither should be neglected. Even though the terminology differs, his viewpoint is consistent with that of this paper. We, too, engage in the reconstruction of proto-forms, but our emphasis lies in the reconstruction of linguistic history.

The following sections draw upon maps from the *Dialectal Atlas of Southern Min* (Ang 2023a, abbreviated as the DASM) to demonstrate the research methods of "geo-historical linguistics" and "historical-linguistic geography" across three domains of dialect history. Although this atlas focuses on the core Southern Min dialects (Quanzhou 泉州, Zhangzhou 漳州, Xiamen 廈門), it also takes into account variation in the surrounding dialects, such as those of Longyan（龍岩）, Datian（大田）, and Puxian（莆仙）. The geographical scope of the discussion in this paper is "South Min," which, in addition to the conventionally classified "Southern Min" dialects, also includes the dialects of Datian and Puxian. This dialect group differs from "North Min "(which encompasses Eastern Min and Northern Min) in two crucial respects: first, the derounding of the vowel *-y and its subsequent phonetic developments; and second, the weakening of nasal codas into nasalized vowels and their further evolution. Taking these two features as the focus and using dialect maps as evidence, this paper explores the proto-language of Common South Coastal Min and the historical processes of its development.

2. Reconstructing South Min *-y on the Basis of Dialect Maps

We begin by discussing the first characteristic feature of South Min: the derounding of *-y, which is associated with the evolutionary processes that led to its multiple dialectal variants and their current distributional patterns.

2.1 The Two Quanzhou Central Vowels

Ang (2001) discusses the reconstruction of rime group for Southern Min central vowels. In the Quanzhou dialect, this group maintains two rime categories involving a central vowel in the nucleus position of an open-syllable. These two categories correspond to the (*-ɨ) rime⟨居⟩ and the (*-ə) rime⟨科⟩ in *Huìyīn Miàowù*《彙音妙悟》. The "central vowel rime categories" are mentioned here only as a brief enumeration and readers may access Ang (2025: 58-65) for a detailed discussion.

In my work *Huìyīn Miàowù and Ancient Quanzhou Phonology* (Ang 1996), I applied the comparative method to formulate the phonological system indicated in *Huìyīn Miàowù*. I traced the system further back to ancient Quanzhou phonology, reconstructing the proto-Quanzhou form of the high central vowel rime category as *-ɨ. This category in Quanzhou corresponds to two distinct rime categories in Zhangzhou-accented dialects; accordingly, two separate rime categories must be established for the Southern Min diasystem as well. Ang (2001) distinguished the (*-ɨ) rime of *Huìyīn Miàowù* into two rime categories. One is (-ɨ~-u), which corresponds to the Zhǐ rime group, Division III, open(止開三) in Middle Chinese (MC); the other is (-ɨ~-u), which corresponds to Yù group, open Division III in MC. He then proceeded to reconstruct common Southern Min, also known as "Proto-Southern Min". What shows below is a comparison of the realizations of these two categories in their proto-forms and various dialects.

Table 1: A Comparison of the Dialectal Variations of (-ɨ~-u) and (-ɨ~-i) and Their Proto-forms in Southern Min[2]

	Proto-form	Quan Zhou 泉州	Hui'an 惠安	Xia Men 廈門	Peng Hu 澎湖	Zhang Zhou 漳州	Long Yan 龍巖	Chao Zhou 潮州	Hai Kou 海口
(-ɨ~-u) 居艍文 (MC zhǐ III open 止開三)[1]	*ɨ	ɨ	ɨ	u	u	ɨ	ɨ	ɨ/ə	i/e
(-ɨ~-i) 居居 (MC yù III open 遇開三)	*y	ɨ	i	u;i	i	i	i	ə	i/u

It can be seen that, through dialect comparison, these two categories originated from

[2] Abbreviated for table format, using "MC" for Middle Chinese, "III" for division III, and "open" for 開口 (open mouth)

different phonetic sources in the MC period and have undergone different processes of change. Nonetheless, they merged together as a simple central vowel in each Quanzhou-accented dialect. In the majority of the dialects cited above, these two categories have been, as a rule, merged in a manner similar to that of Quanzhou-accented dialects, albeit realized as different phonetic forms. Only Zhangzhou and Longyan preserve the distinction by maintaining their phonetic contrast. Xiamen is a variety of Zhangzhou-East accent and is assimilated by Quanzhou. Thus, the (-ɨ ~ -i) rime category in Xiamen is generally realized as -u, similar to other Eastern-biased Zhangzhou accents. Nonetheless, a small number of high-frequency spoken words in this dialect preserve the pronunciation -i (see subsequent paragraphs for details)"

With regard to the (-ɨ~-u) category (Zhǐ rime group, Division III open in MC), it is sensible to reconstruct this rime as *-ɨ given that the Quanzhou reflex -ɨ resembles its corresponding form in Hakka and Mandarin. In accordance, this vowel shifts backward, becomes rounded and yields –u as a result in Zhangzhou and Xiamen. The same vowel shifts forward and becomes -i in Jinjiang 晉江 and Hui'an 惠安 while maintains dialectal variation in Chaozhou 潮州, where it is realized as -ɨ or drops lower to become -ə. In Hainan, this vowel moves further forward to become -e, or it resembles the -i form in Zhangzhou. It carries the genetic imprint of both the Zhangzhou and Chaozhou dialects.

Concerning the (-ɨ~-i) category (Yù group, Division III, open in MC), it is realized as -y by every North Min dialect. Noticeably, the lip-rounding feature of this vowel is lost in the core Southern Min dialects at present. Quanzhou and Chaozhou probably passed through an intermediate stage of change to yield *ʉ, before developing this vowel into -ɨ and merging it with *-ɨ. Xiamen and Penghu conflate the two rime categories and treat them as –u. Haikou differentiates this vowel into -u or -i (Un 1987: 199), with the differentiating factors being unidentifiable. The dialect is consequently presumed to be a mixture variety. As for Chaozhou, it undertakes an initial development paralleled to that of Quanzhou for this rime category, where the vowel is first mixed up with -ɨ. Some of its sub-dialects undergo tongue height lowering and change it into -ə later on. The same rime category is divided into literary -u and colloquial -i in Xiamen (details forthcoming), which is a dialect with mixed features but fundamentally aligns with the "Zhǐ-open-III-Literal" (止開三) category in Chinese phonology. It is judged to be associated with the dialectal system of Zhangzhou-East accent. Overall, this section takes the (*-ɨ~*-i) category as an exemplary case for discussion.

2.2 The Reconstruction of -y for the (-ɨ~-i) Rime Category

As noted above, the rime category of (-ɨ~-u) (Zhǐ rime group, Division III, open 止開三 in MC) is reconstructed as *-ɨ. This is identical to the reflex found in Quanzhou and

Longyan, and corresponds to the pronunciation in Modern Mandarin and Hakka. This reconstruction is relatively reliable as it amasses supporting evidence from many readily available dialectal variants.

Our reconstruction of the (-i~-i) category as *-y is, in fact, akin to traditional reconstruction practice. This is a procedure adopted not only by Ong and Norman in their reconstruction for Common Min but also by Zhang (2022) and Kwok (2018) to reformulate Common Southern Min. The approach we undertake may be claimed to represent a consensus among historical linguists from the field of Southern Min.

From the perspective of internal reconstruction, the rime category (-i~-i) (Yù group, Division III, open 止開三 in MC) indeed seems to admit no reconstruction other than -y. There are four high vowels in Common Southern Min and three of them have already been assigned to an appropriate position each: the (-i~-i) category〈基居文〉, the (-i~-u) category 〈居艍文〉(*-i), and the (-u~-u) category〈珠艍文〉(*-u). It is more than natural and suitable to reconstruct (-i~-i), the remaining category, as -y. By judging the logic of sound change, we notice that if we reconstruct (-i~-i) this way, we may get peace with the natural developments of -y derounding in Zhangzhou (-y>-i) and the centralizing of the same vowel in Quanzhou reflex (*-y>-i).

In this regard, Wu (2009) is the investigator who overrides all objections as to reconstruct this rime category as *-ɯ. Under his proposal, the vowel system will possess two back vowels but only one front vowel. Such a vocalic configuration is comparatively unnatural because, in our differentiation of unrounded versus rounded vowels for languages across the world, we generally find front vowels to be more common than back ones. The opposite cases are relatively rarer to see. Maddieson (1984) developed the UPSID database to survey the phonological inventories of 317 languages worldwide. His study looks into phonemic contrast between rounded versus unrounded vowels that share the same place of articulation. It is found that such contrast exists for 39 pairs of front vowels, 26 pairs of back vowels, and only 2 pairs of central vowels. The numbers shrink to 25 pairs, 19 pairs and 1 pair respectively if we only take high vowels into account. It is thus evident that the paired coexistence of front rounded vowels versus front unrounded vowels is a more natural state of affairs. Drawing from this line of argument, we may infer that, in the phonological system of Proto-Southern Min, the contrastive presence between *-i and *-y is more plausible than that between *-u and *-ɯ. Thus, I modestly propose that, as far as the reconstruction of ancient phonology goes, it is preferable to formulate phonological systems that are more natural and unmarked than those that are more unnatural and marked.

Furthermore, any reconstruction must take into account the naturalness and plausibility of the developmental pathway from the proto-phonological system to the

modern dialects. Reconstructing -ɯ proves to be a highly unnatural explanation for Zhangzhou dialect development. In the Zhangzhou-accented dialects, the (-ɨ~-u)/*-ir[ɨ] category is realized as -u, representing a backing shift (*-ɨ>-u); the (-ɨ~-i)/*-y category is realized as -i, which, under Wu's reconstruction, would entail fronting (*-ɯ>-i). With one vowel moving backward and the other moving forward, the two trajectories would collide head-on—how could they possibly avoid merger? If such a sound change were to hold, the shift *-ɯ > -i would have to leap over *-ɨ, and such a process is truly difficult to conceive. When one further considers that Mandarin, Cantonese, and Northern Min all have -y for this rime category, the reconstruction of *-ɯ for Common Southern Min appears to lack substantial empirical support.

That being said, the reconstruction of the (-ɨ~-i) category (Yù group, Division III open in MC) as *-y is accompanied by doubts casted by the concerned parties. After all, among the Southern Min dialectal variants listed in Table 1, no single one maintains -y. On what grounds, then, do we reconstruct this rime as *-y for Common Southern Min? Ang (2001) offers the following explanations.

> *No dialect of South Min possesses vowel y. However, in the North Min dialects—such as Jian'ou 建甌, Jianyang 建陽, Fuzhou 福州, and Putian 莆田—the majority of characters belonging to the Yù group, Division III open, are realized as –y. Additionally, there is a phonemic contrast between rounded and unrounded vowels. It is thus evident that Common Southern Min should likewise possess an *-y vowel.*

Cheng (2001) draws a map showing the distributional variants of the character 魚 ("fish") across Fujian province. By referring to his piece, we may clearly observe the distribution of (-ɨ~-i) /*y category (Yù group, Division III open in MC 遇開三) in the Min dialects as a whole. As is illustrated in the map below, the character 魚 is a representative exemplar of this rime category. It is produced with the rounded vowel y all across the non-Southern Min areas, which range from Northern Min, Eastern Min, Central Min to Puxian dialectal regions. The variants ŋ, ŋɤ are Hakka pronunciations that lie outside our concern.

In other words, there are a wide range of variants for the conventionally classified "Southern Min" dialects, as shown in u, ɨ, ə, and so forth. Yet no single one of them possesses the rounded vowel y. If we reconstruct the (*-ɨ~*-i) category as -y, there arise the implication that all modern Southern Min dialects have undergone a sound change of vowel derounding. A situation like this suggests that Ang's (2001) reconstruction of *-y for this rime category is not based on any ready-made variant from Southern Min. The

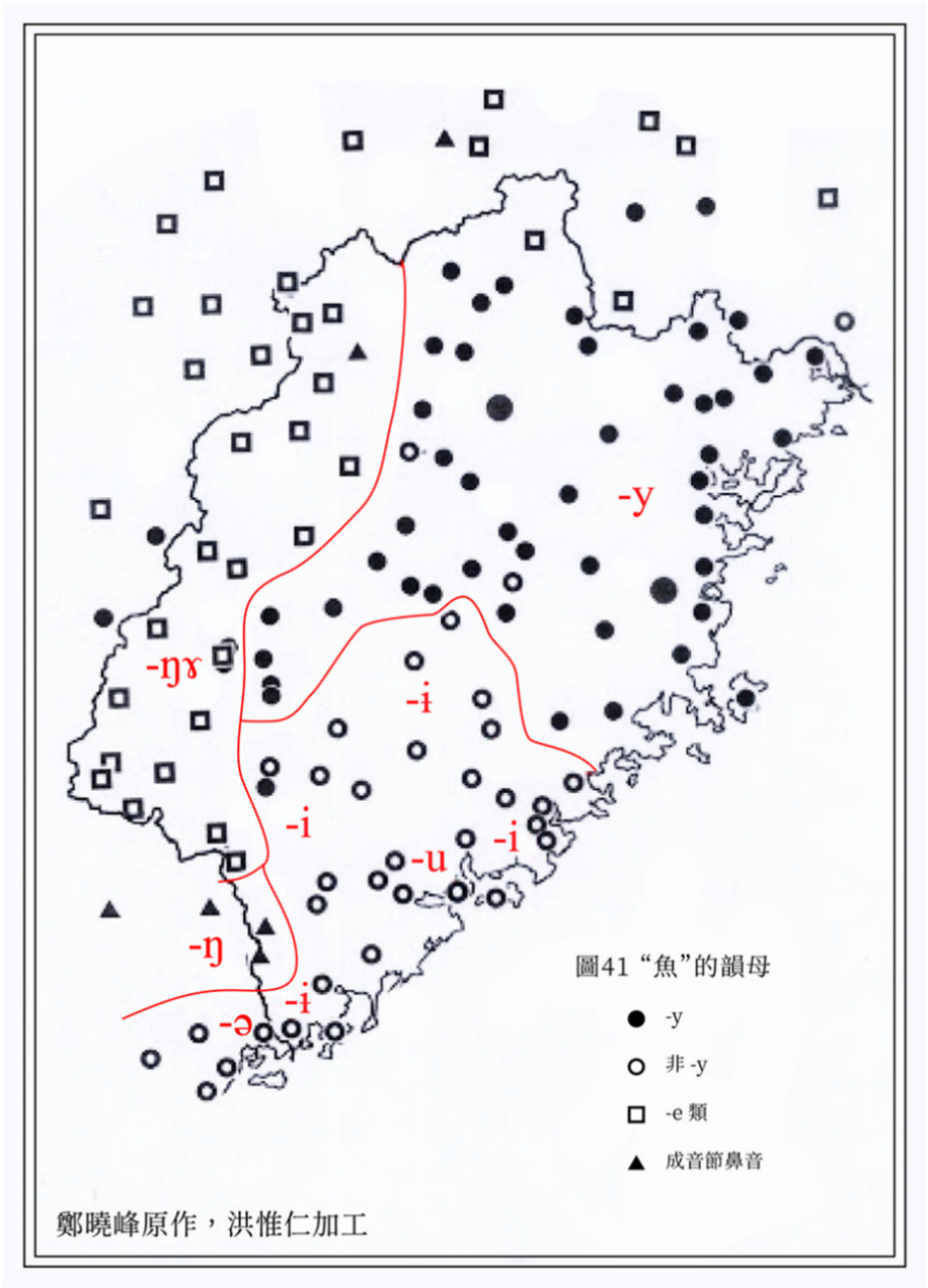


Figure 1: Distribution of the Variant Pronunciations of the Character 魚 (“fish”) across the Fujian Dialects

(Source: Cited from Cheng (2001); isoglosses and certain Southern Min phonetic variants are created by the author.)

problem resolves itself if we put the Puxian dialect under the category of "South Min". Wu (2021), however, contends that citing the Puxian rounded vowel as evidence involves the operation of "external evidence," which fails to provide sufficient support for the reconstruction. He offers the following criticism:

> *In historical linguistics, the fundamental method of comparative reconstruction is achieved through a comparison of cognates. The process proceeds in a bottom-up manner, building up reconstructions layer by layer. Did the *-y rime exist in Proto-Southern Min? One should test the hypothesis against the internal evidence from Southern Min itself to answer this question. He should not instead appeal directly to the history of Min phonology or phenomena found in other branches (such as Eastern Min), with which he attempts to make use of a higher-level system to interpret phonological changes in a top-down manner. The reason is purely simple: with respect to the reconstruction of Proto-Southern Min, materials gathered from other dialectal branches or the history of Min phonology are, in relative terms, external evidence. A premature introduction of such evidence—prior to an adequate investigation of internal materials—leads to two consequences. On the one hand, it gives rise to preconceptions regarding the formulation of the early forms in Proto-Southern Min. On the other hand, it may result in circular reasoning, leading to an erroneous reconstruction of Proto-Min.*

The bottom-up, layer-by-layer approach to reconstruction has long been a tenet of my "pyramid" theory. We readily acknowledge that the availability of internal evidence could certainly work to one's best satisfaction, yet external evidence is also preferred so long as there is a need to address the logic of sound change, as is the case of internal reconstruction discussed above. In addition, Southern Min and Northern Min are both branches of Min. If this character is realized as -y in the majority of Min dialects, then *-y stands as the best candidate form for Proto-South Min. We may take the reconstruction of consonant cluster in Old Chinese as an example. This structure has vanished without trace in modern Chinese dialects, yet is still preserved in Tibeto-Burman and Austroasiatic languages. Specialists of Old Chinese phonology frequently draw on it as material for comparison, with a goal to verify the availability of consonant cluster in Old Chinese. Tibeto-Burman and Chinese both belong to the Sino-Tibetan language family, while it remains to be seen whether Austroasiatic languages maintain a genealogical relationship among themselves. In any case, these languages have clearly undergone a process of language contact. If there are indeed consonant clusters in all the languages aforementioned, we may—with the use of internal reconstruction and philology as evidence—believe that there should be consonant clusters in Old Chinese as well. It is thus

apparent that internal evidence represents an ideal of its own, but we cannot rule out the use of external evidence, particularly the acceptable piece that involves internal reconstruction or documentary materials. Citing external evidence is not a methodological taboo in historical linguistics, nor does it entail any problem of "preconception" or "circular reasoning."

It is to our regret that Ang (2001) had not yet, at that time, discovered evidence pertaining to the preservation of the rounded vowel -y in Southern Min. But he did in fact discover a Zhangzhou-accented dialect in Pingle 平樂 County of Guangxi 廣西, which preserves a four-way contrast among the categories which realize (-i~-i)〈居居〉 as -y, (-i~-u)〈居艍文〉 as -i , (-i~-i)〈基居〉 as -i, and (-u~-u)〈珠艍文〉 as –u respectively. During the Wanli 萬曆 era of the late Ming Dynasty, this dialect was transported westward to what is now Yunan 鬱南 County of Yunfu 雲浮 City in Guangdong 廣東 Province, which claims a population of 15,000. It was transported again to Pingle 平樂 County of Guilin 桂林 City in Guangxi 廣西 Province during the Qing Dynasty, where its population currently stands at 10,000. The ancestral homes of the migrants speaking this dialect include Nanjing 南靖, Longxi 龍溪, Beixi 北溪 (a tributary of the Jiulong River), Zhangping 漳平, Hantou 涵頭 (possibly Hanjiang in Putian 莆田), and Pubian 埔邊 (possibly Jinjiang 晉江, Xiamen 廈門, or Putian 莆田). This dialect is distinctive for possessing rounded front vowel, making it the only peripheral dialect of core Southern Min to preserve four high vowels (see Zhang and Lin 2009: 8). What show below are the examples of rime category.

Characters for the category of (-i~-i)〈基居〉-i : 比, 米, 死, 戲
Characters for the category of (-i~-u)〈居艍文〉-i: 資, 紫, 此, 私
Characters for the category of (-u~-u)〈珠艍文〉-u : 事, 有, 浮, 府, 主, 久, 牛
Characters for the category of (-i~-i)〈居居 1〉-y : 女, 舒, 呂, 居, 舉, 巨, 許, 語
Characters for the category of (-i~-i)〈居居 2〉-i: 豬, 箸, 汝, 煮, 去

Of the five categories listed above, (-i~-i)〈居居 1/2〉 exhibits literary-colloquial stratification. The small number of colloquial high-frequency characters cited above are realized with -i as the rime; they are provisionally assigned to (-i~-i)〈居居 2〉(colloquial). The remaining majority of characters in the (-i~-i) 〈居居 1〉 literary stratum are realized with the rime -y. The split within the (-i~-i) category parallels the literary-colloquial stratification found in Xiamen and Taiwan, which is brought up by dialectal mixture. Roughly speaking, common colloquial lexical items are realized with –i as the rime, while the remaining literary lexical items are realized with –u.

The characters cited above—豬, 箸, 汝, 煮, 去—which belong to the colloquial (-i~-i)〈居居 2〉category, are likewise realized with -i as the rime in the general varieties of

Xiamen (see Ang 2023, Map 2.1.1.7) and Taiwan (see Ang 2025, Map 2.1.1.3-1~-2). In the literary stratum, these same words are realized with the rime -u. They correspond to the (*-i̱ ~ *-i) /*-*y* category, exemplified by the literary reading -y of the character〈居居$_1$〉(see Ang 2023, Map 2.1.1.6). The -y variant has disappeared from the core Southern Min dialects. Despite this, the presence of the Pingle dialect acts as "internal evidence"—or hard proof—showing the ancestral form of this category should be reconstructed as *-y.

It might be claimed that -y was a structure borrowed from Cantonese, and this is indeed a possibility that cannot be ruled out. Some characters in the Pingle dialect may show traits of Cantonese influence; for instance, certain characters of the Zhī series (知系) have affricate initials, and the fricative h- before a rounded vowel is labialized into a bilabial fricative (hu->f-). The former, however, is confined to a limited set of lexical items, whereas -y bears a highly regular correspondence with the rime category of (-i̱~-i) /*y 居居. It has been inferred that the literary-colloquial split within this category in Pingle reflects dialect mixing among the original migrants. An inspection into the ancestral homes of the Pingle inhabitants, as aforementioned, reveals that they originated almost exclusively from the Jiulong River 九龍江 basin, with the possible addition of some Putian migrants. The presence of these Putian speakers, combined with the Cantonese linguistic environment, may well exert a retention effect, preserving the -y vowel in the Pingle dialect. Such a situation is analogous to that of the Puxian dialect, which preserves -y under the retention effect of Eastern Min. Given the evidence from both Pingle and Puxian, we cannot lightly dismiss the *-y* reconstruction as mere "external evidence."

Here comes another "bold conjecture" of mine: The Zhangzhou dialect might retain two coexisting variants of -i and -y for the (-i̱~-i) /*y category during the Ming Dynasty. It was likely that the ancestral dialects of the Pingle migrants might largely preserve -y,[3] while some speakers had already shifted to the modern Zhangzhou -i. Once these individuals had migrated to Pingle, the process of koineization resulted in the coexistence of both rimes in the modern Pingle dialect.

Based on the foregoing discussion, we maintain that the reconstruction of -y for the rime category of (-i̱~-i) in Southern Min cannot be dismissed as "external evidence;" it is,

[3] The (-i̱~-i) category exhibits the greatest divergence in the modern Zhangzhou dialects. It has become -i in most varieties; in the Eastern Zhangzhou type, it is realized as -u; in Zhangzhou-South, as in Quanzhou, it has merged into -i̱. Sound change never proceeds by abrupt leaps; whether in geographical or social dialects, some vestiges of the older sound are always preserved during a period of transition. We may infer that, during the Ming Dynasty, certain Zhangzhou-type dialects still retained -y, and this ancient sound has been preserved in the Zhangzhou-type Pingle dialect of Guangxi. A bolder inference is that Eastern Zhangzhou, spoken today in the western part of Xiamen City, may likewise have preserved -y during the Ming Dynasty. It subsequently merged with the (-i̱~-u) category (*-i̱) to yield the modern Eastern Zhangzhou reading -u.

rather, a type of "internal evidence." The Puxian 莆仙 dialect is a transitional variety standing between Eastern Min and Southern Min but it remains considerably closer to the latter. Therefore, it should be classified as a conservative branch of "South Min." From the standpoint of geographical linguistics, the loss of vowel *-y becomes all the clearer under a classification as such. This vowel sees its own distribution along the periphery of the South Coastal Min area—in Putian and Pingle—while all the intervening Southern Min dialects are short of a rounded front vowel. Such a distributional pattern can be explained by making reference to Yanagita Kunio's (1930) "dialect peripheral theory" (方言周圈論). We may infer that the sound changes of derounding arose in the central zone of Southern Min, and only the peripheral areas—Putian and Pingle—preserved the ancient sound.

According to modern research on the Min dialects, Puxian is perceived to be a branch of the Min group which coordinates with Eastern Min and Southern Min. It is well known, however, that this dialect is a transitional code lying between Eastern Min and Southern Min. It stands closer to Southern Min in the lexical domain but exhibits phonological features of both varieties.[4] At the same time, this dialect maintains innovative characteristics of its own. Nevertheless, Wu (2021) advances three pieces of evidence to argue that the Puxian dialect is closer to the Eastern Min dialect. First, voiced dental initials in MC are realized as fricatives, as in Eastern Min, rather than as affricates, as in Southern Min. Second, voiced qù-tone (濁去聲) characters in MC are merged into the yīn-qù (陰去 upper departing) tone, distancing themselves from Southern Min, where they are merged into yáng-qù (陽去 lower departing) tone. Third, the (-ɨ~-i) category is realized as -y, which agrees with Eastern Min but differs from Southern Min.[5] Consequently, he

[4] Liu (2004), citing Huang Jinhong's (黃金洪 2002) comparison of 1,255 lexical items across Xiamen 廈門, Fuzhou 福州, and Xianyou 仙遊, finds 384 shared lexical items, 190 items with partially shared morphemes, only 82 items shared exclusively with Fuzhou, and 258 items shared exclusively with Xiamen. This situation demonstrates that, lexically speaking, the relationship between Puxian and Xiamen is considerably closer. Liu, however, maintains that determining degrees of linguistic relatedness should place greater weight on core vocabulary comparison. Furthermore, Kwok Bit-chee (2023), comparing the developmental outcomes of Proto-Coastal Min (PCM) into Proto-Eastern Min (PEM) and Proto-Southern Min (PSM), classifies the Puxian dialect as belonging to the Southern Min type on the basis of "coda weakening"—that is, the conversion of nasal codas into nasal vowels and of stop codas into glottal stops. He accordingly groups Proto-Southern Min and Proto-Puxian into what he terms "Proto-Southern Min–Puxian" (corresponding to what I call "South Min"), which is subordinate to "Proto-Coastal Min" and coordinate with "Proto-Eastern Min." It is thus evident that there is robust evidence for elevating the Puxian dialect to a higher node under "South Min" or "South Coastal Min."

[5] Wu (2021) also discusses the -y- medial. He attributes this vowel in Putian to assimilation by the rounded feature [+round] of the primary vowel [ɒ] in Proto-Puxian rimes, such as *iɑi, *iɑn, and *iɑt. Eastern Min still preserves the -i- medial. The Yongchun dialect (which he cites as the representative Southern Min dialect for comparison) has, by contrast, split into two rime categories

contends that Puxian should be assigned to the Proto-Eastern Min–Puxian group, as it is structurally more distant from Southern Min.

We would argue, however, that what Wu proposes is far from a fair comparison. The article in question mentions only evidence in favor of its author's assertion, either omitting or downplaying evidence that points to a closer relationship between Puxian and Southern Min. Take, for example, the most important hallmarks of Southern Min phonology: the weakening of consonantal coda, whereby certain yángshēng rimes undergo "nasalization." Thus, a nasal coda is lost and the feature of nasality is shifted to the syllable nucleus, yielding a nasalized rime. Puxian for the most part preserves nasalized rimes and the feature of nasalization gets lost only in certain subdialects of the eastern districts of Hanjiang 涵江 and Chengxiang 城廂.

The next feature is "initial denasalization," whereby nasal initials become voiced obstruents. Within Southern Min, this feature is subject to the influence of regional dissimilarity and demonstrates varying degrees of realization across its subdialects. Putian not only exhibits initial denasalization but has gone so far as to commit to devoice these resulting voiced obstruents. As a result, 我 ("I") is realized identically to 寡 (*gua>kua). This devoicing is an innovative change peculiar to the Puxian dialect, whereas initial denasalization itself is a major hallmark of South Coastal Min. These two features, together with the aforementioned argument that -y in the (-i~-i) category functions as a retention of a South Min trait, demonstrate that, phonologically, Puxian stands closer to Southern Min.

The Putian dialect exhibits the two innovative changes noted above, yet these are nevertheless sound changes built upon Southern Min features—that is, they are shallow-level traits**.** The underlying genetic sequence of this dialect remains falling within the Southern Min accent. In her study of Putian, Liu (2004: 240) arrives at a view fairly alike ours. She concludes:

> *We may observe present-day surface forms of the Putian dialect, such as the denasalization of ancient nasal initials, the evolution of ancient yángshēng rimes, and the distribution of rounded rimes. If these forms are evolved from the same linguistic structures shared by Southern Min as the starting point, we may discover quite regular sound changes in this dialect.*

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depending on whether the initial is a lingual consonant. Lingual-initial characters are realized as -ia (e.g., 寄 kia) while non-lingual-initial ones are realized as -ua (e.g., 紙 tsua). On this basis, he concludes that Putian is closer to Eastern Min. This line of argumentation is rather convoluted, and the reasoning is not entirely rigorous. Putian differs from both Eastern Min and Southern Min and this fact cannot demonstrate that Puxian is closer to Eastern Min. This paper therefore regards this evidence as inconclusive.

If, however, we assume that these lexical items are borrowed from the Eastern Min, then we find no reasons to explain why ancient nasal initials should become voiceless stops, why nasal codas should disappear altogether, why nasalized rimes should exist, and so forth. The localization of rounded rime is even an issue absent in many varieties of the Fuzhou dialect…

In sum, Puxian is a transitional dialect which maintains features of both Eastern Min and Southern Min, yet it stands closer to the latter. Based on this understanding, we opt to incorporate this dialect into the South Min dialect maps in the DASM. The present paper draws upon the data from this publication as supportive evidence for our geo-historical linguistic study on the dialect of under discussion.

2.3. The Literary Rime Category of (-i~-i) /*y

The maps in the DASM focus primarily on varieties in the core Southern Min dialect area, which refers to the cities of Quanzhou 泉州, Xiamen 廈門, and Zhangzhou 漳州 in Fujian Province. The DASM also selectively admits some representative codes from South Min for referential purposes. They serve as a point of reference for investigators who intend to know variation within South Min and to reconstruct proto-Southern Min forms. In this sense, it may be justly treated as an atlas of South Min as a whole. The following figure reproduces Map 2.1.1.6, "Distribution of the Variants of the Literary (-i~-i) /*y category". It depicts dialectal variations across South Min.

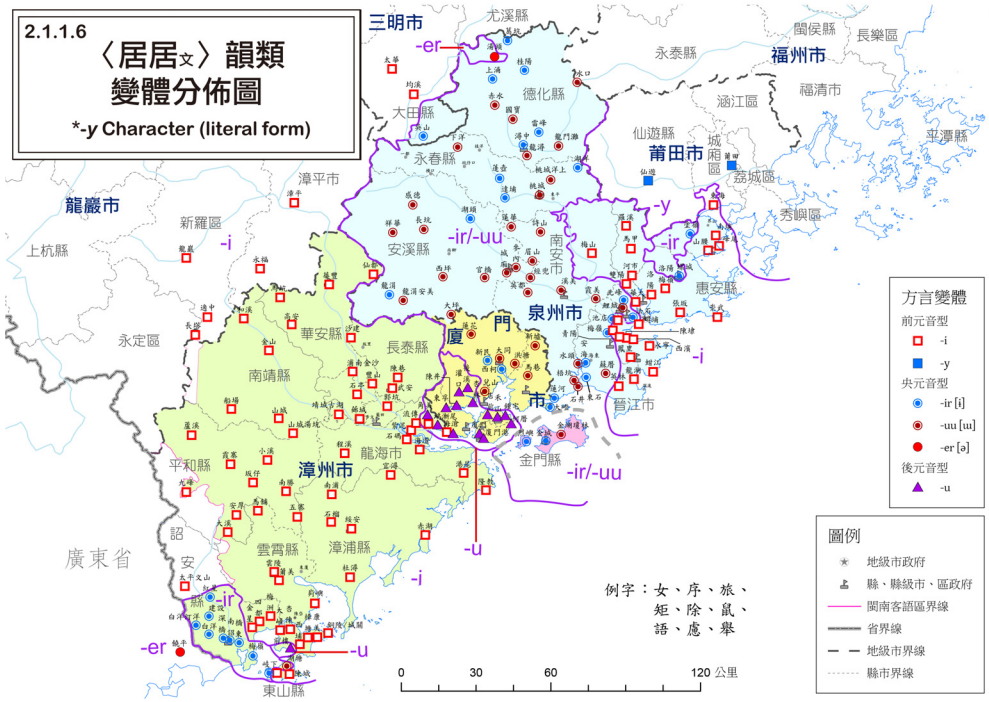


Figure 2: Distribution of the Variants of the Literary (-i~-i) /*y category〈居居文〉 in the Southern Min Region (Source: Map 2.1.1.6 in the DASM)

Each map in the DASM is accompanied by a "map commentary." We have formulated the following conclusions regarding the overall distributional pattern of the variants of the (-i~-i) literary rime category in South Min, as well as the divergent developments experienced by these diverse varieties.

(1) The -y variant is confined to the Puxian 莆仙 area. It represents one of the very few dialects of South Min that conservatively preserves the ancestral Min form and stay away from the sound change of derounding. Based on the geo-linguistic arguments advanced earlier, we infer that this is the result of the "retention effect" exerted by the North Min. As noted earlier, in addition to Puxian, the Zhangzhou-accented Pingle dialect of Guangxi also preserves the rime category (-i~-i) as -y and maintains a three-way contrast with (-i~-u) as -i and (-i~-i) as -i (Zhang and Lin 2009).

(2) The -i variant is distributed over the greater part of the Quanzhou-accented area, with the exception of the Coastal Quanzhou subtype. It covers most of Quanzhou City, such as present-day Dehua 德化, Yongchun 永春, Anxi 安溪, and Nan'an 南安 (except the Honglai 洪瀨 area), the Licheng 鯉城 District of Quanzhou City, Anhai 安海 in Jinjiang City, the Quangang 泉港 District (except Jieshan 界山 and Nanpu 南

埔), and northern Hui'an 惠安. This vowel is also found in Tong'an 同安, Xiang'an 翔安, and Jimei 集美 of the present-day Xiamen City, as well as the Kinmen 金門 County administered by the Republic of China. It likewise occurs in the "Zhao'an 詔安 -accented area" in southern Zhangzhou, encompassing Zhao'an 詔安 and the southern part of Dongshan 東山. In these latter dialects, (-ɨ~-u) (Zhǐ rime group, Division III open in MC) and (-ɨ~-i) (Yù group, Division III open in MC) have been merged, and the resulted phonetic realization is identical to that of Quanzhou-accented dialects. It is inferred, however, that these dialects in the Zhao'an-area bear no genealogical relationship to Quanzhou-accented dialects. Their similarity is attributable to "parallel evolution."

(3) The -i variant is distributed principally over Zhangzhou City, extending northward into Longyan, Zhangping, and Datian County. It also occurs in the "Coastal Quanzhou" subtype area lying east to Quanzhou, where, however, (-ɨ~-u) (Zhǐ rime group, Division III open in MC) and (-ɨ~-i) (Yù group, Division III open in MC) have merged. It is inferred that this mixture is due to vowel de-centralization in the ancient Quanzhou accent. we presume that a "catalytic change" triggered by maritime contact with Zhangzhou-accented dialects was responsible for this development. The change bears no genealogical relationship to the Zhangzhou accent.

(4) The -u variant is distributed over the so called "Eastern Zhangzhou accent area "漳東腔區", which extends from Jiaomei 角美 of Longhai 龍海 City to eastern Xiamen and moves northward to the Guankou 灌口 region. This variant carries a distinctive way of sound change by its own. Nevertheless, the merger of (-ɨ~-u) (Zhǐ rime group, Division III, open in MC) and (-ɨ~-i) (Yù group, Division III, open in MC) coincides with the developmental pattern of the Quanzhou accent. It is inferred that this sound variation reflects an influence from Tong'an as a Quanzhou-accented dialect. This change proceeded through the derounding (*y>ʉ>u) and de-centralization (*ɨ>u) described above, eventually culminating in a merger. The merger of these two rime categories is thus similar to that in Quanzhou, but the directions of change differ from each other.

The foregoing descriptions attest that the rounding of (-ɨ~-i) category in Puxian is by no means a superficial feature of recent development, but rather one that preserves the ancestral form of South Min. The two Guangxi dialects, Puxian and Pingle, stand at the periphery of the South Min area, with one located in the far east and the other in the far west. By referring to the "principles of the dialect peripheral theory", we may infer that the vast majority of derounding or de-centralization found in these two dialects was sound changes that occurred at a later time point. Each dialect subsequently moved ahead with its

own course of innovation and thereby yielded the distributional configuration that we witness at present. By incorporating a conservative dialect such as Puxian into Southern Min, this study provides a reasonable and coherent explanation for the (-i̍~-i) category as *-y. It in turn bridges the gap between Southern Min and the broader Min group.

3. The Collapse of Southern Min Nasalized Mid Vowels: A Dialect Map Perspective

Nasalized rimes function as the defining hallmark of South Min, as the presence or absence of such a structure serves as the primary feature that distinguishes South Min (i.e., Southern Min and Puxian) from North Min (i.e., Northern and Eastern Min). The collapse of nasalized mid vowels indicates a tendency of dialectal variation in Southern Min, with Quanzhou-accented dialects standing at the forefront.

Why are nasalized vowels prone to collapse? In the first place, the production of nasalized vowel requires not only an open oral cavity but also a simultaneously open nasal passage. The simultaneous discharge of the airstream through both channels poses a relatively greater challenge in articulation. In relation to the phonetically simpler "unmarked" sounds such as oral vowels or nasal consonants, nasalized vowels take the position of "marked" sounds which are inclined to evolve into unmarked ones. There are three strategies for resolving the markedness of nasalized vowels; among them, two belong to the extreme strategies of "denasalization":

The first one is "denasalization," whereby a nasal vowel becomes an oral one—as in the Shishi 石獅 dialect of Quanzhou City and the Hainan Island 海南島 dialect. The second one is "nasal consonant conversion", as exemplified in syllables such as 飯 png ("meal") and 媒人 hm̂ ("matchmaker"). In these two syllables, the nucleus is filled by [-ŋ] and [-m] respectively, these are termed "syllabic nasals" because they function as the syllable nuclei.

The conversion of nasal vowels into syllabic nasals is most widespread in Quanzhou-accented dialects, with Zhangzhou dialects exhibiting a similar pattern. For example, Quanzhou-accented dialects have already completed a change for both (-ŋ~-uĩ) 〈毛褌白〉 (*-uĩ >-ŋ) and (-ŋ~-ŋ) 〈毛鋼白〉 (*-ɔ̃>-ŋ). However, there has arisen a phenomenon of "structural diffusion" in Zhangzhou-accented dialects. As is noticed, for the colloquial (-ŋ~-ŋ) category, which consists chiefly of categories from the Dàng rime group, Division I, open (宕開三) in MC. A number of sonorant-initial characters still preserve [-ɔ̃]. Thus, 毛 môo and 兩 (the numeral) nōo still carry the nasal vowel -õ[ɔ̃] in most Zhangzhou-accented dialects. As for characters containing a non-sonorant initial, Zhangzhou-accented dialects have essentially caught up with Quanzhou and discarded this nasal vowel. Except Changtai-accented (長泰腔) dialect and New Changtai-accented

dialect of Chenjing 陳井, which still retain [-ð], all other dialects have converted this vowel into a syllabic nasal (see the DASM, Map 2.1.2.1, "Distribution of the Variants of the Colloquial (-ŋ~-ŋ) Character.")

There is another common practice in which nasal vowels are preserved while undergoing a shift in vowel height, thereby reducing the inventory of nasal vowels. The chief trend is the shifting of mid vowels to either high or low vowels, resulting in the collapse of the mid-vowel series. In Quanzhou-accented dialects, the overall tendency of change for mid nasal vowels is upward movement. For instance, there is a raising of the front vowel (ɛ̃ >ĩ) and the back vowel (iɔ̃>iũ>iŋ), among others. In the peripheral dialects such as Putian and Datian, by contrast, these vowels may be dropped into low vowels, as in ɛ̃>ã. In northern Zhangzhou-accented dialects, rounded vowels are likewise lowered, as shown in uɛ̃>uã.

As for the character (*-ðiˀ) 〈 隻干白 〉that contains a central vowel, Quanzhou-accented dialects first raise the vowel and moves it backward, as shown in *-ðiˀ>*-ĩĩˀ >-uĩˀ. The Tong'an 同安 subtype, however, evolves in the opposite direction by first lowering the nucleus, as demonstrated by *-ðiˀ>-ãĩˀ. Zhangzhou-accented dialects maintain a more divergent tendency in this regard. In the Zhangshan subtype, the target vowel undergoes either lowering, which shifts the coda to a nasal consonant to yield -an, or fronting to become -ɛ̃ĩ (a phenomenon currently preserved in Yongfu 永福, Zhangping 漳平 County). In most dialects, the coda is converted into -eŋ; in Zhangshan, the output structure is then moved upward to become -iŋ that coexists with -an. Regardless of whether the vowel shift operates in an upward or downward direction, Southern Min displays a common tendency toward a "mid-vowel collapse" as sound change. They are the prominent rime categories that this paper intends to address. What can be learned from the foregoing discussion is the megatrend of nasal vowel collapse that Southern Min has experienced, which is still in progress at the moment. Rimes of different classes undergo sound change at different speeds and in different directions, which are embodied in the kind of lexical diffusion that I term "structural diffusion" (see Ang's 2003 dissertation). Such diffusion is not confined to social dialects but can also be applied to sound changes in geographical dialects. This phenomenon conceptually aligns with what historical linguistics terms "conditioned sound changes." The only difference is that the latter highlights the results of a sound change, whereas this study is concerned with the process itself.

In what follows, several nasalized rime categories from the nasalized mid-vowel rime group are utilized as the object of analysis. This section aims to examine the diffusion pattern and directionality of sound change pertaining to the collapse of nasal vowels, and to determine the diffusion source and process of change for these vowels.

3.1 The Colloquial Rime Category of (-ĩ ~ɛ̃)

This rime category belongs to the Gĕng rime group, Division II, open (梗開二) in MC. The rime is reconstructed as *-ɛ̃ in characters such as 生, 更, 坑, 棚, 爭, and 省 in Proto-Southern Min. The same rime is also available in the colloquial pronunciation of open-division characters, such as the ones associated with the Gĕng rime group, Division III, open (梗開三) (e.g., 平, 病, 井, 嬰, 靜, 姓, 性) and Division IV, open (梗開四) (e.g., 晴, 青, 星, 腥, 醒, 經). In the diasystem, these divisions are assigned to the colloquial (-ĩ ~ɛ̃) category. While some items may be reconstructed as **-iɛ̃ in Proto-South Min, others are incorporated into (-ĩ~ɛ̃) or the colloquial (*-iã) category. Before rime nasalization set in, the original ancestral form in South Min was likely **-eŋ. Refer to the map below for the dialectal variants and the geographic distribution of dialectal varieties associated with this rime category.

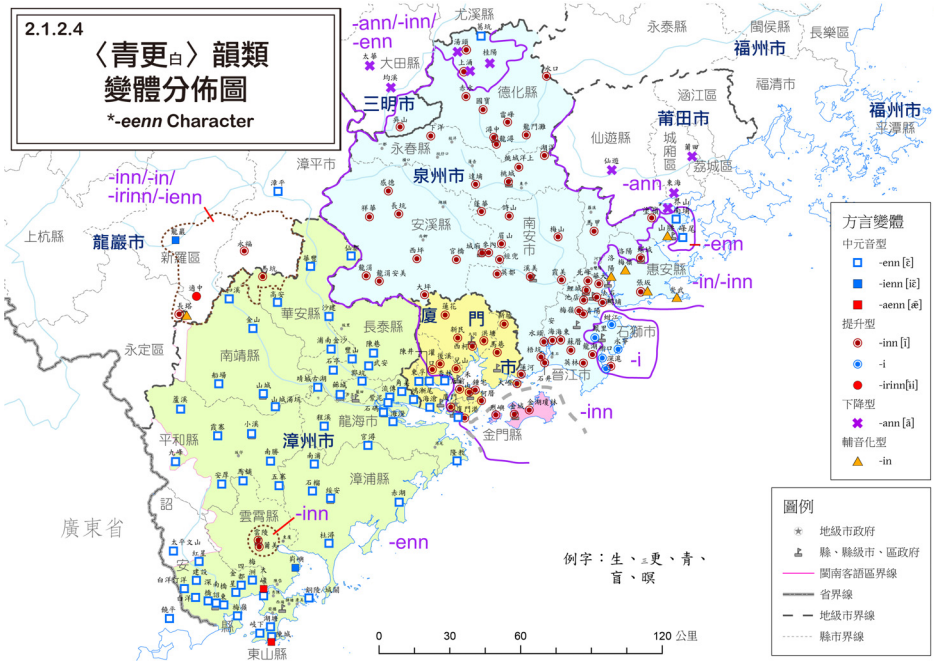


Figure 3: Distribution of the Variants of the (-ĩ ~ɛ̃)/*enn〈青更白〉Category
(Source: Map 2.1.2.4 in the DASM)

As can be seen from the map, the Zhangzhou pronunciation -ɛ̃ manifests a conservative retention of this mid vowel in ancestral South Min. In Quanzhou-accented dialects, a nasalized mid vowel is raised to become -ĩ. In the peripheral dialects of Puxian and Datian, the same vowel is lowered to become -ã.[7] In western Fujian, by contrast, the

[7] The -ã found in the peripheral Puxian and Datian dialects can only be interpreted as a result of

dialects of Yongfu 永福 (in Zhangping County) and Changta 長塔 Village (in Nanjing 南靖) show a tendency toward vowel raising. Specifically, the dialects of Longyan 龍巖 and Shizhong 適中 exhibit vowel shifts to -ĩ and - ɪ̃i respectively, demonstrating an ongoing change of vowel raising simultaneously accompanied by vowel splitting.

It can also be seen that, regarding rime change, Zhangzhou-accented dialects are the most conservative varieties for this category, while the peripheral dialects show a tendency to either raise or lower the vowel. The dominant trend of sound change is vowel raising, which centers around Quanzhou-accented dialects, expands southward to the Quanzhou-influenced Eastern-Zhangzhou accent and diffuses towards Longyan City in western Fujian. Quanzhou-accented dialects have already completed the sound change of nasalized vowel raising. From the overall distributional configuration of the variants across South Min, we may infer that the Quanzhou dialect area constitutes the diffusion source for this change.

3.2 The Colloquial Rime Category of (-ŋ~-ŋ)

This rime category comprises characters from the Dàng rime group, Division I, open in MC. Several items are from the Dàng rime group, Division III, open (宕開三), in particular those with initials belonging to the Zhuāng 莊系 and the Zhī 知系 series; others originate from the Jiāng rime group, Division II, open. The original ancestral form in South Min can be reconstructed as **-oŋ. The weakening of the coda consonant, coupled with the nasalization of the syllable nucleus, yielded the nasalized rime *-õ. In the core Southern Min area, the actual phonetic value of /õ/ and its closed-syllable counterpart /o/ (i.e., the yángshēng rime -oŋ and the rùshēng rime -ok) are often realized as the lower back vowels [õ] or [ɔ]. We don't see much vowel lowering in the dialects of Longyan 龍巖 and Shizhong 適中.

Characters of this rime category manifest colloquial pronunciation of the Dàng rime group, Division I, open 宕開一, and the Dàng rime group, Division III, open (宕開三) in MC, which claim the presence of an obstruent initial. There are exemplar characters such

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vowel lowering. It is true that Kwok Bit-chee (2023) reconstructs the Coastal Min forms for the Xián, Shān, and Gěng rhyme groups all as *aŋ by following the Eastern Min evidence. Under this hypothesis, the -ã of Puxian and Datian would have to be viewed as a conservative ancient object. However, reconstructing the Southern Min Gěng group as *-ã would result in a merger with the Xián group -ã (as exemplified by characters such as 三, 膽, 敢, etc.). Kwok therefore reconstructs the Proto-Southern Min form as *-ẽ, implying that the -ã variant is a later development resulting from vowel lowering. The present study likewise argues against reconstructing the Gēng group as *aŋ for Coastal Min, as this proposal fails to explain why a single *-ã should have developed into different vowels across the Xián, Shān, and Gěng groups. As stated earlier, we reconstruct the original South Coastal Min form for the Gěng group characters as **-eŋ.

as 扛, 妝, 床, 缸, 康, 糠, 當, 湯, 裝, 莊, 莊, 霜, 桑, 喪, 央, 秧, 倉, 瘡, 滄, 貞節坊, 爽, 耍, and 囥, which are assigned to the colloquial (-ŋ~-ŋ) category in the diasystem. This rime category leads the transition toward nasal consonant conversion. Conversely, characters with the same rime that possess a sonorant initial (such as 毛 and 兩) displays a delayed change, a phenomenon to be discussed further in Section 3.3. Refer to the map below for the geographic distribution of dialectal variants for this category.

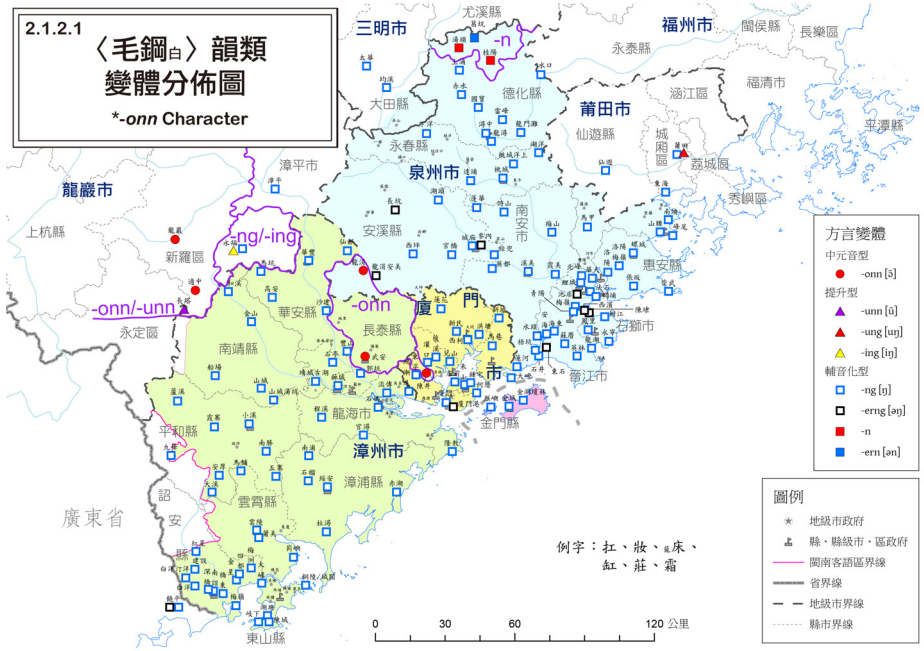


Figure 4: Distribution of the Variants of the (-ŋ~-ŋ) /*-onn Category〈毛鋼白〉
(Source: Map 2.1.2.1 in the DASM)

As can be seen from the map above, the overwhelming majority of modern South Coastal Min dialects have already converted -õ into the syllabic nasal -ŋ. The only exceptions occur to Longyan, Shizhong, and the conservative rural varieties of Changtai County and Guankou Township (in the Jimei District, Xiamen)—such as the Chenjing dialect—which preserve the ancient form -õ [ɔ̃]. This sound change should be extrapolated to pass through an intermediate stage of vowel raising to generate *-ũ, a change corroborated by the -ũ variant found in Changta Village of Nanjing County in Zhangzhou City. The entire process of change is reconstructed as **-ɔ̃ > *-ũ > -ŋ.

3.3 The Colloquial Rime Category of (-ŋ~-õ)

There are characters that carry the same rime class of (-ŋ~-ŋ) and maintain a sonorant initial, such as 毛 (hair) môo and 兩 (two) nōo, among others. They are classified under

the rime (*-ŋ) “毛”(mn̂g) in *Huìyīn Miàowù*《彙音妙悟》and the rime (*-õ) “扛”(konn) in *Yǎsú Tōng Shíwǔyīn*《雅俗通十五音》. These two characters are derived from different ancient sources respectively. The MC form—or rather the Common Min form—of 毛 should be **mɑu, and this character is classified under the colloquial rime (o~o) (*mo) in Common South Coastal Min. The rime subsequently undertakes nasalization and is reassigned to the category of (-ŋ~-õ) (*mõ). In spite of this, both characters carry sonorant initials; among them, the nasals m- and n- are unmarked sounds. In addition, -õ is anchored by the stability of the initial and therefore resistant to change. Consequently, Zhangzhou-accented dialects undergo delayed sound change, giving rise to the phenomenon of “structural diffusion.”

In what follows, we take the rime category of 兩 (meaning “two”) as an example to illustrate how its diffusion pattern differs from that of (-ŋ~-ŋ)/*〈毛錮白〉.

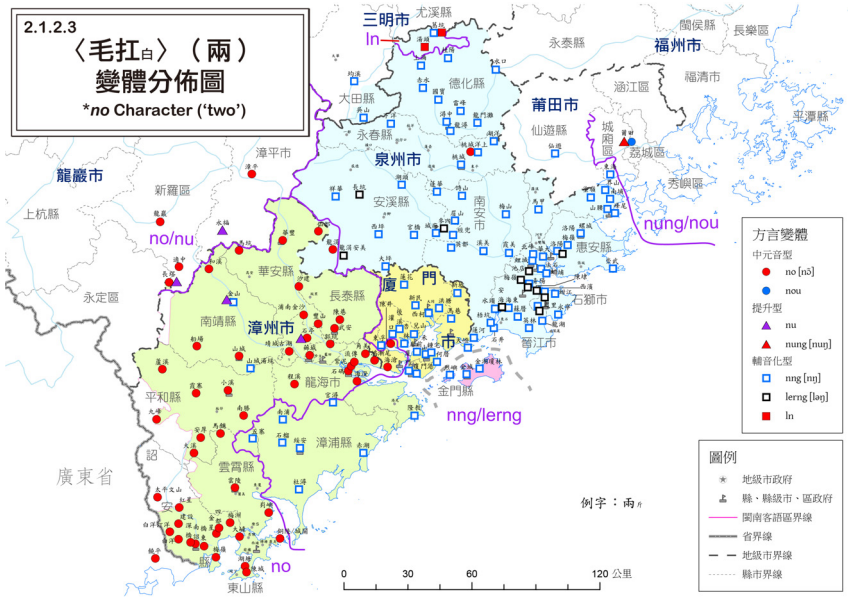


Figure 5: Distribution of the Variants of the Rime Category (-ŋ~-õ) (*no)〈毛扛白〉(兩)
(Source: Map 2.1.2.3 in the DASM)

As can be seen from the map, the majority of Zhangzhou-accented dialects preserve -õ[ɔ̃]. The character 兩 is realized as nõ[nɔ̃], which is spelled as nōo in Tâi-lô Romanization 臺羅拼音 (Taiwanese Romanization System). The distribution pattern of 毛 is largely similar and will not be detailed here. As the map indicates, the greater part of Zhangzhou-accented area and the Longyan area in western Fujian realize the rime as nõ. However, certain sectors within the Zhangzhou-accented circle—Zhangpu 漳浦, Haicheng 海澄, and the Quanzhou-influenced Eastern Zhangzhou accent—have already experienced the diffusion of the Quanzhou-accented nŋ variant. Meanwhile, in Shiting 石亭 Township of Zhangzhou, Jinshan 金山 Township of Nanjing 南靖 County, Changta 長塔 Village

and Yongfu 永福 Township as well, this character is realized as nũ. Such a tendency indicates that these sites are situated at an intermediate stage of sound change, following the trajectory of *nõ>nũ>nŋ.

The two maps presented above characterizing the categories (-ŋ~-ŋ) for〈毛鋼白〉and (-ŋ~-õ) for〈毛扛白〉, clearly depicting the sound change process of the nasalized mid vowel, namely *-ɔ̃ > *-ũ > -ŋ." Zhangzhou and Longyan are relatively conservative in this respect. As for the processing of (-ŋ~-ŋ) that carries an obstruent initial, Changtai and Longyan are the only varieties that conserve -o[ɔ̃]. There has been a better preservation of the ancient forms for (-ŋ~-õ) that carries a sonorant initial; nevertheless, the coastal belt of Haicheng and Zhangpu, which borders the Quanzhou-accented area, has also been subject to the diffusion of Quanzhou-accented pronunciation. We infer this situation to be a result of the catalytic influence arising from maritime contact with Quanzhou. It may thus be concluded that Quanzhou-accented dialects constitute the diffusion center for the raising of nasalized vowels. These dialects spread forcefully into the surrounding areas, thereby manifesting the phenomenon of "structural diffusion."

3.4 The Colloquial Rime Category of (-ŋ~-uĩ) (Shān, Zhēn)

This rime category comprises characters from the Shān rime group, Division I, closed in MC—such as 斷, 卵, 鑽, 酸, 算, 管, 貫, 剜, and 碗. Examples include items from the Shān rime group, Division III, closed—such as 飯, 全, 傳, 轉, and 遠; from the Zhēn rime group, Division I closed—such as 本, 門, 頓, 孫, 下昏, and 損; from the Zhēn rime group, Division III closed—such as 暈 and 問; and from the Tōng rime group, Division III closed—such as 楓 and 風時雨. For the Shān rime group, Division III closed, Common Southern Min was reconstructed as *-uõi, while for the Zhēn rime group, divisions I and III closed, it was reconstructed as *-uəi. Southern Min tends to perceive nasalized vowel raising and the subsequent merger of vowels into modern -uĩ as an outcome of natural phonetic development.

Furthermore, in core Southern Min, categories from the Dàng rime group (Division I, closed 宕合一) and the Tōng rime group (Division III, closed 通合三-uɔ̃) have merged with the *-uõi rime category[8]. Collectively, they are assigned to the (-ŋ~-uĩ) 〈毛褌白〉

[8] Akitani Hiroyuki (2023) reconstructs the Proto-Min forms of 風 and 楓 as *puon¹ and *-puoŋ¹, and their Proto-Eastern Min counterparts as *puo[ŋ]¹ and *puo[ŋ]¹. This paper argues that **puoŋ¹ is suitable as the ancestral form of the Southern Min colloquial stratum (Note: The Southern Min hoŋ and Fuzhou huŋ readings are literary pronunciations. Similarly, the Quanzhou and Chaozhou reading huaŋ for 風 is a literary variant rather than a colloquial form, making it unsuitable for direct comparison). This reconstruction, however, cannot explain the palatalized rime variants such as Shaowu piuŋ¹ and Guangze pioŋ¹ in northwestern Min. We concur with Li Fang-kuei's (1982: 21)

category. In Quanzhou-accented dialects, this form has further developed into the syllabic nasal -ŋ via consonantalization. These groups are treated as a separate category because they are derived from different historical sources, displaying divergent directions of sound change as shown by the peripheral dialects of Quanzhou[9]. Please refer to Map 2.2.2.9 in the DASM and the related analysis. The map below shows the distribution of the variants for -ŋ~-uĩ)/*-uoinn (Shān, Zhēn) 〈毛禪白〉(山、臻).

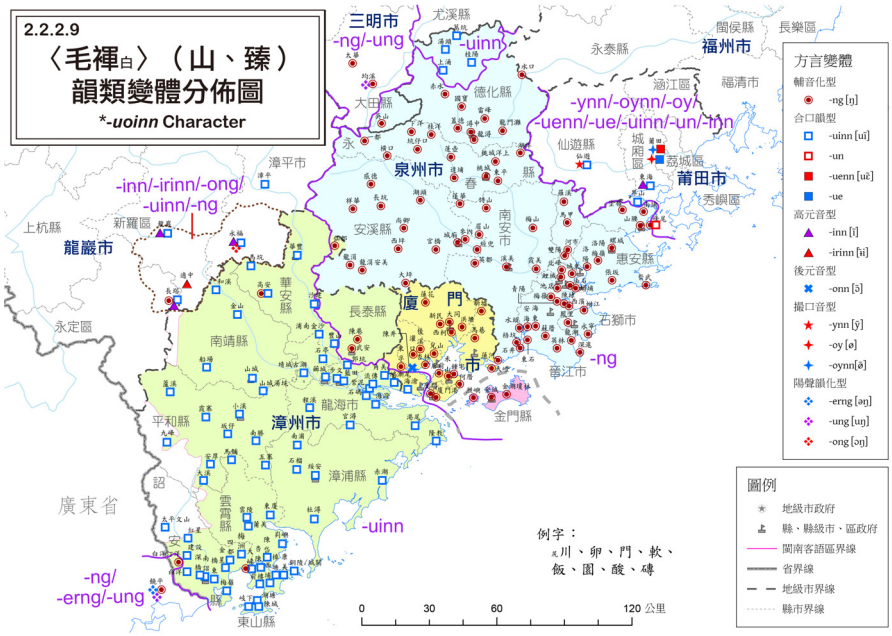


Figure 6: Distribution of the Variants of the (-ŋ~-uĩ) /*-uoinn Category (Shān, Zhēn) 〈毛禪白〉(山、臻) (Source: Map 2.2.2.9 in the DASM)

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view that, in Old Chinese, characters with labial initials lacked a closed medial, and that its subsequent appearance in later periods resulted from progressive assimilation triggered by the labial initial. The closed medial -u- in South Min is precisely such a later development, arising from assimilation to the labial initial *p-. Common Min, inheriting the Old Chinese form, should therefore be reconstructed as **pjəuŋ. As this issue is rather complex, it will be treated in a separate paper.

[9] Chang Kuang-yu (2019: 268–269) reconstructs the evolutionary process of the (-ŋ~-uĩ) rime category (*Shān* 山 and *Zhēn* 臻) as follows: *uɔn>uon>uẽ for the Shān group, Division I, closed, and *uən>uen>uẽ for the Zhēn group, Division III, closed. These two realizations subsequently merged into Zhangzhou -uĩ and Quanzhou -ŋ. Because the early-stage forms (*uɔn > uon and *uən) have not yet undergone vocalic nasalization, they should be assigned to the Proto-Min layer of Common Min. As for the intermediate-stage variants, such as uen>uẽ, they left virtually no reflexes in modern Southern Min dialects—with the notable exception of a few residual forms in Putian that exhibit -uẽ (see below). This paper contends that the principle of vowel raising triggered by nasalization is sufficient to account for the entire sound change process.

As shown in the map, Zhangzhou-accented dialects for the most part conservatively preserve -uĩ, whereas Quanzhou-accented dialects have completed the process of consonantalization, realizing the rime as -ŋ. This syllabic-nasal variant has already spread to Datian 大田 and certain Quanzhou-influenced areas of Eastern Zhangzhou. Within the latter, the Chenjing 陳井 dialect has merged this category into (-ŋ~-ŋ), accordingly realizing the rime as –õ[-ɔ̃] (with some characters displaying a mixed pronunciation of -ŋ). This represents a highly conspicuous development.

Although Chenjing belongs to the New Changtai 新長泰 accent, the present-day Changtai dialect realizes the rimes corresponding to the (-ŋ~-ŋ) and (-ŋ~-õ) categories both as -õ [-ɔ̃], while converting the two (-ŋ~-uĩ) categories—which yield -uĩ in the Zhangzhou accent—into -ŋ. In the Quanzhou-influenced Eastern Zhangzhou accent, all of these rimes have merged into -ŋ. This phonological distribution clearly reflects the influence of Tong'an 同安 as a Quanzhou-accented variety. Only in Chenjing do we see a merger of all four rime categories into -õ [-ɔ̃]. This fact demonstrates the strong retention of nasalized vowels within this dialect and further attests that, at an earlier developmental stage, the main vowels of these four rime categories had already merged into -õ[-ɔ̃]. We thus infer that the sound change process of the (-ŋ~-uĩ) category was *-uõi>*-uɔ̃>-õ, in which the loss of the -u- medial and the subsequent opening of the rime were driven by a co-occurrence constraint on rounded vowels.

As a whole, the (-ŋ~-uĩ) category (Shān and Zhēn groups) is uniformly realized as -ŋ in Quanzhou-accented dialects, clearly demonstrating the completion of nasal vowel consonantalization. The influence of this sound change has spread to regions associated with the Quanzhou-influenced Eastern Zhangzhou accent, Changtai County, and Datian County. In contrast, the surrounding Zhangzhou-accented dialects still conservatively preserve the nasalized rime.

The rime under discussion is realized as -uĩ in the Zhangzhou-accented varieties of northern Dehuat 德化 in Fujian, which conservatively preserve the ancient form of Common Southern Min. In the peripheral area of Longyan 龍巖, this rime has been simplified to -ĩ. The Puxian 莆仙 dialect, alternatively, exhibits divergent developments merging the Zhēn group 臻攝 into the Shān group 山攝 as part of the (**-uõi) rime category. This historical form subsequently yielded present-day -uɛ̃/-ue, or developed into the nasalized rounded rime -ø̃ in a small number of dialects. The Shān group categories may instead be merged into the Zhēn group and thereafter develop into the present-day nasalized rounded rime -ỹ via the transitional form *-uĩ. On the other hand, this rime category may have been influenced by Quanzhou shifting first to *-ŋ before evolving into -uŋ or –oŋ.

By and large, the syllabic nasal -ŋ of the Quanzhou accent is centrally distributed in the middle and surrounded by other variants. Based on the dialect peripheral theory 方言周圈論, we may infer that the Quanzhou-accented dialects serve as the diffusion source for the collapse of nasalized rimes.

3.5 The (-ŋ~-uĩ) Category (Dàng Group, Division I, closed)

The colloquial rime (-ŋ~-uĩ) 〈毛禪白〉 (Dàng group, Division I, closed 宕合一) comprises the colloquial pronunciations for characters from the Dàng rime group, Division I, closed in MC, such as 光, 廣, 黃, and 荒. In Common Southern Min, the rime of these characters is reconstructed as *uõ. In core Southern Min, the rimes of the Dàng 宕, Shān 山 and Zhēn 臻 groups have already merged into *-uõi[10]. These rimes are classified into different categories in some peripheral Southern Min dialects, demonstrating different directions of change for these two. Taking this into account, the current study splits the category into two distinct categories: the (-ŋ~-uĩ) category (Shān and Zhēn groups) and the (-ŋ~-uĩ) category (Dàng group). Both categories merged into -ŋ in Quanzhou-accented dialects and -uĩ in Zhangzhou-accented dialects, but developed into □õ in the Chenjing dialect.

While the previous section has analyzed the distribution of the colloquial category (-ŋ~-uĩ) 〈毛禪白〉 for the Shān 山 and Zhēn 臻 groups, this section examines the distribution of the variants under the Dàng group, Division I, closed 宕合一. Refer to the map that characterizes the distribution of this category.

[10] Chang Kuang-yu (2019: 438) reconstructs the evolutionary path of characters from the Dàng group, Division I, closed 宕合一 (e.g., 光) that merged into the (-ŋ~-uĩ) category as uo>ue>uẽ. These forms subsequently split into the modern reflexes Zhangzhou uĩ and Quanzhou –ŋ. Furthermore, the *uoŋ stage—preceded the weakening of the nasal coda—should be reconstructed as a Proto-Min form. As for the proposed intermediate stages, such as *ueŋ>uẽ, they find no empirical support in modern Southern Min dialects. Consequently, these transitional forms appear to be purely hypothetical constructs and cannot be accepted as theoretically reliable.

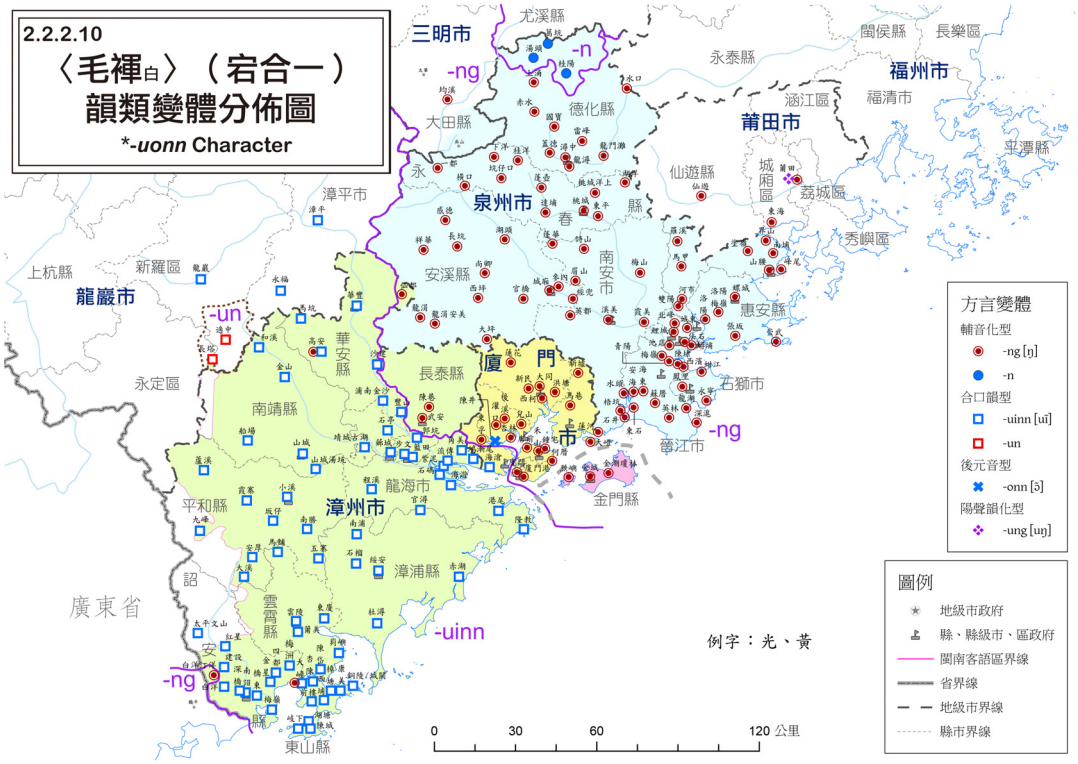


Figure 7: Distribution of the Variants of the (-ŋ~-uĩ)/*-uonn Category (Dàng group) 〈毛禪白〉(宕) (Source: Map 2.2.2.10 in the DASM)

A comparison of the two maps reveals that the distributional patterns of these two rime categories are entirely identical within the core Southern Min dialects. In the Northern Dehua variety, however, a split emerges. The (-ŋ~-uĩ) category of (Shān 山, Zhēn 臻) is realized as -uĩ—aligning with the Zhangzhou accent—whereas the (-ŋ~-uĩ) category of the Dàng (宕) group has been subsumed under (-ŋ~-õ) and (-ŋ~-ŋ), where the rime is realized as -n. We infer that this realization is derived from the Quanzhou-accented -ŋ, which underwent nasal fronting. It is thus evident that the (-ŋ~-uĩ) 〈毛禪白〉category (Shān and Zhēn groups) (山、臻) and the (-ŋ~-õ) category (Dàng group, Division I closed 宕合一) represent two distinct rime categories.

The Puxian dialect likewise shows a similar tendency to realize the (-ŋ~-uĩ) category of (Shān 山, Zhēn 臻) 〈毛禪白〉as a nasalized rounded rime. Nevertheless, as is the case in Quanzhou, it realizes the (-ŋ~-õ) category (Dàng group, Division I closed 宕合一) as -ŋ. In the urban variety of Putian, the latter is produced as the nasal-coda rime -uŋ. Consequently, characters from the Shān and Zhēn groups appear to remain distinct from those of the Dàng group.

It is thus evident that, in core Southern Min, the (-ŋ~-uĩ) category (Shān and Zhēn groups) and the (-ŋ~-uĩ) category (Dàng group) have all merged into the single (-ŋ~-uĩ)

category. By examining the surrounding peripheral dialects, however, we notice that these rimes must still be differentiated into separate categories in Common Southern Min. Accordingly, for the same category of (-ŋ~-uĩ) 〈毛褝白〉 in Common South Min, we reconstruct *-uõi for the Shān group 山攝, *-uãi for the Zhēn group 臻攝, and *-uõ for the Dàng group 宕攝.

The (-ŋ~-uĩ) category (Dàng group, Division I, closed) 〈毛褝白〉(宕合一)(*-uõ) can be treated as the closed-mouth counterpart to both the (-ŋ~-ŋ) 〈毛鋼白〉 and (-ŋ~-õ) 〈毛扛白〉 categories (Dàng group, Division I, open 宕開一) (*-õ). As for the remaining two rime categories, the Zhangzhou dialect merges the (-ŋ~-uĩ) (*-uõi>-uĩ) category of the Shān group 山攝 into the (*-uãi>-uĩ) category of the Zhēn group 臻攝. In contrast, the Quanzhou dialect sustains its own operation of rule for nasalized vowel raising, undertaking the progression of -uĩ >-ŋ.

3.6 The Motivation and Developmental History of Nasalized Mid-Vowel Sound Changes

In summary, based on our analysis, we offer the following account of the motivations, directionality, and lexical diffusion driving sound change in nasalized mid-vowels.

1. The motivation behind the collapse of nasalized mid vowels: Nasalized vowels lag far behind oral vowels in their capacity for phonemic contrast. Consequently, reducing the nasalized vowel inventory represents a major trend in Southern Min's sound change. There are three principal strategic mechanisms employed to this end: (1) denasalization, which converts a nasal vowel into an oral one; (2) reduction of nasal mid-vowels, which involves raising or lowering mid nasal vowels; and (3) nasal consonantalization, which converts a nasal syllabic nucleus into a nasal consonant. All maps of nasalized rimes demonstrate that every Southern Min dialect has undergone a collapse of nasalized mid vowels, with the Quanzhou-accented dialect area serving as the diffusion source for this sound change.

2. The diffusion center of nasal mid-vowel raising: All maps of nasalized rimes demonstrate that Quanzhou-accented dialects constitute the locus of this sound change, from which it spreads to the surrounding areas.

3. Structural diffusion of vocalic sound changes in nasal rime categories: Vowels differ with respect to the speed and directionality of the changes they undergo. This variance stems from differences in the features of phonological structure (phonetic value), or the structural position of a segment within the syllable.

4. The splitting of the (-ŋ~-uĩ) rime category: In Common South Min, this rime category can be subdivided into at least three distinct subcategories, where the Shān group 山攝 is reconstructed as *-uõi, the Zhēn group 臻攝 as *-uãi, and the Dàng group, Division I, closed (宕合一) as *-uõ. While these three subcategories have all merged into a single rime category in core Southern Min, they split and recombine into two or three distinct rimes in peripheral dialects, each retaining a unique pronunciation.

4. Reconstructing Linguistic History through the Quanzhou-accented Strata in the Yilan Dialect of Taiwan

As is well known, the Yilan 宜蘭 dialect belongs to the Zhangzhou accent group. However, several questions arise: Is it a pure Zhangzhou dialect? If so, which specific sub-dialect does it descend from? Alternatively, if it is a mixed variety, through what channels did it acquire its own heterogeneous features? These questions cannot be settled by mere conjecture; instead, they demand empirical evidence from Southern Min geographical dialectology. The core content of this section was previously addressed in the preface of Ang (2023a, Section 1.3.1) under the title "Dispelling Misconceptions about the Linguistic History of the Yilan Dialect." To demonstrate the application of geographical linguistics to linguistic history reconstruction, this paper reassesses those relevant materials for the sake of completeness, while incorporating additional elaborations and insights.

In my book, *A Journey through Taiwan's Dialects*, I included an article entitled "The Stronghold of the Zhangzhou Accent: A Survey Report of the Yilan Dialect" (Ang 1992: 108-114). I found from surveys that the Yilan dialect preserves the most typical phonological characteristics embodied in the Zhangzhou accent. The (-ŋ~-uĩ) rime category〈毛褝白〉is realized as -uĩ, as exemplified in the phrase 食飯配鴨卵, wherein 飯 ("meal") is realized as puĩ and 卵 ("egg") as nuĩ—two ancient pronunciations of the Old Zhangzhou accent.

In the colloquial (-iũ~-iõ) category, however, characters such as 尚("monk") and 薑 ("ginger") in the phrase 和尚咬薑 are realized as siūnn and kiunn respectively. According to records in Douglas's *Dictionary of the Vernacular or Spoken Language of Amo*y《廈英大辭》and *The Taiwan-Japanese Dictionary*《日臺大辭典》, the -iũ variant of (-iũ~-iõ) represents a Quanzhou-accented pronunciation, while -iõ represents a Zhangzhou-accented pronunciation. Based on the available documentation**,** I proposed the opinion in the article that the Yilan dialect is 95% Zhangzhou-accented, with the remaining 5% carrying a "non-Zhangzhou accent," which refers to the Quanzhou-accented pronunciation of -iũ for this particular category.

I had not yet surveyed the Zhangzhou dialects at that time, and thus mistakenly assumed that the -iũ pronunciation of the (-iũ~-iõ) category in Yilan—a Zhangzhou-accented dialect—manifested an admixture of the Zhangzhou and Quanzhou accents similar to that found in Taipei. This type of dialectal mixing was a normal phenomenon of "Zhangzhou-Quanzhou blending" in the Taiwanese vernacular.

This initial assessment, however, proved to be "a tunnel vision", as a closer inspection of the general distribution of Taiwanese dialects reveals its limitations. A review of Map B4 (entitled "Language Map of Central Min Prefecture") from Ang (2019b) would highlight the misjudgment I made. In Taiwan, the -iũ variant is distributed across both the

Quanzhou-accented region and the interior-coastal-Zhangzhou-accented area, inserted with a belt of mountainous Zhangzhou-accented territories lying between the two. If the claim that the interior -iũ is indeed the result of assimilation to Quanzhou stands, how could this Quanzhou-coastal variant bypass the mountainous Zhangzhou-accented territories to reach the interior of the coastal Zhangzhou-accent region? This speculation is geographically unimaginable.

Subsequently, I first examined Zhou's (1986) network-style survey report on Southern Min, which provided a pragmatic overview of the Zhangzhou-accented dialects in China. Later, between 2010 and 2011, I personally conducted similar dialect surveys in the Southern Min region. It was during this fieldwork that I suddenly discovered the -iũ pronunciation of the (-iũ~-iõ) category is extensively distributed across the central and coastal areas of Zhangzhou. Consulting Map 2.2.2.11, "Distribution of the Variants of the Colloquial (-iũ~-iõ)/*-ionn Character" in Ang (2023a), reveals that approximately half of the Zhangzhou-accented area is occupied by the -iũ variant. The Zhangzhou dialects realized as -iõ are confined to the Jiulong River 九龍江 basin of northern Zhangzhou and to Zhao'an 詔安 and Dongshan 東山 in the south.

It is evident that my earlier misunderstanding arose from relying solely on documentary records without incorporating insights from Southern Min geo-dialectology. Subsequently, I corrected this error by dividing the Zhangzhou-accented dialects into two classes: those realized as -iõ are termed the "mountain Zhangzhou accent," while those realized as -iũ are referred to as the "coastal Zhangzhou accent." The -iũ variant in Yilan characterized in my study belongs to the "old coastal Zhangzhou accent" (see the relevant maps for the Northern Min and Central Min Prefectures in my *Language Atlas of Taiwan*, Ang 2019b).

In fact, the documentary records were not mistaken: -iũ is indeed a Quanzhou-type pronunciation, and -iõ is a Zhangzhou-type pronunciation. However, these records did not imply that Zhangzhou-type dialects entirely lack -iũ. The error lay in my over-extrapolation of the documentary sources, which stemmed from the limited understanding I had when I first began my studies of Taiwanese dialectology. As the saying goes, "To believe everything in books is worse than to have no books at all." Documentary sources are of limited utility; if one does not use them judiciously and with discernment, one may well misread them without even realizing it. With the publication of the DASM (Ang 2023), all these problems have been resolved at a stroke. No further guesswork is needed, as the facts now speak for themselves through the maps**.** This clearly demonstrates the indispensable contribution of geographical dialectology to the study of linguistic history.

4.1 The Colloquial (-iũ~-iõ)/*ionn Category

This rime category realizes the colloquial readings of the MC Dàng group, Division III, open (宕開三) —encompassing characters such as 量, 蔣, 醬, 槍, 搶, 廠, 匠, 象, 箱, 相, 張, 長, 漲, 丈, 章, 唱, 傷, 鄉, 香, 掌, 養, 上, 讓, 楊, 羊, 洋 and 陽—and is labelled the (Siuⁿ-kiuⁿ colloquial) 〈箱薑白〉category. On the basis of dialect comparison, this category is reconstructed as **-ioŋ in Common Min and *-iõ in Proto-Southern Min. The latter is preserved today in the mountain Zhangzhou type of northern and southern Zhangzhou. The -iũ variant is distributed throughout the entire Quanzhou-type region, while nasalized mid vowel raising constitutes a general trend in Southern Min sound change. Following the arguments advanced above, we infer that the sound changes of -iõ>-iũ originated in Quanzhou, operating in parallel with the -ɛ̃>-ĩ shift as a direct result of nasalized mid vowel raising (for details, see Section 3.1–3.5 of this paper). The -iũ variant exhibits comparatively robust competitive strength; in fact, it has already spread along the coastal belt to Haicheng 海澄 and Zhangpu 漳浦 in Zhangzhou, extending further inland into Pinghe 平和 and Nanjing 南靖. Its distributional area is termed the "coastal Zhangzhou type." See the map below for the dialectal variants of this rime category and its distribution.

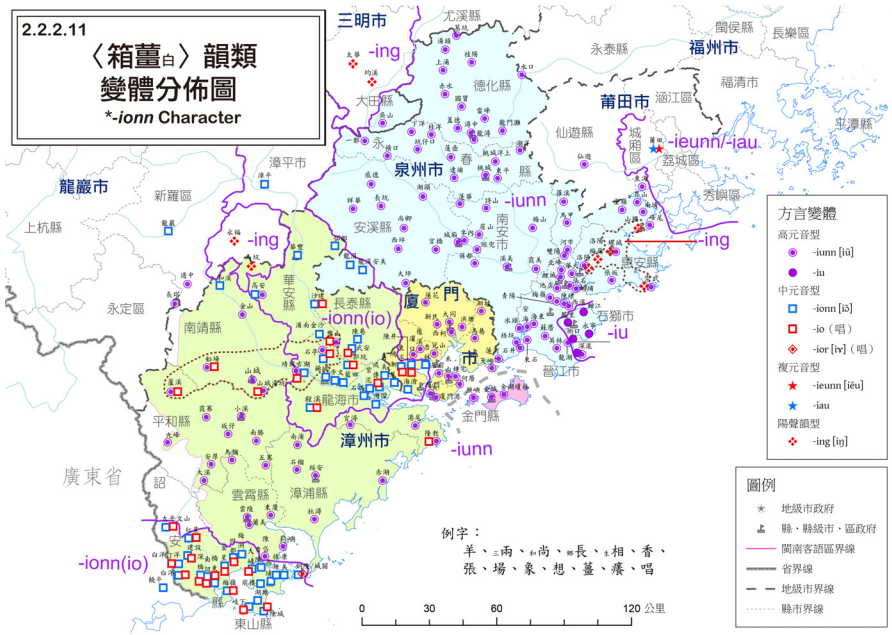


Figure 8: Distribution of the Variants of the Colloquial (-iũ~-iõ)/*-ionn Category 〈箱薑白〉 (Source: Map 2.2.2.11 in the DASM)

From the distribution of variants shown in the map, it is evident that the distributional area of Zhangzhou -iõ for the (-iũ~-iõ) category is bisected by -iũ, forming an a-b-a

distributional configuration. According to the dialect peripheral theory, the –iũ variant inserted into the middle of the Zhangzhou-type area is believed to be an innovative variant, while the peripheral -iõ represents an older stratum. The underlying cause may be sought in "catalytic change" induced by maritime contact with Quanzhou-type dialects. Originating along the coastal belt of Haicheng 海澄 and Zhangpu 漳浦, this change has gradually spread inland toward Pinghe 平和 and Nanjing 南靖, giving rise to the coastal Zhangzhou-type dialect area. Since the resulting -iũ forms a continuous distribution with that of the Quanzhou-type region**,** this pattern can hardly be dismissed as parallel evolution. As can be seen from the map, the Quanzhou-type -iũ variant has outflanked the Zhangzhou-type -iõ area in northern Zhangzhou, demonstrating its formidable competitive strength.

The phenomenon of Zhangzhou–Quanzhou dialect blending is long-standing, and its complexity far exceeds our prior assumptions. To argue that the -iũ pronunciation of the (-iũ~-iõ) category in the old coastal Zhangzhou type of Yilan 宜蘭 reflects Quanzhou influence is not incorrect. The error lies in the assumption that this influence arose post-migration in Taiwan, through contact with the Quanzhou-type dialects of Taipei. In fact, Quanzhou influence had already taken effect in the coastal Zhangzhou region of the homeland long before the Yilan ancestors emigrated to Taiwan. This crucial dynamic could not have been discovered without undertaking geographical-historical linguistic research in the Southern Min heartland. This geographical dialectology judgment perfectly aligns with the historical fact that the Yilan 宜蘭 settlers traced their ancestry chiefly to the coastal Zhangzhou-accented regions of Nanjing 南靖, Pinghe 平和, and Zhangpu 漳浦.

With the above misunderstanding dispelled, we maintain the revised view that the conservative Yilan accent of thirty years ago had not yet been substantially "contaminated" by the Taipei Quanzhou-type or the general Taiwanese common accent**;** rather, it still preserved a rather pure form of the ancestral coastal Zhangzhou type.

5. Conclusion

This paper proposes new methodological conception for research into linguistic history, drawing upon the maps from the *Dialectal Atlas of Southern Min* 閩南地區方言地圖集 (Ang 2023) to demonstrate the applications of geo-historical linguistics and historical-linguistic geography across three domains of dialect history. It does not repudiate the contributions of traditional comparative historical linguistics to proto-language reconstruction. We maintain, however, that historical-linguistic geography offers a finer-grained resolution**,** enabling researchers to uncover the dynamic paths of sound change and providing a higher degree of empirical validity than traditional

comparative historical linguistics. In our view, traditional historical linguistics primarily functions at the stage of formulating "bold hypotheses;" it is only by incorporating geographical linguistics or sociolinguistics into historical linguistic research that one can attain the scientific ideal of "meticulous verification."

This paper begins by taking the (-ɨ~-i) rime category, or the class of〈居居〉韻類 (Yù group, Division III, open 遇開三 in MC), as a case study. From the standpoint of internal reconstruction, it argues that Common South Min admits no reconstruction for this category other than *-y. The paper then turns to the perspective of linguistic geography. Since *y is distributed only in the peripheral zones of South Min—namely, in the Puxian 莆仙 dialects and the Pingle 平樂 dialect of Guangxi—while all the intervening Southern Min dialects lack this rounded front vowel, we may follow Yanagita Kunio's "dialect peripheral theory" 方言周圈論. We infer that the core Southern Min area has already undergone derounding, meaning that the -y of the peripheral dialects represents an antique of the ancient sound.

Next, this paper turns to the nasalized vowels of Southern Min. Nasalized vowels are "marked" sounds and are therefore prone to collapse, either through conversion into oral vowels and nasal consonants, or through the reduction of the nasalized vowel inventory. The most typical instance of the latter mechanism is the shift of nasalized mid-vowels, which occurs via either raising or lowering. Drawing on dialect maps of five rime categories from the DASM—namely, (-ĩ ~-ɛ̃) 〈青更白〉, (-ŋ~-ŋ) 〈毛鋼白〉, (-ŋ~-õ)〈毛扛白〉, (-ŋ~-uĩ) (Shān and Zhēn groups)〈毛褌白〉(山、臻), and (-ŋ~-uĩ) (Dàng group, Division I, closed) 〈毛褌白〉(宕合一)—this paper demonstrates that the collapse of nasalized vowels originated in the Quanzhou-type dialect region, subsequently spreading to surrounding areas via structural diffusion. These linguistic maps clearly reveal that individual rime categories exhibit distinct speeds, trajectories, and geographic scopes of diffusion.

Finally, from the perspective of linguistic geography, this paper argues that the -iũ variant of the Yilan dialect did not arise through contact with the Quanzhou-type dialects of Taipei. The map of the (-iũ~-iõ) category in the DASM demonstrates that the shift of *-iõ>-iũ had already occurred extensively within coastal Zhangzhou dialects in the immigrants' ancestral homeland. Although this change is inferred to have originally developed under Quanzhou-type influence, its occurrence predates the migration of Yilan settlers to Taiwan. Therefore, the sound change in Yilan is not the result of local influence from the Taipei Quanzhou-type dialects, but is rather an inherited feature brought directly from the ancestral coastal Zhangzhou varieties.

This paper advocates for "the reconstruction of Southern Min phonological history through geo-historical linguistics." Rather than dismissing the methods and achievements

of traditional historical linguistic the methods and achievements of traditional historical linguistics, this approach proceeds from comprehensive dialect surveys to map the distribution of variants across the Southern Min landscape. On the basis of these dialectal distribution facts, the paper reconstructs the historical developments of Southern Min. By doing so, it avoids relying on abstract comparisons of a mere handful of dialects—which can give undue rein to speculation—and reconstructing proto-forms and sound change pathways akin to the proverbial blind men feeling an elephant. This approach echoes the view of language advocated by LaPolla (2022) under the banner of "Non-Structuralist Linguistics," which urges researchers to break free from the constraints of formalist, structuralist, and traditional historical linguistics. Instead, through cross-disciplinary research (LaPolla 2001), it seeks to construct linguistic history on the firm footing of empirical linguistic data, ethnic migration histories, and language contact patterns**.**

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The Major Features and New Evidence of the Tibeto-Altaic Grammatical Stream

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Abstract: Based on his work with several mixed languages, Atshogs (2003, 2004, 2005) argues that the syntactic system and the lexical system of one language can have different historical origins, merging together through intensive language contact. This is referred to as a "heterogeneous organization" of a language. When characteristics of such a heterogeneous organization can be synchronically observed in a language with a long history, we can refer to those as an "anisotropic organization". Accordingly, the relationships that such a language has with its neighboring languages can also be called anisotropic.

Atshogs (2003, 2005, 2013) has shown that the historical relation between Tibetan and Chinese is not of a canonical genetic linguistic relationship, instead, these two languages can be argued to be in an anisotropic relationship to each other and to their neighboring languages. Specifically, Chinese may be a mixed language sharing features of Proto-Tibeto-Burman (traditionally designated as the "Ancient Qiang" language in Chinese sources) and Proto-Kra-Dai (traditionally designated as the "Ancient Baiyue" language in Chinese sources). Put differently, Tibetan and Chinese may share only their basic lexicon, whereas their syntactic systems may come from different origins. It is argued that the syntactic system of Tibetan (as well as other

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Tibeto-Burman languages) is closely related to that of Altaic languages. More precisely, many of Tibetan morphemes display systematic sound correspondences to their Altaic counterparts. This type of relationship between Tibetan and Altaic languages is referred to as Tibeto-Altaic grammatical stream.

The major features of "Tibeto-Altaic grammatical stream" can be summarized in the following thirteen observations: 1) *-i (*-ki) for the possessive/genitive case; 2) *Tu or *-a for the dative-locative; 3) *Tu+s, *a+s for the ablative case; 4) zero marking for nominative: *-ø; 5) the anterior consonants for the plural marker: *Plur. [+ant] (*s , *r, *n, *d) ; 6) *a/o (objective) and *i (subjective) for modality; 7) *o for the sentence-final modal particle; 8) the word-formation of verbs ending with labial sounds *V= [+lab]／__#; 9) the right-peripheral high pitch prosodic system for Nouns，which can be expressed as *N=[＋H] /_# ; 10）the gender category for nouns (Tibeto-Burman feminine *-M and masculine *-p, corresponding to Altaic feminine *-N and masculine *-R) ; 11) *P for the perfect aspect of verb; 12) *-T for the past tense of verb; 13) *o for imperative mood and *-a, *-i for optative mood.

This study summarizes the major features of Tibeto-Altaic grammatical stream as outlined in Atshogs (2003), and focuses on new evidence for this stream collected in recent years, including systematical and regular sound correspondences between Tibeto-Burman languages and Altaic languages in terms of such morphological structures as nominal gender, number and case, verbal tense, aspect and modality.

Keywords: Tibeto-Altaic Grammatical Stream; gender; number; case; verbal TAM

1. Introduction

Atshogs (2003, 2005, 2013) has argued that the historical relationship between Tibetan and Chinese is not a genetic relationship in the traditional sense, but rather a "heterotropic relationship" manifested through their mutual connections with neighboring languages; Chinese may be a mixed language formed by the convergence of Proto-Tibeto-Burman

(traditionally designated as the ancient Qiang language in Chinese sources) and Proto-Kra-Dai (traditionally designated as the ancient Baiyue language in Chinese sources). Consequently, Tibetan and Chinese share only "half" a relationship—namely, their historical cognacy in basic vocabulary. In this respect, the most powerful argument to date remains that of Shi (2000). At the same time, the other half of the history of Tibetan exhibits systematic correspondences in grammatical morphology with the Altaic languages to the north—what is known as the "Tibeto-Altaic grammatical stream (TAGS)." These views have received echoes from prominent scholars in China: Wang (2003) considers research on the "heterotropic relationship" among Tibetan, Chinese, and the Altaic languages "a remarkable discovery"; Hu (2006) regards the relevant work as a "major breakthrough in mixed-language theory"; and Hong (2009) has also offered affirmative comments.

This paper continues the discussion of new evidence for the Tibeto-Altaic grammatical stream. Since Tibetan possesses historical texts that reflect the most archaic strata of the Tibeto-Burman languages, the Tibeto-Altaic grammatical stream represents a Tibeto-Burman–Altaic grammatical drift. It may be said that, through the previous and the present research, the evidence bearing on the Tibeto-Altaic grammatical stream has now come to encompass all major aspects of the morphological system, including gender, number and case among nominal categories, as well as tense, aspect, mood and word-formation (suffixation) among verbal categories. Even those who do not subscribe to a historical relationship between the two families, cannot set aside the fact that these systematic and rigorous correspondences do obtain within the morphological system. Departing from the previous practice of relying solely on Old Tibetan material as a representative of Tibeto-Burman, this paper additionally incorporates a broader array of evidence from other Tibeto-Burman languages.

Because the arguments advanced here diverge considerably from the prevailing views in the field, it is necessary to briefly set out the relevant background against which these claims are made.

1.1 Lexical ensembles and grammatical streams

From the perspective of deep language contact, Atshogs (2003, 2004) has argued that it is not exceptional for a language's lexicon and its grammatical system to derive from different ancestral languages, forming a mixed language; indeed, even some languages with

ancient histories may well be products of the heterogeneous fusion of lexical and grammatical systems of different origins.

Accordingly, in the transmission of language across time, the lexical and grammatical systems may be inherited independently and stably. Each system can therefore be traced and reconstructed separately to its respective origin using the comparative method. The inheritance and distribution of a shared ancestral lexicon may be abstracted into a single concept: the lexical ensemble. Correspondingly, the transmission across multiple languages of a system of grammatical forms sharing a common origin may be abstracted as the grammatical stream.

1.2 The East Asian lexical ensemble and the Tibeto-Altaic grammatical stream

While confirming (Atshogs 2003, 2013) that early Tibetan and Old Chinese are closely related in basic vocabulary (together with their sound correspondences) and in phonological structure (including the identity of early syllable structure and parallel changes in historical sound classes), Atshogs also argues that Tibetan exhibits systematic functional-sound correspondences with the Altaic languages in morphology. To this end, we concur with Chen (1996) , Hu (2006), and Hong (2009) among others that proto-Chinese may have been a mixed language, holding that Chinese is very likely the product of the heterogeneous fusion of the "Ancient Qiang" (proto-Tibeto-Burman language) and the "Ancient Baiyue" (proto-Kra-Dai) languages. With respect to its core morphological system, Proto-Chinese is unrelated to Tibeto-Burman but shares the corresponding "grammatical stream" with the Baiyue languages, which may be termed the "Sino-Tai grammatical stream."

As for Tibetan and the Tibeto-Burman languages more broadly, there is "a common ancient lexical inheritance widely distributed among many languages of East Asia, including those with long documentary traditions such as Chinese and Tibetan, which we call the East Asian lexical ensemble" (Atshogs 2003: 220); "in the vast region spanning the Eurasian continent, including the Altaic and Tibeto-Burman languages, countless languages sharing a common grammatical-structural type extend in a continuous belt; this shared vein of grammar, we call the Altaic grammatical stream" (Atshogs 2003: 224–225). Naturally, this involves not merely similarity in grammatical-structural type, but systematic correspondences in morphology and phonology as well. In Atshogs (2013), the "Altaic grammatical stream" is more specifically termed the "Tibeto-Altaic grammatical stream".

Today, should one take into account the attention that van Driem's (2011) proposal to rename the "Sino-Tibetan family" the "Trans-Himalayan phylum" has received within the field, one may likewise speak of a "Himalayan–Altaic grammatical stream". Of course, we are happy to continue using the term Sino-Tibetan (or Trans-Himalayan) languages to refer to the languages belonging to the "East Asian vocabulary cluster", since, at present, the relevant scholarship in the field in fact reflects the historical correspondences observed in the lexicon of these languages.

1.3 On the controversy over the Altaic languages

In international and especially western scholarship, the Altaic hypothesis remains highly controversial. Yet one basic fact in this debate is that the Altaic languages exhibit a quite high degree of consistency in grammatical-structural type and quite high functional-sound correspondences in grammatical morphology. What is most seriously doubted lies precisely in the lexical domain: the scarcity and lack of rigor of the proposed sound correspondences in basic vocabulary, including numerals, as well as the possibility that such vocabulary may be borrowed. Thus this controversy in no way undermines our use of the hypothesized Altaic languages in discussing the "grammatical stream"; on the contrary, it happens to be favorable to our discussion in two respects.

First, the "opposite-direction" manifestation of lexicon and grammar in their historical sources is precisely the basic theoretical foundation of the present study; within the discussion of the internal genetic relations of the Altaic languages, one likewise observes a manifestation of the "opposite-direction" relationship—namely, clear sound correspondences in morphology alongside insufficient sound correspondences in basic vocabulary. Second, what we discuss are the sound correspondences between the Tibeto-Burman and Altaic languages in their morphological systems; we are not concerned with lexical historical relations, nor do we maintain or assume any comprehensive historical genetic relationship between the two language groups.

2. Existing evidence on the Tibeto-Altaic grammatical stream

Represented above all by Atshogs (2003, 2006, 2013), research on the "TAGS" has not only summarized the shared features of the syntactic-structural type but, more importantly,

has sorted out the systematic sound correspondences among grammatical markers. Here we offer a brief review of the evidence. We keep published content as concise as possible, while making some adjustments to certain terms, and some reconstructions, supplementing important references and language materials—especially Tibeto-Burman materials beyond Tibetan.

2.1 Case markers and plural markers of substantives

Gong (1989) was among the first to notice the similarities in case marking between Tibeto-Burman and Altaic languages; Jalasen and Zhengyue (1999) likewise studied similarities in case marking between Tibetan and Mongolian. Both are important precursors in this line of research, though neither confirmed that these similarities carry value for discussing historical genealogical affiliation. Moreover, given that Chinese, with its more ancient documentary records, shows no case system, and adhering to the Sino-Tibetan genetic perspective, Gong (1989) tended to regard the similarities in case marking between Tibeto-Burman and Altaic as resulting from Tibeto-Burman innovation and borrowing toward Altaic. This differs from our view that Tibeto-Burman and Altaic share a common historical origin in their morphological systems.

On the basis of these precursors, Atshogs (2003, 2006) further sorted out the rigorous "sound correspondences" among a number of morphological markers between Tibetan and the Altaic languages. Atshogs (2013) explicitly holds that these phenomena reflect an early common origin in case morphology, including: 1) genitive: *-i* (*-ki*)[1]; 2) dative-locative: **-Tu* or **-a*; 3) ablative: **-s*; 4) the zero form of the nominative: **-Ø*; and 5) the coronal consonant component of the plural marker: **s*, **r*, **n*, **d*.

These grammatical markers comprehensively cover the case-marking system of old Tibetan with the sole exception of the "ergative". From a diachronic perspective, the ergative marker of ancient Tibetan is a compound structure of "genitive + *s*," which is clearly a later, non-primary innovation; other Tibeto-Burman languages possessing an ergative should

[1] Because we take these morphological markers in the Sino-Tibetan (Tibeto-Burman) languages to share a common historical origin, we follow the standard conventions of historical linguistics and use the asterisk (*) to denote their reconstructed early common forms. In the reconstructions, uppercase letters represent sound classes (e.g., P stands for the bilabial stops b, p, etc.), while lowercase letters represent actual phonetic values. A preceding hyphen indicates a suffix (bound element that follows the stem), a following hyphen indicates a prefix (bound element that precedes the stem), and the absence of a hyphen indicates that the position of the element is unrestricted (variable).

likewise be understood this way (LaPolla 1995). Therefore, the fact that some Tibeto-Burman languages possess a later-developed ergative-absolutive system does not hinder the historical comparison of grammatical morphology between Tibeto-Burman and Altaic languages, although the latter have a nominative–accusative system.

In what follows, the genitive, the dative-locative, the ablative, and the plural marker are discussed in turn, with certain adjustments having been made in the present paper to their formulation and reconstruction. As for the nominative, whose zero form is attested both in Altaic and in most Tibeto-Burman languages, it will not be pursued further here.

2.1.1 Genitive: **-i* (**-ki*)

Tibeto-Burman and Altaic languages generally do not distinguish a genitive from a possessive; we call both the genitive/possessive.

(1) Ancient Tibetan: *-gi, -kyi, -gyi, -vi, -yi*

(2) Ancient Burmese: *-i* (colloquial Burmese has become *-jɛ*)

(3) Tangut: *-ʔij* (Gong 1989)

Other Tibeto-Burman languages: rGyalrong *ji*, Qiang *i*, Yi *si*, Ersu *i*, Nusu *i*, Dulong *mi*, Anong *i*, Achang *mi*[2]

Here "Ancient Tibetan" and "Ancient Burmese" refer to the Old Tibetan and Old Burmese reflected in written documents; we broadly use "ancient" to mean representative historical corpora (in what follows "ancient" is used in a similarly loose sense and does not denote a particular historical period).

From the above materials it can be seen that Ancient Tibetan, Ancient Burmese, and a great many modern Tibeto-Burman languages all show an "*i*" vowel in the genitive/possessive. Indeed, for the genitive/possessive of Proto-Tibeto-Burman, the Sino-Tibetanist Simon (1942) reconstructed **-'ji*; Gong (1989) reconstructed **-ʔi*; Thurgood (1981), DeLancey (1997), and others reconstructed **-ki*. That is, all possess the *i* vowel.

[2] The case-marking data of the modern Tibeto-Burman languages are compiled on the basis of the concise grammatical sketches of the respective national languages (as issued by the Editorial Board of the Five Series on the National Questions of the State Ethnic Affairs Commission; viz., the Concise Grammar Series of the Minority Languages of China, published by the Ethnic Publishing House; hereafter the same), and supplemented with reference to Zhang (1992); grammatical markers and tones are omitted.

(4) Proto-Mongolic: **y-i-n; *U-n; *-U*;

the genitive-accusative of Proto-Mongolic: **-i, *-yi* (Janhunen 2003: 14)

(5) Old Turkic: *-iŋ/ïŋ; -niŋ/-nïŋ* (Tekin 1968: 126)

(6) Jurchen: *-i, -ni* (Menges 1968: 252; Jin & Jin 1980: 204)

The "Old Turkic" here uses the materials of ancient Orkhon Turkic, the earliest attested form of Turkic in documents; Jurchen is likewise an earlier Tungusic language attested in documents. Mongolian directly uses a reconstruction of Proto-Mongolic (similar to Middle Mongolian and Written Mongolian). The genitive/possessive of all these languages generally contains the *i* vowel.

In Proto-Mongolic the genitive and accusative are closely related; in Middle Mongolian the accusative and genitive share a common marker (genitive-accusative), both with the *i* vowel; the accusative of Old Turkic also occasionally uses the genitive-related *ni/nï* (Tekin 1968: 127). Likewise, some Tibeto-Burman languages, such as Tangut, also have identical genitive and accusative, both with the *i* vowel (Gong 1989).

In the overwhelming majority of modern Altaic languages, the genitive case to this day still exhibits a manifestation of the vowel **-i*. The relevant data may be consulted in the individual language "brief descriptions" (jianzhi), as well as in Chaok Dular (1997) and Wu (1998). Atshogs (2006) provides a systematic survey of the genitive in the modern Altaic languages as well, and the illustrative examples need not be repeated here.

Thus, the genitive/possessive markers of the Altaic languages, both ancient and modern, universally display the *i* vowel. More importantly, the Altaicist Lee (1983) reconstructed the genitive of Proto-Altaic as **i*, while Kotwicz (2004[1953]) also reconstructed the common Altaic suffix expressing "belonging" as **-ki / -gi*.

In sum, we reconstruct the genitive/possessive of the TAGS as **-i (or *-ki)*.

Finally, it should be noted that in Old Tibetan the ergative and the instrumental are homophonous — both being compound forms built upon the genitive base, with *i* as their core vowel. In fact, the instrumental and the genitive in the Altaic languages are also closely related (both reconstructed as **-n* by Lipttoo Tohti (2004: 404, 406); although we hold that it should be **-i*). It may thus be said that the instrumental in Tibeto-Burman and in such Altaic languages likewise share a common form, and the ergative in Old Tibetan is to be regarded as having developed from the instrumental.

2.1.2 Dative-locative case: - **Tu*, **-a*

The case markers for the dative and the locative are sometimes kept distinct and sometimes conflated in Tibeto-Burman and Altaic; here we treat them together as the dative-locative. In this respect the consistency between Tibetan and Mongolian is the most conspicuous, and there is also a high degree of correspondence with the other major language families. Consider first Written Tibetan and Written Mongolian:

(7) Ancient Tibetan: *-du, -tu, -ru, -su; -r*; and *-la, -na*

(8) Ancient Mongolian: *-du/-dü, -tu/-tü, dur/dür, tur/tür*; and *-a/-e* (Jalasen & Zhengyue 1999: 55)

The "Ancient Mongolian" here refers to the Written Mongolian (which Jalasen and Zhengyue (1999) call "Classical Mongolian"). From the above manifestations of the dative-locative in Tibetan and Mongolian, it can be seen that there are two systems: the *Tu*-system (Tu standing for which-ever of *d* or *t*, as below) and the *a*-system. Gong (1989) reconstructed the dative and locative of Proto-Tibeto-Burman as **-du* and **-a*, respectively. Poppe (1955: 198–200) reconstructed the dative-locative of Proto-Altaic as **-a/-e* and **-da/*du*, corresponding quite neatly with Tibeto-Burman.

Turning to historical or modern Tibeto-Burman and Altaic languages, some have both the *Tu-* and *a*-systems, some use one or the other, and some have merged them into the *Ta*-type. Among the earlier Tibeto-Burman languages reflected in documents other than Tibetan are Old Burmese in stone inscriptions and Tangut:

(9) Old Burmese: â (Nishida 1955)

(10) Tangut: ɣaɦ (Nishida 1964)

The case markers for the dative and the locative of other modern Tibeto-Burman languages include Burmese *m̊a*, Zaiwa *ma, la*, Jinuo *a*, Hani *a*, Yi *ta*, Cuona Menba *ka*, Cangluo Menba *ka*, Dulong *dɔ*, Lahu *lʉ*, Nusu *do*, Bai *no*, etc.

The situation among the ancient Altaic languages is as follows:

(11) Proto-Mongolic: **-dU/r, *-tU/r* (Janhunen 2003: 14)

(12) Old Turkic: *-qa/kä; -a/-ä* (Tekin 1968: 130)

(13) Jurchen: *-do, -du, -la/-le* (Menges 1968: 252)

In the modern Mongolic and Tungusic language families, the vast majority of languages inherit the *Tu*-type and *a*-type markers; in the modern Turkic family, most languages show the *Ta*-type dative-locative marker. Atshogs (2006) provides a fairly detailed enumeration using the language sketch volumes and other materials; we need not repeat that here.

In sum, we reconstruct the dative-locative of the TAGS as two types, **-du / -tu* and **-a* (or more briefly, **Tu* and **-a*).

2.1.3 Ablative: *Tu/a + s*

The ablative, in Old Tibetan through the Altaic languages, mostly manifests as a compound structure of a dative-locative marker plus some other marker.

(14) Ancient Tibetan: nas, las (compound structures: *na+s*; *la+s*)

(15) Ancient Mongolian: *-a+ča/-e+če*, pronounced in the spoken language as *-aːs/-əːs*, *ɔːs/oːs* (Jalasen & Zhengyue 1999: 56)

The ablatives of ancient Tibetan and ancient Mongolian as reflected in the written languages are both compound structures, consisting of the *a*-type dative-locative marker plus *-s*; moreover, from the spoken forms of ancient Tibetan and Mongolian, both contain *-s*.

In other Tibeto-Burman and Altaic languages, although *-s* is not visible, their relationship with the *a*-type, *Tu*-type, or *Ta*-type dative-locative is still discernible.

(16) Old Burmese: *hma, ka*

(17) Old Turkic: *-da/tä; -ta/-tä; -din/-dïn, -dan/-dän*, etc. (Tekin 1968: 133)

(18) Jurchen: *-dohi/-duhi* (Aisin Gioro 2006); *-ti* (Jin & Jin 1980: 204)

The *Ta+n* form of the Old Turkic ablative and the *Tu+hi* form of the Jurchen ablative are likewise recognizable as compound structures based on the dative-locative. It is not yet clear, however, whether the fricative of the *-h-* type in the Jurchen compound ablative is related to the *-s* of the Mongolic family. The ablatives of the modern Turkic and Tungusic languages are likewise largely closely related to the dative-locative.

Among the modern Mongolic languages, Dagur and Moghol still preserve compound markers of the *-a+s* or *-ʌ+s* type; Eastern Yugur, Dongxiang, Bonan, and others directly show markers of the *sa*, *sə* type, all with *-s*.

In sum, although the *-s* in the ablative marker is hard to trace in languages outside ancient Tibetan and the Mongolic family, given that these two languages—traditionally assigned to different "families"—show such rigorous correspondence, we regard this as a common feature of the TAGS and reconstruct it as *-*s*. Moreover, since the ablative generally manifests as a compound structure closely related to the dative-locative, we now believe that the relationship between the ablative and the dative-locative is also a common feature of the TAGS. In the end, this paper reconstructs the ablative of the TAGS as **Tu*+ *s*, **a* + *s*.

2.1.4 Coronal plural markers *Plur. [+ant] (*s, *r, n, d)

The plural markers of Tibetan and the Altaic languages are quite complex, yet none departs from the coronal consonants, for example:

(19) Ancient Tibetan: *-tsho, rnams, dag*

(20) Ancient Burmese: *tou, mya*

(21) Proto-Mongolic: *. *s,* *. *d* (Janhunen 2003: 12)

(22) Old Turkic: *-lar/-lɛr* (Deng 1995)

(23) Jurchen: *(-ʃi), sə, ə, ta* (Jin and Jin 1980: 196)

Visible plural markers in general tend to exhibit coronal consonant realizations. (Burmese *mya* does not contain a coronal consonant, but it is the product of the grammaticalization of a corresponding lexical noun.) Ramstedt regarded the plural markers of the Manchu–Tungusic languages as *-l*, *-il*, and *-r*, and considered them to from an earlier form *-d* (Ramstedt 2004 [1957]: 54).

Modern Altaic elements marking the plural likewise abound in coronal consonants. In the Mongolic languages there are the consonants *d*, *n*, *r*, *s*, etc.; the Tungusic languages make heavy use of components beginning with *s*; and there are other plural markers containing *t*, *n*, *l*, *r*—see Atshogs (2006) for details; we will not enumerate further.

Accordingly, we hypothesize that one common feature of the plural marker of the TAGS is possession of a coronal consonant, expressed by the notation *Plur. [+ant] (+ant = anterior, used here to represent apico-postalveolar consonants.).

2.2 Verbal morphology

Thus far, our research has primarily addressed, in the domain of verbal morphology, the

subject/objective modality categories, the marker of judgment (Atshogs 2003), and the word-formation suffixes (Atshogs 2013). Following Atshogs (2013: 422–423) in numbering and formulation, these are: 6) the **o* of the final particle; 7) the subjective/objective modality category of the copula; 9) the verbal base form (gerund) ending in a labial, *V[+lab].

We review these briefly below, adjusting the formulation where necessary, and supplementing further Tibeto-Burman materials. Since the "final particle" expressing judgment is connected with the subjective and objective modalities, we discuss them together.

2.2.1 The *a/o* (objective) vs. *i* (subjective) opposition in the modality

Atshogs (2003, 2006) connected the "subjective/objective modality" of Middle Mongolian and of the modern Monguor, Bonan, and Eastern Yugur languages with the subjective/objective modality in Written Tibetan. However, since no clear phonological correspondence was observed, this could only be regarded as a typological similarity.

In this paper we further propose that the grammatical element expressing judgment in ancient Tibetan possesses an contrast of subjective vs. objective modality (the terminology following Altaic scholarship), manifested specifically as the opposition between the subjective-judgment *-yin* and the objective-judgment *-o* (what traditional grammar calls the final particle) or *-lags* (expressing judgment, honorific)—that is, chiefly the opposition between the high vowel *-i* and the non-high vowel *-o* or *-a*, as shown below.

(24) Ancient Tibetan
subjective modality (also expressing judgment): *-i*
objective modality (also expressing judgment): *-o / -a*
Middle Mongolian and modern Monguor:

(25) Middle Mongolian
subjective modality (expressing existence/judgment): *-bü*
objective modality (expressing existence/judgment): *-a*

(26) Monguor
subjective modality (expressing existence/judgment): *-i:*
objective modality (expressing existence/judgment): *-a*

Ozawa (2004 [1979]: 343) discovered that the existential verb of Middle Mongolian

has two forms with a semantic difference; this resembles the "subjective/objective" modality reported by Chinggeltei (1981, 1985) *etc.* for Monguor, Bonan, and Eastern Yugur, and among them there should be a common historical origin. As for the objective modality marker, the Middle Mongolian reflected in the written language differs somewhat from modern Monguor; Monguor should represent the more archaic form. Researchers hold that the existential/copular verb of Altaic can be reconstructed as an opposition **bi-* vs. **ba* (Litip 2001), with the vowels chiefly being an *i* vs. *a* opposition.

Accordingly, we can also regard the opposition in the modality category (also expressing judgment) between ancient Tibetan and the Altaic languages as an opposition of **a/o* (objective) vs. **i* (subjective), or alternatively as an opposition of open (objective) vs. close (subjective) vowels. This subjective/objective modality opposition, in later Tibetan dialects, became an important source for the grammaticalization—through the "copular verb" and "existential verb"—of the egophoricity.

2.2.2 Verbal base form (gerund) ending in a labial *V=[+lab] /_#

Regarding the suffix of the gerund, i.e., the derivational morphology of the verb, the correspondence between Tibeto-Burman and Altaic was tentatively put forward by Atshogs (2013) but not developed. This part of the discussion may therefore be seen as part of the "new evidence" of this paper for the TAGS.

The verbal base form of Old Tibetan is the gerund form, and it uniformly ends in the labial *-pa/-ba* (the *-p/-b* variants depending on the voicing/voicelessness of the coda of the root). Likewise, the verbs of the Altaic languages also end in a labial.

(27) Turkic: -ma, -maq, -madïn, -maqsïz (ïn), Ɣma
Mongolian: -ma, -maɣ, -maɣvč, -mavči, -mar, mał, -msar
Manchu: -me
Tungusic languages: -mī (Kotwicz 2004 [1953]:51)

Kotwicz (2004[1953]:51) likewise identified the same-root suffix-ma as the nominalized form of the verb in Altaic. Interestingly, in dictionaries compiled by modern editors, verbs in both Tibetan and the Altaic languages tend to be lemmatized — i.e. entered under their nominalized (verbal-noun) forms marked by a labial suffix — as though this form constituted the verb's "citation form".

(28) Old Tibetan: -pa/-ba

(29) Mongolian: -u

(30) Turkish and Uyghur: -mak/-mek (-maq/-mek)

(31) Manchu: -mbi

As can be observed, the suffixes appended after the root consistently exhibit labial features, namely rounded vowels or labial consonants. It is difficult to accept this as a mere coincidence.

In Middle Mongolian, verb endings also exhibited a distinction between "masculine" and "feminine" forms, which corresponded to the gender of the subject. These related endings had numerous variants (Ozawa 1961), which can be subsumed under the *-u* masculine suffix type and the *-i* feminine suffix type. Subsequently, with the collapse of the gender category in Mongolian, the verb endings were reduced to only the rounded *-u*.

Likewise, although the verb-final *-pa* has begun to disappear extensively in the modern Tibetan dialects and in Tibeto-Burman, it is still attested in Written Tibetan as well as in languages such as Bahing, Meithei, Garo-Bodo, and Burmese-Lolo; Benedict therefore regards it as the early Tibeto-Burman nominalizing suffix of verbs, and relates it to the masculine marker *-pa* of Proto-Tibeto-Burman (Benedict 1972: 96). In connection with the discussion of gender categories in §3 below, we hold that verbs in Proto-Tibeto-Burman originally possessed both masculine and feminine endings, but that—as in Mongolian—only the masculine -pa survived after the collapse of the gender system.

With respect to this labial feature: for consonants it designates the bilabial articulator [+lab]; for vowels, it refers to rounded vowels [+round]. Here we use [+lab] uniformly to denote both the bilabial and rounded features, where V stands for verb. The fluid verbal ending (or masculine ending) of the Tibeto-Altaic system grammar may accordingly be reconstructed as: *V = [+lab] / __#.

2.3 The right-peripheral high prosodic system of nominals N=[+H]/_#

The shared terminal prominence of nominals in Proto-Tibetan and Altaic was first explicitly proposed by Atshogs (2013) and subjected to further detailed analysis by Atshogs (2017). Poppe (1965: 180) observed that the musical tone of Turkic, Mongolian, and Manchu–Tungusic languages fall on the word-final or the penultimate syllable. From the

modern Tibetan dialects back to Proto-Tibetan, nouns and adjectives likewise carry a terminal-prominent accent (Caplow 2009). Synthesizing the literature and our own research (Atshogs 2017), we maintain that the right-peripheral "high" prosodic system of nominals constitutes an important feature of the Tibeto-Altaic grammatical stream, formalized as ∗N = [+H] / __ #.

It should be noted that, drawing on the investigation of the internal mechanisms of languages with heterogeneous structures, Atshogs (2003, 2004) revealed that, in rapid systemic change, the morphosyntactic system—i.e., the grammatical system—tends to be interconnected with phonological elements, just as the lexical system relates to phonological structure. The grammatical stream, accordingly, encompasses both the morphological system and the system of phonological elements (including prosody). This, in turn, forms part of what Sapir (1985 [1921]) called the mysterious "stream" of language. The above constitutes the existing evidence for the Tibeto-Altaic grammatical stream. In what follows, we further discuss new and important evidence concerning the nominal gender category and the categories of tense, aspect, and mood of the verb in Tibeto-Burman and Altaic.

3. New evidence for the Tibeto-Altaic grammatical stream (I): Nominal Gender

The grammatical category of gender is, first and foremost, a grammatical classification of nouns. Such a classification may encompass the natural sex of animate beings, but, more importantly, it also subsumes various inanimate nouns into the gender classification. Secondly, when verbs, adjectives and other constituents co-occur with nouns, they are generally subject to corresponding requirements of gender agreement. It is a consensus in the field that Tibeto-Burman languages—from ancient written records to modern dialects—exhibit no gender category with grammatical agreement. Nevertheless, through comparison with the Altaic languages, we can observe important evidence indicating that early Tibeto-Burman languages once possessed traces of a gender category.

3.1 The numerous -P/-M type suffixes in Tibetan and the hypothesis of an early gender category

In Tibetan, the suffixes expressing the natural sex of animate beings, as well as the "agent nouns" (བདག་མཐུན) expressing the possessor or responsible party of a thing or act (e.g.,

དཔའ་བོ། དཔའ་མོ། *dpav-bo* ‘male hero’, *dpav-mo* ‘female hero’), use a labial stop to express the male (hereafter masculine), including *-pa, -po, -ba, -bo, -pha, -pho*, denoted here by *-P*; and a labial nasal to express the female (hereafter feminine), including *-ma, -mo*, denoted here by *-M*.

Francke and Simon (1929: 111) observed long ago that even nouns unrelated to biological sex carry gender affixes in Tibetan, and conjectured that the function of these affixes was to mark the “sex” of all nouns. Benedict (1972: 96), for his part, reconstructed the gender markers *-ma and *-pa for Proto-Tibeto-Burman. As can be seen, from Old Tibetan to modern spoken Tibetan, a large number of inanimate nouns likewise take, respectively, these two distinct classes of affixes, -P and -M. Taking Written Tibetan as an example, ཉི་མ (*nyi-ma*) expresses the sun and ཟླ་བ (*zla-ba*) the moon; the former uses the -M suffix མ (*-ma*), while the latter uses the -P suffix བ (*-ba*). Aside from core words for natural phenomena such as the sun and moon, many other commonly used nouns—body parts, names of plants and animals, and man-made objects—carry these two kinds of suffixes.

Human organ-related terms with Class P suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(32)	ལག་པ	lag-pa	'hand '	རྐང་པ	rkang-pa	'foot'
	འཛོག་པ	vdzog-pa	'fist'	འདོམ་པ	vdom-pa	'Outstretched arm'
	མགོ་བོ	mgo-bo	'head'	རྣ་བ	rna-ba	'ear'
	འགྲམ་པ	vgram-pa	'cheek'	མཁུར་བ	mkhur-ba	'Cheek region'
	མཇིང་པ	mjing-pa	'neck'	དཔྲལ་པ	dpral-pa	'forehead'
	ཕྲག་པ	phrag-pa	'shoulder'	སོག་པ	sog-pa	'scapula'
	སྒལ་པ	sgal-pa	'back'	སྐེད་པ	sked-ba	'waist'

	གསུས་པ	gsus-pa	'abdomen'	ལྟོ་བ	lto-ba	'belly'
	ལྟེ་བ	lte-ba	'belly button'	སྨིན་བ	sem-ba	'mole'
	བྱིན་པ	byin-ba	'shin', 'calf'	སྒྱིད་པ	sgyid-ba	'the bend at the back of the knee'
	ཁོག་པ	khog-ba	'body cavity', 'abdominal cavity'	གཟུགས་པོ	gzugs-po	'body'
	ཁྲད་པ	klad-pa	'brain'	མགྲིན་པ	mgrin-pa	'throat', 'esophagus'
	མཁྲེས་པ	mkhres-pa	'gallbladder'	མཆིན་པ	mchin-pa	'liver'
	མཚེར་པ	mtsher-pa	'spleen'	གློ་བ	glo-pa	'lung'
	ཕོ་བ	pho-ba	'stomach'	ལྒང་པ	lgang-pa	'bladder'
	རྒྱུས་པ	rgjus-pa	'tendon'	རུས་པ	rus-pa	'bone'
	ཐོད་པ	thod-pa	'skull'	ལུད་པ	lud-pa	'phlegm'
	སྐྱག་པ	skyag-pa	'feces'	གཅིན་པ	gcin-pa	'urine'

Human organ-related terms with Class -M suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(33)	ལོངས་མོ	lag-pa	'fingers' and 'toes'	མཛུབ་མོ	mdzub-mo	'index finger', 'fingers' and 'toes'
	མཐེབ་མོ	mtheb-mo	'thumb'	སྤར་མོ	sbar-mo	'animal claws'

	སེན་མོ་	sen-mo	'fingernail'	གཉེར་མ	gnyer-ma	'wrinkle'
	རྩི་མ	rdzi-ma	'eyelash'	སྨིན་མ	smin-ma	'eyebrow'
	གྲུ་མོ་	gru-mo	'elbow'	པུས་མོ་	pus-ma	'knee'
	ལྐོག་མ	lkog-ma	'throat', 'front neck'	ཨོག་མོ་	og-ma	'Larynx', 'anterior neck', 'chin'
	ནུ་མ	nu-ma	'breast'	ཝོ་མོ་	vo-ma	'breast milk'
	མཁལ་མ	mkhal-ma	'kidney'	གློ་མ	glo-ma	'Posterior lobe of the lung'
	རྒྱུ་མ	rgyu-ma	'intestine'	གཉེ་མ	gnye-ma	'sigmoid colon'
	རྩིབ་མ	rtsib-ma	'rib'	ཤ་མ	sha-ma	'placenta'
	མཆི་མ	mchi-ma	'tears'	མཆིལ་མ	mchil-ma	'saliva'

Natural celestial phenomena and related terms with Class P suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(34)	ཟླ་བ	zla-ba	'moon'	སྤྲིན་པ	sprin-pa	'cloud'
	རི་བོ	ri-bo	'mountain'	ཆུ་བོ	chu-bo	'river'
	ཆར་པ	char-pa	'rain'	ཁ་བ	kha-ba	'snow'
	སེར་བ	ser-ba	'hail'	ཟིལ་པ	zil-pa	'dew'
	དུ་བ	du-pa	'smoke'	སྨུག་པ་	smugs-pa	'fog'
	ཐལ་བ	thal-ba	'dust'	ལུང་པ	lung-pa	'valley'

Celestial phenomena and related terms with Class M suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(35)	ཉི་མ	nyi-ma	'sun'	སྐར་མ	skar-ma	'stars'
	ཉིན་མོ	nyin-mo	'day'	མཚན་མོ	mtshan-mo	'night'
	བ་མོ	ba-mo	'frost'	བྱེ་མ	bje-ma	'sand'
	གྲིབ་མ	grib-ma	'shadow'	ཀླུང་མ	klung-ma	'rivers'

Animals and related terms with Class P suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(36)	ལྕི་བ	lji-ba	'flea'	ངང་པ	ngang-pa	'wild goose', 'goose'
	སྦལ་བ	sbal-ba	'frog'	ཤྭ་བ	shwa-ba	'deer'
	གླ་བ	gla-ba	'Siberian musk deer'	ཝུག་པ	vug-pa	'owl'
	མཆེ་བ	mche-ba	'tusks'	པགས་པ	pags-pa	'leather'
	རྨིག་པ	rmig-pa	'hoof '	གཤོག་པ	gshog-pa	'wing'
	ལྕི་བ	lji-ba	'cow dung'	ཀོ་བ	ko-ba	'leather'

Animals and related terms with Class M suff- ixes include:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(37)	ཤིག་མ	shig-ma	'louse'	སྲོ་མ	sro-ma	'louse eggs', 'nits'
	གྲོག་མ	grog-ma	'ants'	སྦྲང་མ	sbrang-ma	'bees'
	གྲོལ་མོ	grol-mo	'roundworm'	ཏྲེ་མ	tre-ma	'yellow weasel', 'three-spined venomous wasp'

	འཇོལ་མོ་	vjol-mo	'wood thrush'	ཉ་མོ་	nya-mo	'fish'
	ཝ་མོ་	wa-mo	'fox'	གཟུགས་མོ་	gzugs-mo	'hedgehog'
	ཁལ་མ	khal-ma	'Cattle as draft animals'	སྡེར་མོ་	sder-mo	'claw'
	རྔ་མ	rnga-ma	'tails'	རྔོག་མ	rngog-ma	'Mane hair'

Related terms and related nouns with Class P suffixes include:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(38)	སྒོག་པ	sgog-pa	'garlic'	བྲ་བོ	bra-bo	'buckwheat'
	སྟག་པ	stag-pa	'A birch tree'	གྲོ་བ	gro-ba	'birch'
	ཤུག་པ	shug-pa	'cypress tree'	རྩ་བ	rtsa-ba	'root'

Terms and related nouns with Class M suffixes include:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(39)	སྨྱུག་མ	smyug-ma	'bamboo'	གཡེར་མ	gyer-ma	'Sichuan pepper'
	ལྕང་མ	lcang-ma	'willow'	གླང་མ	glang-ma	'High-mountain willow'
	སྲན་མ	sran-ma	'pea','legume'	གྲོ་མ	gro-ma	'potentilla anserina'
	ཙྷེར་མ	tsher-ma	'thorn/prickle'	གྲ་མ	gra-ma	'Maimgang' (also refers to animal arrow hairs)

	ལོ་མ	lo-ma	'leaf'	འདབ་མ	vdab-ma	'leaf' (also refers to the wings of birds and insects）

Artificial objects and related terms with Class P suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(40)	ཁང་པ	khang-pa	'house'	ཀ་བ	ka-ba column	'capital'
	ཟམ་པ	zam-pa	'bridge'	གཞོང་པ	gzhong-pa	'wooden trough', 'wooden basin'
	ཐག་པ	thag-pa	'rope'	སྐུད་པ	skud-pa	'thread'
	ཕྱིང་པ	phying-pa	'felt'	ཁུ་བ	khu-ba	'soup'

Artificial objects and related terms with Class M suffixes, such as:

No.	WT	Translit.	Gloss	WT	Translit.	Gloss
(41)	ཟ་མ	za-ma	'food'	རྫ་མ	rdza-ma	'earthenware pot'
	དོར་མ	dor-ma	'trousers'	ཁུག་མ	kug-ma	'pocket'
	ཐུར་མ	thur-ma	'small stick'	གདུང་མ	gdung-ma	'idgepole and beam', 'timber'

These lexical items all carry identifiable “gender” affixes. Such gender affixes, which pervade a substantial portion of the core vocabulary yet bear no relation to biological sex, can only be relics of nominal word-formation following the collapse of the early grammatical gender category.

However, owing to the absence of concord requirements imposed by a grammatical gender system, such lexical items bearing masculine/feminine gender affixes have conventionally been regarded in traditional grammatical studies as unmotivated,

unexplainable “primitive words” or “primary words” (འདོད་རྒྱལ་གྱི་མིང་། vdod rgyal gyi ming), as opposed to the explainable, motivated “derived words” or “compound words” (རྗེས་གྲུབ་ཀྱི་མིང་། rjes grub kyi ming). In other words, viewing Tibetan language and script in isolation, the reason why these words carry masculine/feminine gender affixes is unexplainable, and they can consequently only be treated as unmotivated “primary words”. Yet from the perspective of the Tibeto-Altaic grammatical tradition, the picture is different. That is to say, if these affixes, which lack any motivation within Tibetan itself, exhibit the same manifestations in the Altaic languages, it would be difficult to account for such correspondences as mere coincidence; rather, they can only be interpreted as traces of the gender category of the early Tibeto-Altaic languages.

To be sure, a portion of Tibetan nouns exhibit no gender affix at all. We hypothesize that the gender marking of these words has already disappeared, or that they belong to the neuter gender within the gender category. Examples include core vocabulary such as body-part terms — “mouth, nose, eye, tooth, tongue, hair, heart, blood, flesh, fat”; natural-phenomenon terms — “sky, earth, stone, fire, lake, sea, salt”; animal-related terms — “horn, fur, egg, snake, dog, bird, worm”; plant-related terms — “flower, grass, seed”; and artifacts — “door, road.”

Furthermore, all verbs uniformly end in *-pa / -ba* (with *-pa / -ba* representing allomorphs of a single suffix conditioned by the voicing of the final consonant of the root). From the perspective of the gender category, this may be regarded as equivalent to a masculine affix today. As noted above, it may be hypothesized that in the early stage, in accordance with concord requirements in the gender category with nouns, verbs possessed both masculine and feminine affixes; however, since the grammatical gender category had long since collapsed, only the basic masculine affix survived in the verb paradigm.

In written Tibetan, the vast majority of adjectives likewise end in the masculine suffix *-po/-bo* or the feminine suffix *-mo*. However, the masculine/feminine affixation of adjectives is frequently interchangeable, as in the case of ཡག་པོ (*yag-po*) ‘good’, which also occurs as ཡག་མོ (yag-mo); which of the two constitutes the underlying/original form remains to be determined. It can be clearly established that, from the perspective of word-formation morphology, the most distinctive feature distinguishing adjectives from verbs and nouns in Old Tibetan lies in the fact that adjectives predominantly end in the vowel *o*.

3.2 Traces of the Gender Category in Tibeto-Burman and Altaic Languages

Below we analyze the correspondences of the gender category between Tibeto-Burman and Altaic languages in a number of typical lexical items. First, a brief note is in order: lexical items that exhibit excellent correspondences in grammatical morphological categories may share no correspondences whatsoever in their roots—this is the fundamental idea of what we call the "heterotropic structure" and " heterogeneous organization" of human language (Atshogs 2003, 2004; Hu 2006), whereby the grammatical morphology and the lexical system of a language can have distinct origins. Accordingly, if Tibetan and the Altaic languages exhibit markedly divergent origins in their basic lexical roots but striking correspondences in their morphological categories, this is precisely the intended implication of the "TAGS", namely the close connection in grammatical morphology under the overall "heterotropic" relationship between the two languages. Secondly, we have imposed two restrictions on the selection of the comparative items: 1) we select the most "core" items that carry no biological sex, for discussion; 2) we select insofar as possible items that are semantically closely related in human languages and typically form binary oppositions in the gender category (such as "sun" and "moon"). In this way, on the one hand the core vocabulary is more stable; on the other hand, demanding that the items be semantically closely related and capable of binary opposition is relatively more difficult, and correspondingly better able to rule out the possibility of chance coincidence. Since in existing research on the Altaic language family, it has been pointed out that early Mongolic languages exhibited traces of the gender category—such as the gender category of Middle Mongolian (Ozawa 1961)—we likewise take the Mongolic languages as our example below, focusing our discussion on comparison with Tibetan. Ozawa's important contribution was the discovery of distinctions in the gender category in the verbal suffixes of Mongolian (Ozawa 1961); correspondingly, the nominal gender was mainly found among entities bearing natural biological sex distinctions, such as humans. Our discussion, by contrast, is conducted mainly with regard to nouns, where both the Mongolic languages and Tibetan may possess grammatical gender categories that go beyond natural biological sex distinctions. For ease of exposition, we first state directly the basic conclusion of this section, namely the final basic hypothesis: in the Mongolic languages, the marker of the masculine category in nouns lies in the suffix, the masculine being a retroflex consonant, denoted by -R (e.g., -r-/-r); the feminine is a nasal ending, denoted by -N (e.g., -n-/-n, -ŋ-/-ŋ). Moreover,

the source paths of these two suffixes are the same as in Tibetan, both deriving through grammaticalization from the lexical words denoting natural sex, "male/female" (manifested in Written Mongolian and Dongxiang, among others, as *ərə / əmə*). We discuss this below using three sets of core vocabulary.

3.2.1 "Sun" and "Moon"

"Sun" and "moon" are among the most basic and high-frequency lexical items in human language, and in languages with a gender category they frequently stand in binary opposition. In Tibetan, "sun" is ཉི་མ (*nyi-ma*), which carries a feminine suffix, while "moon" is ཟླ་བ (zla-ba), which carries a masculine suffix—the two are thus precisely opposed in gender, leaving no room for doubt.

In this regard, the Tibeto-Burman languages also furnish abundant evidence. For "sun," one may cite: Zhaba *ŋɐ̯ʌ⁵⁵mi⁵⁵*, Guiqiong *mi³¹tsʰə⁵⁵*, Shixing *ŋɐ̯e⁵³mi³³*, (and) Lüsu Shixing *ŋɐ̯e³³mi⁵³*, Achang *ni³¹mɔ³¹* (*n³¹mɔ³¹*), Hani *nə⁵⁵ma³³*, Naxi *ŋɐ̯i³³me³³*, and so forth. For "moon": Lüsu *łœ³³pʰe⁵³*, Xide Yi (Nuosu) *łɔ²¹bɔ²¹*, Lisu *hãba³³*, Lahu *xaq³³pa³³*[3], among others.

Now let us examine the representation of these two lexical items in the Mongolic languages[4]:

Table 1: The Terms for "Sun" and "Moon" in Mongolic Languages

Languages	Sun	Moon
Standard Mongolian spoken language	nɑr	sɑr
Chenbarhu Mongolian	nɑr	xɑr
Daur Language	nɑr	sɑruːl
Mongolian written language	nɑrɑ	sɑrɑ
Tuzhu language	nɑrɑ	sɑrɑ
Alxa Mongolian	nɑrɑ	sɑr
Hejing Mongolian	nɑrn	sɑr
Buryat Mongolian	nɑrɑnŋ	hɑr
Security Terminology	nɑrɑnŋ	sɑrə

[3] The Tibeto-Burman data are cited from Huang (1992). Hereafter the same.
[4] The Secret History of the Yuan (Yuanchao mishi) data are drawn from Kuribayashi (2009). The other Mongolian data are cited from Sun (1990). Hereafter the same.

Eastern Yugur Language	naran	sara
Dongxiang Language	naran	sara
“Secret History of the Yuan Dynasty”	naran	sara

From the perspective of Standard/Written Mongolian, the word-final segments of nar/nara “sun” and sar/sara “moon” are both *-r* (what we term “male suffix *-R*”), revealing no distinction between them. Likewise, in Khorchin and Alasha Mongolian, as well as in Dagur and Monguor, both 'sun' and 'moon' take male suffix *-R*. However, when we turn to Hejing and Buryat Mongolian, and to such languages as Bonan, Eastern Yugur and Dongxiang, we find that the word-final segment of “sun” is in fact *-n* or *-ŋ* (what we term the “female suffix *-N*”). It may be said that the Dongxiang and other languages preserve a more archaic stage, whereas modern Mongolian has long since lost the female suffix *-N*.

More importantly, as is evident from *The Secret History of the Mongols* (《元朝秘史》), “sun” is recorded as 纳舌阑 (*nà-shé-lán*) and “moon” as 撒舌剌 (*sǎ-shé-là*). The Chinese-character phonetic transcription 纳舌阑 represents *naran*, while 撒舌剌 represents *sara*. It is thus clear that in Middle Mongolian “sun” still retained the female suffix *-N*, whereas “moon” bore precisely the male suffix *-R*—a polarity of male/female suffixes in “sun” and “moon” that coincides exactly with that found in Tibetan.

3.2.2 “louse” and “flea”

Regarding the other core lexeme, louse, and its closely paired insect flea, which is regularly juxtaposed with it in Tibetan:In Written Tibetan the louse is ཤིག (*shig*). In the Muya variety of the Khams Tibetan, however, the louse appears as ཤིག་མ (*shig-ma*), i.e. carrying the feminine suffix *-M*. Abundant corroborating evidence is found in the wider Tibeto-Burman stock, e.g. Muya *tshə*^{55} *ma*^{53}, Shixing *ɕœ*^{55}*mi*^{55}, Lushui *ʂu*^{33}*mœ*^{53}, and Sani Yi *xi*^{33}*mɒ*^{33}. By contrast, in Written Tibetan the flea is ལྗིད་བ (*ljid-ba*), marked by the masculine suffix *-P*; cognate forms in other Tibeto-Burman languages include Zhaba *sɐ*^{33} *pʰi*^{55}, Guiqiong *ʒə*^{35}*wu*^{33}, and Darang Deng *tsʰu*^{53}*wun*^{55}.

Now, how is this pair of insects manifested in the Mongolic languages? (Languages or dialects exhibiting forms essentially identical to Standard Spoken Mongolian are, omitted from the enumeration.)

Table 2: Louse and Fleas in the Mongolic Languages

Languages	**Louse**	**Flea**
Standard Mongolian	bɵːs	noxœːŋ bɵːs , noxœː bɵːs
Daur	buːs	suɑr
Monguor	boːsə	burgə , noxui bɵːsə
Dulan Mongolian	bøːsen	noxɑːn beːsen
Hejing Mongolian	bøːsn	byːryg
Buryat Mongolian	bɵːhəŋ	buluːtɑx
Bonan	bosoŋ	bərge
Eastern Yugur	byːsən	gədzou
Dongxiang	bosun	benɣe
The Secret History of the Mongols	bö'esün	—

From the material above, it can be seen that the word for "louse" (lice) in the various Mongolic languages shares a common origin, as does the word for "sun." In Standard Spoken Mongolian, Dagur, and Monguor, the final segment has already been lost, whereas in Dongxiang, Eastern Yugur, and Bonan, as well as in such Mongolian dialects as Dulan, Hejing, and Buryat—and even in Middle Mongolian—the *-N* suffix is still retained. It may therefore be concluded that, like its Tibetan counterpart, the word for "louse" is of the feminine gender. The case of "flea" is somewhat more complicated. Standard Spoken Mongolian, Dulan Mongolian, and one of the Mongghul lexical items form a single group; these forms are in fact compound words combining "dog" (Standard Mongolian *noxœː-*) and "louse" (Standard Mongolian *bɵːs*), and need not be discussed further. Eastern Yugur constitutes an entirely separate category and, being potentially of different origin from that of most languages, may also be set aside. The Dagur form *suar*, although bearing an R-class masculine suffix, likewise differs in origin from the majority of forms. What remains are Dongxiang *benɣe*, Bonan *bərge*, Hejing Mongolian *byːryg*, and Mongghul *burgə*, which clearly display a cognate relationship and for the most part show the ending *-rg-*, suggesting a probable R-class masculine suffix. We therefore further infer that "louse" and "flea"—and

above all “louse,” as a core vocabulary item of human language—correspond consistently with Tibetan in the Mongolic languages with respect to the masculine/feminine (gender) categorization of class suffixes.

3.2.3 “Hand” and “Fingernail”

Turning to body-part nouns, the core high-frequency Tibetan word for “hand” (ལག་པ་, lag-pa) has a masculine suffix. “Hand” and “foot” are often mentioned together, but both are masculine in Tibetan. The word relatively close in meaning to “hand,” “fingernail” (སེན་མོ, sen-ma), has a feminine suffix. For “hand”: Qiang jə pɑ, Queyu le^{55}pa^{55}, Zhaba ja^{33}pa^{55}, Lusu le^{33}pi:^{53}, Weishan Yi l̪i^{21}p^{h}l̪i^{33}, Lisu lɛ̪^{31}p^{h}ɛ̪^{35}, Jinuo la^{55}pu^{44}, Gazhuo la^{53}p^{h}a^{55}; for “fingernail”: Tujia tɕie^{35}mi^{55}, Karen k^{h}ɔ^{31}me^{31}. Let us now examine these two words in the Mongolic languages:

Table 3: 'Hand' and 'Fingernail' in the Mongolic Languages

Languages	**Hand**	**Fingernail**
Standard Mongolian	gar	xuməs
Daur	garj	kimtʃe:l
Monguor	ɢar	tʃe:lusə
Dulan Mongolian	gar	xums
Hejing Mongolian	ɢar	xumsn
Buryat Mongolian	gar	xumhaŋ
Bonan	χar	ɢomsoŋ
Eastern Yugur	ɢar	χəməsən
Dongxiang Language	qɑ	ɢɯmusun
Secret History of the Yuan Dynasty	qur	kiml

Evidently, among the Mongolic languages, the word for “hand” carries in the vast majority of cases a masculine suffix of the -R type, which is entirely consistent with the situation in Tibeto-Burman. Likewise, the word for “nail/fingernail”—from Hejing and

Buryat Mongolian to Bonan, Dongxiang, and Eastern Yugur—invariably carries a feminine suffix of the -N type, again in full agreement with Tibeto-Burman.

3.2.4 The Origin of the Masculine and Feminine Nominal Suffixes in Tibetan and Mongolian

The origin of the -P/-M nominal suffixes in Tibetan is perfectly clear: they derive from pho 'male' and mo 'female,' the words denoting biological sex. By the same token, the Mongolic suffixes of the -R and -N types must have a comparable origin, for in Mongolian the words expressing biological sex are precisely *ərə/ər* 'male' and *əmə/əm* 'female', of which *ərə* and *əmə* are the literary (written) forms and *ər* and *əm* the colloquial pronunciations. Table 4 presents the terms for male/female in the two languages, together with the corresponding written-language suffixes and the hypothesized gender categories.

Table 4: Gender affixes denoting male/female in Tibetan and Mongolian, together with Lexical words for male and female

		Male	**Female**
Tibetan	Lexical words for masculine and feminine	pho	mo
	Gender Affixes Attested in Written Sources	-pa/-po/-ba/-bo	-ma/-mo
	Gender Hypothesis	* -P	* -M
Mongolian	Lexical words for masculine and feminine	ərə/ər	əmə/əm
	Gender Affixes Attested in Written Sources	-r	-n/-ŋ
	Gender Hypothesis	* -R	* -N

In essence, we believe that the correspondence between Tibeto-Burman and the Mongolic languages with respect to the category of gender can hardly be regarded as a coincidence. We tentatively maintain that this constitutes an important manifestation of the "Tibeto-Altaic grammatical stream," which may be summarized as follows:

(42) Substantives in the TAGS possess corresponding gender categories (the feminine *-M and masculine *-P of Tibeto-Burman correspond, respectively, to the feminine *-N and masculine *-R of Altaic).

It should be noted that the core of the gender correspondence discussed here lies primarily in the categorial correspondence of feminine-to-feminine and masculine-to-masculine, rather than in an overall sound correspondence. The gender markers of Tibeto-Burman and Altaic languages are derived from the grammaticalization of lexical items denoting biological sex in their respective languages. Moreover, in the "heterotropic relationship" between Tibeto-Burman and Altaic languages, lexical items are not required to share a common historical origin; that is, no phonological correspondence between lexical items is required. Since the gender assignment of words referring to non-biological entities lacks any biological rationale and is therefore arbitrary, it is difficult to regard the appearance of systematic categorial correspondences across different languages as coincidental.

Of course, neither modern Tibeto-Burman nor modern Altaic languages retain gender as a category in the sense of grammatical agreement. In Tibetan, the numerous gender affixes on nouns are merely vestiges, exhibiting no agreement between nominals and verbs. In Middle Mongolian, the verbal gender category agreed only with subjects that were nouns denoting natural gender, whereas all other inanimate nouns displayed no gender agreement with the predicate whatsoever. It is evident that the gender category of Mongolian as a whole had already collapsed. From the extant materials, finding vestiges of gender categories on substantives in Tibetan and the Altaic languages may not yield a large number of neat and consistent correspondences. Nevertheless, those lexical items that are particularly high-frequency, core, archaic, and paired are relatively stable and unlikely to have arisen through chance; accordingly, the correspondences discerned in such materials carry particular value.

4. New Evidence for the Tibeto-Altaic Grammatical Stream (II): Tense and Aspect

4.1 The Perfective Aspect Marker *P

Ancient Tibetan verbs exhibit a fairly systematic inflectional morphology, which encodes such grammatical categories as aspect (or tense—here referred to as "aspect"), mood, volitionality, and causativity. Among these, the perfective aspect is characteristically marked by a prefix *b-* and suffix *-s/-d* attaching to the root; the prospective (future) aspect also takes the prefix *b-*. In this sense, *b-* may be regarded as a "non-progressive (present)"

aspect marker. Nonetheless, a thorough examination of verbal morphology shows that if a given paradigm exhibits only a single preposed *b-,* it invariably belongs to the perfective aspect. For example:

(43) Present progressive གཏོད་པ (gtod-pa); Prospective stem གཏད་པ (gtad-pa); Perfective stem བཏད་པ (btod-pa); Imperative གཏོད (gtod). Meaning: to entrust, to deliver; to rely on, to press; to point toward, to turn toward; to establish, to set up, to found.

(44) Present progressive stem གསོད་པ (gsod-pa); Prospective stem གསད (gsad-pa); Perfective stem བསད (bsad); Imperative སོད (SOD). Meaning: to kill, to slaughter; to harm, to put to death.

(45) Present progressive stem ལྟོས་པ (ltos-pa); Prospective stem ལྟོས་པ (ltos-pa); Perfective stem བལྟོས (blods). Meaning: to be contingent upon; to depend on; to pay attention to; to look at.

This phenomenon is likewise reflected in the table of eight inflectional verb classes of Written Tibetan given in Coblin (1976: 60). From this it may be inferred that the verbal prothetic consonant b- in Tibetan serves chiefly as a marker of the perfect(ive) aspect. The perfective marker in Burmese is also related to labials: *bji* in the written language and *bji/bi* in the spoken language (Wang 2011: 169). It may therefore be said that the perfective aspect of Tibeto-Burman verbs is associated with labial consonants. Benedict (1972: 112) reconstructed the perfective marker of Proto-Tibeto-Burman as * *b-*.

(46) Old Tibetan: *b-*

(47) Old Burmese: *bji-*

(48) Proto-Tibeto-Burman: **b-*

Turning now to the Altaic languages, we may again observe that one of the main markers of the perfective aspect likewise consists of a labial consonant, taking forms such as *-p, -b*, and *-f*. It is difficult to attribute so many coincidences to chance; we can only regard this as a shared perfective marker of the "Tibeto-Altaic grammatical stream," and denote it as **P*.

The following are the findings of previous scholars concerning labial-related perfective suffixes in the Altaic languages.

(49) Converbal suffix expressing a preceding action, Turkic: *-p* (*-b*)
Converbal suffix expressing a past tense, Mongolian: *-fi; -pi* (rare)

(52)	Verb stem + -°p	bašla-p	yür-üp
		“having led, having begun”	“having gone”
	Verb stem+ -°pan / °pän	baq-ipan	kör-üpän
		“having looked”	“having met”

Suffix expressing a narrative perfect, Mongolian: *-ba*

(W. Kotwicz 2003[1953]: 51)

Accordingly, Kotwicz (2004 [1953]) summarizes the above suffixes as the Altaic “cognate suffixes” *-p* and *-b*. Litip Tohuti (2004: 419) likewise reconstructs the “Common Altaic converb suffix of the perfective aspect” as **-pV*. The following section offers a brief and concrete examination of this phenomenon, taking Old Turkic as a case in point.

(50) Verbs ending in a vowel form this morpheme with *-p*; those ending in a consonant mostly take *-ïp, -ip*, and after a final syllable with rounded vowel *-up, -üp*; in the n-dialect, the forms *-ap, -äp* occur. Person and number are added on the verb after the -p converb; that is, the action occurs before that of the immediately following verb.

(von Gabain 2003[1974]: 109)

Chen (2016: 398) points out that the languages attested in Old Turkic and Old Uyghur texts contain converbs expressing completion, see (51) ：

(51)	Verb stem + -p	bar-ïp	äsit-ip
		“having gone”	“having heard”
	Verb stem + -pan / pän	aɣï-pan	sök-üpän
		“having ascended”	“having waded through”

Chen (2016: 398) further observes that “...the form with *-p* denotes an action preceding the main verb, and may be called a ‘past perfective converb.” According to Chen (2016: 399), the principal converbs expressing the perfect(ive) in Chaghatay literary sources include, for example:

In sum, we may conclude:

(53) Tibeto-Burman and the Altaic grammatical stream share a common perfective marker, *-P.

4.2 The -D Marker of the Past Tense (or Perfective Aspect) of Verbs

In the preceding section, we have discussed that, apart from the *-*b* prefix, the perfective aspect in Ancient Tibetan is also marked by the suffixal consonants -s / -d. Ancient and modern Tibetan do not formally distinguish tense from aspect (some scholars treat the system in terms of tense, others in terms of aspect). Burmese, by contrast, appears to distinguish tense from aspect, with the past tense marked by *-tθi* in written (classical) Burmese and by *-dɛ* in the spoken language (Wang 2011: 169), which may be plausibly correlated with the corresponding forms in Ancient Tibetan. It is generally held that the Ancient Tibetan past-tense / perfective marker *-d* is an allophone or variant of *-s*; yet, in view of the *-t /-d* forms in Ancient Burmese, the Tibetan *-d* should also be regarded as of considerable significance. Accordingly, the past tense of Proto-Tibeto-Burman may be reconstructed as* *-S / -T*. It should be noted that the *-d / -t* type markers of Ancient Tibetan and Ancient Burmese may likewise occur in the present tense; here, however, we restrict our discussion to the "past tense" (or perfective aspect).

(54) Old Burmese past tense: *-tθi* (colloquial *dɛ*)

(55) Old Tibetan past tense: *-s/d*

(56) Proto-Tibeto-Burman past tense: *-S/-T*

Similarly, the Altaic languages generally possess *-d* and *-t* type affixes denoting past events. Litip Töhti (2004: 420) reconstructs a "Common Altaic gerund suffix" *-*dV*, *-*tV*. In what follows we continue to examine the past-tense forms of verbs in Old Turkic.

(57) Stem: *-t or -d* (§36; with the -^{0}t verbal noun; cf. §131), with person marked by possessive suffixes: -t+^{0}m; -t+^{0}ŋ (also in the inscriptions: -t(^{0})ɣ); -t+ï; -t+^{0}m^{0}z; -t+ŋ^{0}z (also in the inscriptions: -t(^{0})ɣ(^{0})z); -t+ï and -t+ïlar. Likewise, after stems ending in consonants, forms with a voiced initial and forms with a voiceless initial both occur; even the same stem takes different suffixes. Stems ending in a vowel mostly take *d*.

(von Gabain 2003[1974]: 103–104)

As is evident, in ancient Turkic, the verb expresses the past tense in two ways. The primary of these (Past Tense I) is marked by *-t* or *-d*, hereinafter referred to as the *-T* type marker. As may be further observed in detail in Chen (2016), the past tense (Group A) across ancient and modern Turkic languages likewise employs the -T type marker.

(58) "Verb stem + *-dï /-di /-du /-dü /-tï /-ti /-tu /-tü*, followed by the person suffix"
(Chen 2016: 420–426)

(59) "Verb stem + *-di /-ti /-du /-tu /-dü /-tü*, with the person suffix attached."
(Chen 2016: 420–426)

Accordingly, we would also like to tentatively propose the following correspondence rule:

(60) The TAGS shares a common past tense (or perfective) marker *-T.

To be sure, whether aspect and tense constitute genuinely independent categories in the Altaic languages, and especially in early Tibeto-Burman, remains a question still awaiting demonstration. Nevertheless, even if one does not treat tense and aspect as independent categories, the combined use of the *P-type markers and the -T-type markers — that is, combining (53) and (60) — to jointly express past/perfective function is a genuinely shared phenomenon in the historical linguistics of Tibetan and the Altaic languages.

5. New Evidence for the Tibeto-Altaic Grammatical Stream (III): Verbal Moods — Imperative and Optative

In the verbal morphology of Classic Tibetan, the expression of the imperative and optative (jointly referable to as the "injunctive/command mood") manifests itself in both inflectional and affixal forms, with phonological shapes falling broadly into three types: (1) internal verbal inflection, with the vowel shifting to *o*; (2) the suffixes *-cig / -zhig / -shig*; (3) the suffix *-dang*. A further peculiarity of the Old Tibetan imperative is that it may consist of a bare stem (with root inflection), so that a command addressed to the second person can be expressed directly by a bare stem in sentence-final position.

In Burmese, the verb expresses the imperative through a range of postposed elements, such as *pa, ba, la, ja, khɛ, tɕhi, lɔ, so* (Wang 2011: 178). On the basis of their vowels, these imperative markers of Tibetan and Burmese may be simply grouped into three classes: (1)

the a-class; (2) the i-class (Burmese *i/ɛ*); (3) the o-class (Burmese o/ɔ). As regards the o-class, Shafer (1951) argued that the imperative of Proto-Tibetan and of certain other Tibeto-Burman languages was *o,* a view widely accepted in the field; it is reasonable, then, to reconstruct the Proto-Tibeto-Burman imperative as *o*. Regarding the i-class, both Tibetan and Burmese exhibit the consonants *k/g/tɕ* (Tibetan letter c being phonetically [tɛ]) (provisionally denoted by K). As for the a-class, Tibetan *-dang* may be a later grammaticalized product; however, should such later forms be constrained by a historical phonological "drift" (as discussed below), the relevant phonological features may likewise be brought into the discussion. In Burmese the a-class is highly frequent in the imperative (and modern Tibetan dialects likewise possess a very common *-ya* marking the imperative); the a-class in both Tibetan and Burmese further involves a range of coronal consonants (provisionally denoted by T). In sum, we may provisionally conclude as follows:

(61) Proto-Tibeto-Burman verbal imperative marker: *o

Proto-Tibeto-Burman verbal optative marker: *(T)-a, *(K)-i

According to previous research, the common forms marking command and volition in the verbs of the Altaic languages likewise fall roughly into three types:

(62) *-a, -i* (Kotwicz 2004 [1951]: 49)

(63) *-qa, -ɣai* (Kotwicz 2004 [1951]: 49)

(64) *-su* (Manchu additionally *-so*) (Litip Tohti 2004: 423–424; Kotwicz 2004 [1953]: 231–232)

Strikingly, and parallel to the Tibeto-Burman situation, the common forms of the aforementioned Altaic languages can, when viewed from the standpoint of their vowels, likewise be classified into three types: (1) the *a*-class; (2) the *i*-class; (3) the *u/o*-class. Moreover, the principal form of the second-person imperative in the Altaic languages is likewise the "bare stem" of the verb (Kotwicz 2004 [1953]: 227–230). All of this is difficult to dismiss as mere coincidence. It is noteworthy that the rounded u/o class has been reconstructed by earlier scholars as **su* (Litip Tohti 2004: 423); thus, Manchu so may derive from su. Yet, in connection with the o of the Tibeto-Burman imperative, the *o* of the Manchu imperative may prove equally significant (the Korean and Japanese languages, which are closely linked to Altaic, likewise exhibit *o* in their imperative). Judging from the Tibeto-

Burman languages and Manchu, the rounded *u/o* class is associated more closely with the imperative. In sum, we may provisionally conclude as follows:

(65) TAGS verbal imperative marker: **o/u*

TAGS verbal optative marker: **-a, *-i*

Even the consonants K and T are of great significance across the three major Altaic language families (Kotwicz 2004 [1953]: 226, 232). It should be noted that, as mentioned above, the Tibetan *-dang* may be a product of later grammaticalization and was rarely used in Classical Tibetan. However, grammaticalization may be constrained by a historical phonological "stream", namely, lexical items that follow a particular grammatical-functional pathway are still subject to phonological requirements. In other words, certain grammatical functions are tenaciously associated with particular phonological properties. For instance, the genitive **-i* and the dative-locative *-a, which are widely distributed across Tibeto-Burman languages, Altaic languages, and the Chinese dialects and mixed languages of northwestern China, have been so stubbornly inherited and transmitted since remote antiquity down to the present day as to seem utterly baffling. Take the dative-locative "ha" (-a) in the languages of northwestern China (Atshogs 2010): throughout the long course of history, every language has been in a state of constant change—some languages have even perished (such as Khitan and Tangut), while others have continuously emerged (such as the mixed languages of Wutun, Tangwang, and Daohua)—yet the tradition of retaining the vowel -a in the dative-locative marker has remained immutable, persisting invariantly through the ages. It is truly remarkable that such a highly "grammaticalized" element as a grammatical marker should be so resistant to change at its core phonological level.

Even in some later-born languages, though new markers continually fill the dative-locative slot through grammaticalization, they strictly adhere to this requirement. For example, in the northwestern Chinese dialects and mixed languages that have been in contact with Tibeto-Burman or Altaic languages, morphemes from Chinese such as "shang" (上 'up') and "xia" (下 'down') are frequently grammaticalized into the dative-locative position. Yet the requirement that the dative-locative retain *-a is so resolute that the very choice of grammaticalizing "shang" (as in Daohua and Yuan-dynasty Chinese) or "xia" (as in Wutun, Tangwang, Hezhou, and Qinghai Chinese) is itself the logical process of "preserving -a": "shang" is pronounced *ʂɐ* or *haŋ* ('xing' 行 in Yuan-dynasty Chinese), while "xia" is

pronounced *ha* or *χa*; the entire system revolves around the vowel a, manifesting as different variants of a.

As for the imperative marker, Tibetan also possesses an auxiliary verb grammaticalized from the verb "to come" (*shog*), functionally analogous to the "hortative" category of the o-type in Burmese (Wang 2011: 178); Tibetan also has an imperative suffix grammaticalized from the verb "to help" (*-rogs*). Although these markers are products of later grammaticalization, they all contain the vowel *o*. This can hardly be accidental; it is difficult to deny that this reflects the powerful force by which the imperative mood requires **o*. Such a powerful force is precisely the kind of obdurate form that Sapir describes when he speaks of language finding it "easier to exterminate itself than to shatter its own form" (Sapir 1985 [1921]: 185)—namely, "stream."

6. Conclusion and Further Remarks

This paper has examined the thirteen basic features of the Tibeto-Altaic grammatical stream (1) genitive, (2) dative-locative, (3) ablative, (4) nominative, (5) plural markers, (6) modality, (7) markers of judgment and declarative mood, (8) the derivational morphology of verb base form, (9) the final-high prosodic structure of nominals, (10) nominal gender (11) the perfective aspect of verbs, (12) the past tense of verbs, and (13) the imperative and optative moods of verbs, and has proposed reconstructed forms for the common historical sources of the corresponding morphological markers. These grammatical markers span everything from gender, number, and case in nominals to tense, aspect, mood, modality, and derivational morphology in verbs. It is evident that between Tibeto-Burman and Altaic languages there exist numerous strictly corresponding historical sound correspondences at the level of grammatical morphology, attesting to a profound historical relationship.

There remain many morphological sound correspondences of this kind that merit further exploration, such as causative markers (tentatively reconstructed as *-U/K), the nasal consonants of nominalizing markers (tentatively *-N), the correlation between interrogative markers and velar consonants (tentatively *-K), the correlation between negative markers and bilabial nasal consonants (tentatively *-M), demonstrative markers (tentatively ***i(n)* 'proximal', ***te* 'medial', and perhaps **o* 'distal'), and even the imperfective aspect (or non-past tense) of verbs, among many other areas with considerable room for investigation. The study of the TAGS remains a field of vast promise.

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Compounding processes as pathways to complexity in Tibeto-Burman

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Abstract: Tibeto-Burman languages typically present an expansive range of compounding strategies involving combinations of nouns and verbs, a process that has resulted in the emergence of new morphosyntactic categories and considerable complexity in their stems. Once they have grammaticalized, functional morphemes can undergo additional grammaticalization processes resulting in further grammatical complexity, or their constructions may be subject to reanalysis that does not involve structural change but nevertheless creates new categories of grammar. The paper outlines the diachronic processes through which compounding involving lexical nouns and verbs has provided a conduit for the emergence of new functional morphology. The analysis is mostly based on the languages of the northeastern region of India, as they are particularly well represented by the phenomena discussed.

1. Introduction

Compounding provides an important grammaticalization pathway for the development of functional morphology in Tibeto-Burman languages (TB). This chapter reviews the historical processes through which compounding involving lexical nouns and verbs has provided a conduit for recategorization and the emergence of new grammatical categories, greatly contributing to the morphosyntactic complexity of these languages. The analysis is mostly based on selected languages of the northeastern region of India, but additionally draws on the data of related languages from further afield to demonstrate that the

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grammaticalization phenomena discussed are common to the entire family.

Underlying this diachronic process is the theory of grammaticalization (Givón 1979; Lehman 1985; Heine and Reh 1984; Hopper 1991; Traugott and Heine 1991, *inter alia*) which must surely rank as one of the most significant breakthroughs in linguistics over the past sixty years or so, although the history of insights into the topic extends back to the work of Meillet (1912) and well beyond to observations by earlier scholars who recognized grammaticalization as a distinct type of diachronic change.[1]

Grammaticalization is defined as a process involving lexical items, often in constructions. The direction is always from more concrete concepts to more abstract concepts in grammar, and there are identifiable universal pathways for the grammaticalization of morphology (e.g. Givon 1971, 1979; Lehmann 1985; Traugott and Heine 1991; Hopper and Traugott 1993; Bybee et al. 1994; Kuteva et al. 2019). Frequency of use is a driving force for grammaticalization processes, which involve phonological reduction, semantic bleaching, and loss of semantic specificity leading to the wider functional use of a grammaticalized morpheme. Grammaticalized function words become concatenated with related content words in stems, resulting in a coalescent structure and increasing morphological complexity.

The paper proceeds as follows. §2 begins with a discussion of fossilized prefixes representing the remnants of old compounds in Tibeto-Burman languages, with the main focus falling on the Trans-Dikhuic (formerly Aoic) languages of Nagaland. §3 discusses the grammaticalization of diminutives and augmentatives. Nominalization has created an important conduit for the emergence of new morphology encoding tense/mood marking and converb constructions, in addition to encoding the widely attested functions of genitivization, relativization and clausal nominalization, and these diverse functions and their grammaticalization trajectories are investigated in depth in §4. In §5 our attention turns to the grammaticalization of lexical suffixes and their contributions to morphological complexity in verb stems. The paper concludes in §6 with a summary of the findings.

[1] Lehmann (2015: 1-4) attributes the foundations of grammaticalization theory to Étienne Bonnot de Condillac and Horne Took, followed by subsequent theoretical development in the 19th century by August Wilhelm von Schlegel, Wilhelm von Humboldt, Franz Bopp, and Georg von der Gabelentz.

2. Fossilized nominal prefixes

Many Tibeto-Burman languages of northeast India demonstrate the relicts of former compounding processes that have since been phonologically reduced to syllables or fossilized prefixes consisting of a single consonant or vowel. As Beyer (1992: 95) notes, "some Tibetan syllables are in fact compressions of earlier disyllabic collocations", and ample evidence of this process can be found in many other Tibeto-Burman languages. However, rather than compressions of syllables, these remnants represent former nominal roots that can be traced etymologically to dependent elements of older compounds.

There is broad agreement that the diachronic source of a *s-* prefix occurring on terms for animals in TB languages is ***sya** 'flesh, animal' (Benedict 1972: 106–107), whereas the source of the Proto-Tibeto-Burman (PTB) ***m-** prefix has proven to be a bone of contention for comparativists. Shafer (1938) proposed that it should be reconstructed to PTB ***mi(y)** 'man', while other authors reject this analysis and instead suggest that it represents an old pronominal element (see Benedict [1972: 118–119] and Matisoff [2003: 117–118] for opposing views). Regardless of which analysis is correct, both proposals permit the assumption that these erstwhile nominals formed the dependent elements of N_{DEP}-N_{HEAD} compounds, such that Zeme ***mī****.péɪʔ* of Table 1 below, for example, once expressed a meaning approximating to 'person's head' or 'his/her head'. Unlike many of the grammaticalized morphemes to be discussed in the following sections, these phonologically reduced relicts of ancient compounding processes did not develop any additional functions, as only the heads of constructions grammaticalize. Thus, the operation we see here is not one of grammaticalization, but simply compounding, followed by phonological attrition of the dependent morpheme.

Table 1. Examples of fossilized prefixes (bolded) in selected TB languages[2]

Gloss	**Cl. Tibetan (Beyer 1992)**	**Zeme**	**Khonoma Angami**	***PTB (Benedict 1972)**
'head'	**m**.go	**mī**.péɪʔ	**u^{33}**.tsə^{31}	*m-gaw; (s)gaw
'finger'	**m**.dzub-mo	**mī**.pākrâŋ	**u^{33}**.bi^{33}tʃə^{33}nɔ̃^{11}	*(m-)yuŋ
'fish'	ɲa	**hɛ̄**.kà	kʰɔ^{31}	*ŋya
'tiger'	**s**.tag	**hɛ̀**.ràdî	**tɛ^{33}**.kʰu^{51}	*d-key ~ d-kəy

The retention of the dependent formative (in bold face in Table 1) is very inconsistent. Some conservative languages retain the prefixal element with a phonological form closely resembling the historical source of its nominal root, in some it is phonologically eroded and fused with the erstwhile head of the compound, while in other languages the prefixes are lost completely or are replaced by a newer prefixal formative. Within each language, prefix retention or loss is furthermore very inconsistent – in Table 1, cognates of 'fish' in Classical Tibetan and Khonoma Angami have completely lost the 'animal' prefix, yet those of 'tiger' preserve some relict.

The Trans-Dikhuic (formerly Aoic) languages of central Nagaland are strongly characterized by the retention of fossilized nominal prefixes, particularly in kinship and body part terms. Table 2 below presents examples of nouns from five members of this cluster and compares them with reconstructions by Bruhn (2014). In some of these Trans-Dikhuic languages a former prefix has been poached by the nominal root, which then allows a new prefix to occur in the vacated prefixal slot. This process is historically demonstrated by Mongsen Ao ***tə̄-mə̄.****lī* 'finger', and Northern Sangtam ***à-mɑ́.****ʒíŋ* 'tail', both of which have absorbed an older prefix *mV-* into their nominal roots. Wolfenden (1929: 140) notes a direct correspondence with a Tibetan *m-* prefix in cognates such as *mčin-pa* 'tongue' and other body part terms, thus suggesting that the compounding process that created the structural conditions for this prefix to form must have occurred in antiquity.

[2] The Zeme and Khonoma Angami data are taken from the author's unpublished field notes.

Table 2. Examples of fossilized nominal prefixes in the Trans-Dikhuic languages

	N. Sangtam Coupe 2020	**Mongsen Ao Coupe 2007**	**Lotha Coupe 2023a**	**Yimkhiung Coupe 2023a**	**Wui Coupe 2023a**	**PTD[3] Bruhn 2014**
bird	úzā	wàzà	vɔ̄rɔ̄	wóʔnú	ūlîa	---
bone	**à-**ɪ̄ʌ̄	**tə̄-**ɪə̄t	**ɔ̀-**rɪ̄ʔ	rò	**tā-**līt	***a-**rut
blood	**ā-**ʃʌ́	**ā-**jī	**ɛ̀-**tʃɛ̃nʔ	tʰíʔ	tʰāɪʔ	***a-**(h)jəjʔ
nail	**mʌ̀-**zī	**tə̄-mə̄.**zəŋ	lāŋtʲɛ̀p	**mə̀.**zàn	**mā-**lîn	***m-**z/ʒ-a[ː]n
hand	kʰéʔ	**tə́-**kʰə́t	**ɔ̄-**kʰēʔ	kʰà	kʰɛ̄t	*kʰat
navel	**mʌ́-**lē	**tə̄-pʰə̄.**lā	**n̩̄-**lā	**pʰə̀.**lɛ̀	**pʰā.**lélúɪ	***pʰ-**laj
tongue	**mʌ̀-**lè	**tə̄-mə̄.**lī	**ǹ̩-**lì	**mə́.**ló	**mā.**lâ	***m-**lej(ʔ)
tail	**à-mʌ́**ʒíŋ	**tə̄-**mī	**ɛ̄-**ḿ̩íʔ	**á-**mó	**tā-**lāmā	***a-**hmej
water	kì	**ā-**tsə̄	**ɔ̄-**tʃə̄ʔ	cɛ̀	tâi	*ki, **a-**tʃə

An intriguing pattern observed in these languages is that the outermost prefix that occurs on nominals is segmentally identical to a nominalizing prefix on verb stems that is used to derive deverbal adjectives and nouns, yet their respective forms are not cognate across the Trans-Dikhuic languages. For example, Mongsen Ao *tə̄-* occurs in *tə̄-kə̄p* 'skin', *tə̄-jā* 'mother' and also derives *tə̄-mə̄ɹə̄m* 'red', *tə̄-mījīm* 'love' (n.); Northern Sangtam *a-* (with a variable tone) occurs in *ā-kə́p* 'skin', *à-jà* 'mother', and derives *à-mūʔ* 'red', *à-sʌ́xʌ̀m* 'stink' (n.); Lotha *ɔ-/ɛ-* (also with a variable tone) shows a greater deal of variation in the form of the prefix, but the same pattern of correlations is observed across nominals and deverbal derivations, e.g. *ɔ̄-pīŋ* 'mouth', *ɛ̄-lūjʔ* 'woman', and the nominal derivations *ɛ̄-ɲɛ̄kɔ̄ʔ* 'black', *ɛ̄-pɔ̄k* 'birth'. It seems likely that the respective nominal prefixes and the nominalizing prefixes share a diachronic source in each language. Possibly analogy accounts for the shared patterns of functions and distributions in the absence of morpho-phonological correspondences.

A similar nominal compounding process has been applied to many river names of the northeastern border region of India, e.g. Tizü, Dikhu, Dibang, Burhi Dihing, and Disang,

[3] Proto-Trans-Dikhuic replaces "Proto-Central Naga" in the 21st century. See Coupe and Veikho (forthc.) for justification.

among others. These hydronyms are all significant for containing an initial *ti/di* syllable cognate with the word for 'water' in several TB languages of the region, e.g. Chang (Patkaian,[4] Nagaland) *tèɪ* <PTB ***ti(y)**. It stands to reason that these initial syllables were once the dependent elements of nominal compound constructions that underwent eventual fusion with their heads. We may also take note of the fact that PTB ***ti(y)** is reflected in the reflexes for 'water' in other Sal languages, and that speakers of the Patkaian sub-branch of Sal languages were most likely the ones who first named these rivers of the northeastern region. Ergo, river names provide us with insights into the chronology of migrations into this region of the north-east. Wui has most likely borrowed *tâi* from a Sal language in contact, as this form is not attested in any other Trans-Dikhuic language.

3. Grammaticalization of diminutives and augmentatives

Some TB languages of the northeastern borderlands have grammaticalized diminutive suffixes from compounding processes in which the head of the compound is a noun meaning 'child' and the dependent noun is the modifier. The diachronic source of TB diminutives is PTB ***za** 'child' (Benedict 1972: 27). In the initial stages of grammaticalization, diminutive suffixes are restricted to animate entities; once the morpheme is fully bleached of its semantic specificity, its range of application can extend to inanimates of diminutive size as well.

(1) Khiamniungan (Patkaian, Nagaland) < *ts^{h}òʊ* 'child'
tʃáng-ts^{h}òʊ (cow-DIM) 'calf'
tsāp-ts^{h}ōʊ (from *tsīʔ-k^{h}ém-tsāp* rice-scoop-paddle-DIM) 'teaspoon'
ôtsī-ts^{h}òʊ (sun-DIM) 'watch, clock'

(2) Chang (Patkaian, Nagaland) < *ʃǒʊ* 'child'
mású-ʃòʊ (cow-DIM) 'calf'
júŋ-ʃòʊ (river-DIM) 'creek, stream'

[4] 'Patkaian' was recently coined by Kellen Parker van Dam and replaces 'Konyak', which is a language name as well as the former label for the entire cluster. Like 'Trans-Dikhuic', the advantage is that the new linguistic label does not favour any one language within the sub-group, thus making it more acceptable to speakers of other Patkaian languages.

(3) Mongsen Ao (Trans-Dikhuic, Nagaland) < *zā* ‘child’

māsə-zā (cow-DIM) ‘calf’

ā-jūŋ-zā (NRL-river-DIM) ‘creek, stream’

A compounding process has similarly resulted in the grammaticalization of an augmentative suffix in these three languages. Augmentative derivations are formed via compounds using a word meaning ‘mother’ as the head, whose diachronic source is PTB ***n(y)u** ‘mother’ in the Patkaian languages.

Matisoff (1992) comprehensively demonstrates the universality of the ‘mother morph’ as a target for the grammaticalization of augmentatives in Asian languages, and the augmentative suffix is particularly common in the lexicons of the Patkaian languages. It appears in the Khiamniungan community’s autonym, as they believe that they originate from a location with a major spring. In the colonial literature the tribe was referred to as the ‘Kalyo Kengyu’, which was thought to mean ‘people living in stone houses’ (see Hutton [1921: 351] and Furer-Haimendorf [1939]). While the Khiamniungan did once use slate as a roofing material, this exonym results from a long-standing confusion. It is now clear that ‘Kalyo Kengyu’ actually refers to *kūlìo kìŋ-ɲū*, the name of the mountain on the Patkai Range that can be seen from Patsho village (which incidentally is also misrepresented in the literature as ‘Panso’ village).

(4) Khiamniungan (Patkaian, Nagaland) < *ɲù* ‘mother’

lōŋ-ɲū (stone-AUG) ‘boulder’

kəlìo kìŋ-ɲū (Külio mountain-AUG) ‘Külio Mountain’

kʰīam-ɲū-ŋān (water-AUG-source) ‘[people of the] great water source’

lōŋ-ɲù (beating sword-AUG) ‘large beating sword for weaving’

(5) Chang (Patkaian, Nagaland) < *ɲú* ‘mother’

lìt-ɲú (month-AUG) ‘moon’

tʃà-ɲú (sunlight-AUG) ‘sun’

pù-ɲú (wood-AUG) ‘tree’

(6) Mongsen Ao (Trans-Dikhuic, Nagaland) < *tə-jī* ‘RL-mother’

á-ŋáʔ tə-jī ‘huge fish’ (fish + mother)

tsəhŋī tə-jī ‘watch, clock’ (‘sun + mother’)

Whereas the Patkaian languages Khiamniungan and Chang have fully grammaticalized an augmentative suffix from a morpheme meaning ‘mother’, Mongsen Ao appears to be in an initial stage of grammaticalizing an augmentative morpheme from a different reflex, which Bruhn (2014: 183) reconstructs to PTD as ***ja** ‘mother’. That the grammaticalization is nascent is suggested by examples demonstrating that the nominal prefix *tə̄-* is retained in these constructions. Nevertheless, the compounds still convey a meaning that is consistent with an augmentative interpretation of ‘principal, major’, as implied by the textual example of (7). In the context of the narrative, the only meaning that can sensibly understood from the expression *á-ŋáʔ tə̄-jī* is ‘huge fish’.

(7) Mongsen Ao (Trans-Dikhuic, Nagaland)

tə̀-ə̀ɹ	*nūksə̄nsāŋ-pàʔ*	*nə̄*	*ʺu*	*ā-hŋáʔ*	*tə̄-jī*	*lā*
thus-SEQ	PN-M	AGT	EXCLM	NRL-fish	RL-mother	TOP
lə̄ɹā-ə̀ɹ-ùʔ		*ɹə̄ʺ*				
descend+come-PRS-DECL		PTCL				

‘And, Noksensangba [said] “Ah! A huge fish is coming down [the river].”’

(Coupe 2007: 272)

Lastly, it is interesting that the Khiamniungan conceptualize ‘watch, clock (and probably sun dial)’ literally as ‘child of the sun’, whereas for the Ao it is literally ‘mother of the sun’.

4. Nominalization and extensions of function

As noted in the introduction, nominalization is a thoroughly exploited derivational strategy employed by hundreds of TB languages. The polyfunctionality of nominalization in Tibeto-Burman was first brought to the attention of linguists by Matisoff’s seminal 1972 paper, which reported that nominalization, relativization and genitivization in Lahu are encoded via an indistinguishable construction for all three functions. Furthermore, some Lahu nominalizations were reported to constitute unembedded, ‘stand-alone’ constructions whose clauses lacked a finite verb. Since then, numerous papers have fleshed out our

understanding of the range of uses that nominalization serves in Tibeto-Burman (e.g. Noonan 1997; Watters 2002; LaPolla 2003; Doornenbal 2008; Genetti et al. 2008; Watters 2008; LaPolla 2008), and this work has collectively served as a reference for informing subsequent research on the functions of nominalization in other Asian languages (e.g. Yap et al. 2011).

In many TB languages it is possible to identify a cognate morpheme that functions as a nominalizing/relativizing/genitivizing morpheme. This is often a form related to PTB ***pa** 'father', PTB ***mi(y)** 'man' or a nominal with the meaning of 'place'. There are also a good many examples of unrelated morphemes that serve this function, Lahu *ve* being a well-documented example (Matisoff 1972). There is a good reason for this diversity as well, namely parallel grammaticalization or 'drift' (Sapir 1921; LaPolla 1994). The particular lexical targets of grammaticalization can vary from language to language across the Tibeto-Burman family, hence the range of forms that can develop into nominalizing/relativizing/genitivizing morphemes. For example, in Mongsen Ao the formative *ʧʰāŋ* has grammaticalized from the noun *āpāŋʧʰāŋəɹ* 'man' in the speech of younger speakers and is used as an agentive nominalizer and masculine semantic gender marker (Coupe 2007: 268–269).

The historical compounding process that results in such lexical nouns developing into a functional morpheme is essentially the same. LaPolla (2003: 223–227) cogently demonstrates how a nominalizing clitic (one of three), now reduced to the single segment *-m*, originates from the word *mi* 'man' in Qiang. Table 3 below summarizes the three stages of this process.

Table 3. Diachronic development of relativizing/nominalizing morphology in TB languages.

	Structure	**Semantics**	
Stage 1:	[VERB-'man'$_{HEAD}$]$_N$	'the man who VERB'	= 'the VERB-ing man'
Stage 2:	[VERB-NMLZ]	'the ONE who VERB'	= 'the VERB-er'
Stage 3:	[VERB-NMLZ] N$_{HEAD}$	'the N that VERB'	= 'the VERB-ing N

In **Stage 1**, a verb-noun juxtaposition forms a compound noun, with the head slot filled by a word expressing a general semantic meaning, such as "man", "person" or "place", as noted above. The verb is in an attributive modifier relationship to its head, which is initially

very specific in its lexical meaning, and the compound lacks any morphology to mark the syntactic relationship between its two elements.

By **Stage 2**, the erstwhile noun head has lost much of its semantic specificity and expresses a generic meaning like "the one". This allows what was originally a relativization to be used independently as an agentive nominalization that does not require a head, since it fills the function of a NP and can accordingly be case-marked and determined like one.

By **Stage 3**, we get layering, whereby the lexical item originally meaning "man", "person" or "place" is now fully grammaticalized as a derivational morpheme on the verb stem, and an independent noun that is coreferential with the referent of the nominalized/relativized verb stem can occur in apposition.

The nominalizing clitic /-m/ is now fully grammaticalized in Qiang and can be used with non-human referents, as in example (8a). Note how in (8b), *mi* functions as the shared argument of the relative clause formed by the nominalizing clitic and occurs next to its grammaticalized form *-m*.

(8) Qiang (Qiangic, Sichuan)

a. *mutu-la-fie-m* *wə*
sky-LOC-fly-NMLZ bird
'a bird flying in the sky' (LaPolla 2003: 227)

b. [*qa-panə-dele-m*] *mi*
1SG-thing-give-NMLZ person
'the person who gave me something' (LaPolla 2003: 227)

The role of the apposed noun in these nominalized constructions is open to interpretation. It may be considered the shared argument of the nominalization functioning as a relative clause, or it could be interpreted as an independent, apposed NP. A frequently observed pattern is that a prenominal nominalization expresses a restrictive meaning, whereas a postnominal nominalization expresses a non-restrictive meaning. Thus, the linear arrangement of NP constituents serves the same function as the presence or absence of a pause between the head and its relative clause in English.

This model accounts for the grammaticalization of nominalizing suffixes from nouns with generic meanings, but as Noonan (1997) demonstrates, nominalization is an extremely

versatile grammatical tool that can have a number of other functional extensions. One aspect of nominalization that has received insufficient attention in the literature is the reanalysis of grammaticalized nominalizing morphology as tense and mood markers. This is particularly common in the Trans-Dikhuic languages, as Table 4 below demonstrates. There is a strikingly high frequency of syncretism holding between morphemes used for marking various nominalizing derivations on the one hand, and tense/mood markers on the other.

Table 4. Nominalizing suffixes and isomorphic tense/mood suffixes in selected Trans-Dikhuic languages

	NMLZ	**ANMLZ**	**GEN**	**PURP.NMLZ**	**LOC.NMLZ**	**PST**	**PRS**	**IMM.FUT**	**IRR/FUT**
Chungli	-pàʔ	**-ə̀ɹ**	**ə̀ɹ**		-tʃən	-Ø	**-ə̀ɹ**	-tì	-tsə̀
Mongsen	-pàʔ	**-ə̀ɹ**	**-ə̀ɹ**	**-ɹù**	-tʃən	-Ø	**-ə̀ɹ**	**-ɹù**	-ì
Sangtam	**-tʃhō**, **-pà**	**-ɹɪ̄**	**-ɹɪ̄**	**-nūŋ**	-tʃĩ	**-tʃʰō**	**-ɹē**	---	**-nūŋ**
Lotha	**-tʃʰōʔ**, **-v**	-pūʔ	-tʃə̃	-lò	-pʰé	**-tʃʰòʔ**	-làʔ	---	**-v**; -àʔ
Yimkhiung	**-tʃʰóʔ**, **kʰì** -pɯ́, **pàʔ**	-ɹə̀	-ɹə̀	-pɯ́	---	-Ø, **kʰì**	**-tʃʰóʔ**	---	**-pàʔ**

The possibility that the reanalysis of clause-final nominalizing morphology could give rise to tense/mood marking was reported in Coupe (2007: 344–345), where it was proposed that the present tense marker *-ə̀ɹ* of Mongsen Ao had a diachronic source in the isomorphic agentive nominalizer *-ə̀ɹ*. This suspicion was based on the observation that non-embedded nominalizations are widely reported in TB (e.g. Matisoff 1972; Ebert 1997; Rutgers 1998; Watters 2002). The findings of a long-running workshop on nominalization at La Trobe University and the subsequent collection of papers published in a special issue of *Linguistics of the Tibeto-Burman Area* concluded that non-embedded nominalizations were likely to result from the elision of a copula (Coupe 2008: v). Copula elision positions a nominalizer at the end of the clause, potentially placing it in paradigmatic opposition to older tense/mood marking morphology, which facilitates the nominalizer's reanalysis as a marker of tense or

mood (Coupe 2013: 1127–1128).

Evidence of similar nominalizer > tense/mood reanalysis is found in other TB languages. To illustrate, Manange and Chang both use a nominalizer – reflexes of PTB ***pa** 'father' – to encode irrealis mood, in addition to deriving nominalized verb stems. Equational clauses in particular could give rise to the clause-final reanalysis of a nominalizer as a tense/mood morpheme, because copulas in this type of clause may be optional or are not used, e.g. (9a).

(9) Manange (Bodish, Central Nepal)

a. *1khi* *2nʌ-pʌ*
   3SG sick-NMLZ
   'He is sick.' (Hildebrandt 2004: 87)

b. *1khi-4nu-**pʌ***
   3SG-sleep-**NMLZ**
   'He will sleep.' (Hildebrandt 2004: 83)

In Chang, *-pú* is used for genitivization, nominalization and relativization, and a related form additionally encodes irrealis mood. Example (10) demonstrates how the same form marks the nominalized verb stem of a relative clause as well as the genitival relationship holding between a third person possessor and *ŋàm* 'neck' (in combination with what is assumed to be the ergative/instrumental case marker *éɪ*, which always follows a pronoun in genitival constructions). As *-pú* also appears in the disyllabic form of the irrealis marker in (10b), this is another example of nominalizing morphology developing an extended function of clause-final tense/mood marking.

(10) Chang (Patkaian, Nagaland)

a. *púhèk* *mák* *káːk-**púˊ*** *háu-éɪ-**púˊ*** *ŋàm* *à*
   fruit dirt mark-**NMLZ** 3SG-ERG-**NMLZ** neck LOC
   *ják-**púˊ*** *néɪ* *súŋán-àn* *sáːm-àn* *áp-Ø*
   suspend-**NMLZ** cloth take.out-SEQ wipe.off-SEQ clean-PST
   'Taking off the cloth that was around his neck, he wiped clean the dirt that was marking the fruit.' (AC4-20051121_NBC1-006)

b. *nò* *á-ŋáɪ-tì-làpù,* *héɪ-tí-làpù*
2SG.ABS NEG-return-CAUS-IRR die-CAUS-IRR
'[We] will not let you return, [we] will kill you.' (AC4-20051104_NBC1-004)

Of additional interest is the observation that the contextual past tense setting in (10a) is encoded by a zero morpheme. Like the Ao dialects and Yimkhiung, it seems plausible that Chang initially evolved mood oppositions rather than a paradigm of tense marking, otherwise it is difficult to explain why the past tense is encoded by a zero morpheme, which is reported to be cross-linguistically uncommon (Dahl and Vellupai 2013). Conversely, it is common for realis to be the unmarked category of mood.

In addition to grammaticalizing tense/mood marking morphology, nominalizers are the source of some converb suffixes in the TB languages of Nagaland. A converb (a.k.a. gerund, gérondif, absolutive participle, adverbial participle, conjunctive participle) is a type of non-finite verb form commonly used for clause chaining in the languages of Asia. Converb suffixes are also used for encoding types of adverbial presuppositional meanings, such as reason, condition, concession, simultaneity etc., often in fusions involving concatenated nominalizing and case marking morphology (Coupe 2006, 2017). The concatenations of nominalizers, case markers and other morphology always occur in the same linear order as found in relativized noun phrases, logically because this is their diachronic source. It is not surprising, then, that converb clauses are suspiciously similar in structure to postnominal and headless relative clauses. What begins as a nominalized construction with a referential function is reanalyzed – fundamentally though structural ambiguity – as having a predicative function.

The agentive nominalizer is the source of the sequential converb marker in the Ao dialects. In (11a) it forms a nominalization that correlates with Stage 2 of the grammaticalization process discussed above in Table 3 and is structurally a headless relative clause that functions as a NP. Note that this nominalization has an almost identical structure to the initial sequential converb clause of (11b), the only difference being semantic interpretation: in (11a) it has a referential meaning, whereas the initial converb clause of (11b) has a predicative meaning. It is the inherent ambiguity between referential and predicative meanings that can be interpreted from the same structure that facilitates the reanalysis of a nominalization as a converb (Coupe 2017).

Sequential converbs and nominalizations functioning as relative clauses/nominalizations are bolded in the following examples.

(11) Mongsen Ao (Trans-Dikhuic, Nagaland)

a. [***ājīm*** ***kū*** ***lī-ə̀ɹ***]$_{NP}$
village **LOC** **stay-ANMLZ**
'villager' (Literally: 'in-village-staying one') (Coupe 2007: 264)

b. ***kʰə́ntʃʰà*** ***jīmɹūŋ*** ***tənəm*** ***ī*** ***kū*** ***m̩ən-ə̀ɹ,↗***
Khensa **place.name** **hill** **PROX** **LOC** **place-SEQ**
túŋtən *tsə̄* ***tsʰə̄ʔ-ə̀ɹ, ↗*** ***tʃíjūk-ə̀ɹ, ↗*** *zāŋa-jāk-pì.*
log.drum DIST **pull-SEQ** **keep-SEQ** place-RSM-IRR[5]
On this Khensa Yimrong Hill, the log drum would be pulled and left installed.
(author's unpublished field notes)

In (11b) the same morpheme functions as a sequential marker linking three non-finite clauses to a main clause anchored by the finite verb *zāŋa-jāk-pì*, and here the verb stems marked by *ə̀ɹ↗* clearly express predicative meanings. As the agentive nominalizer has also been reanalyzed as a present tense marker, the clause-final rising intonation encoded by ↗ in example (11b) crucially serves to distinguish the non-finite status of a converb clause from a clause-final finite verb marked for present tense.

Near-identical suffixes are used for nominalization and sequential clause linkage in Northern Sangtam and differ only slightly in vowel quality. Both forms are assumed to reconstruct to PTB ***pa** 'father', which was previously noted to be a common target for the grammaticalization of nominalizing morphology in TB languages.

(12) Northern Sangtam (Trans-Dikhuic, Nagaland)

àpì	***nə̄***	***síŋsí***	***ātùŋ***	***tʃʰánʌ́***	***lápʌ̀lūŋ***		***cāɹō-pʌ̀,***
3SG	AGT	fruit	tree	ABL	pick+gather		descend-SEQ
[[àpì	***hùŋ***	***tsì-pà]***		***sʌ̀]***	*nʌ̀*	*àŋáʔ*	*tsʌ́*
3SG	**neck**	**put-NMLZ**		**cloth**	INST	dirt	DIST

[5] Example (11b) represents the Khensa village variety of Mongsen Ao, in which the form of the irrealis suffix is *-pì.*

nì-péʔ-ɹē.
clean-REMOVE-PRS
'He picked and gathered fruit from the tree, descended, and cleaned off the dirt with a cloth around his neck.' (author's unpublished field notes)

Postnominal and headless relative clauses provide the structural conditions for concatenations of nominalizers and case markers to undergo reanalysis as clause-linking morphology. This is facilitated by the dual nature of participles [i.e. nominalizations] combined with the fact that nominals derived from verbs are still open to interpretation as verbs (Harris and Campbell 1995: 310). The grammaticalization pathway is *generic noun/class term > nominalizer > post-nominal/headless relative clause > reanalysis as a converb clause*.

5. Lexical suffixes

A widely observed development in the TB languages of northeast India is that juxtaposed verb roots (V_1V_2) initially expressing independent meanings gradually become more tightly integrated. The V_2 element of the verb compound enters into an asymmetrical relationship with V_1, sharing TAM and other suffixes. This asymmetry hastens the grammaticalization of V_2 as it undergoes a semantic shift from a purely lexical meaning towards a more abstract grammaticalized meaning as a lexical suffix. The lexical suffix slot is arguably the most important conduit for the grammaticalization of new verbal suffixes and has contributed to the agglutinative structure that characterizes the verb stems of many TB languages of northeast India.

The term *lexical suffix* is borrowed from grammatical descriptions of the Salishan languages (e.g. Kincade 1963; Kuipers 1967; Saunders and Davis 1975, *inter alia*) and was first used to describe a similar grammatical category in Mongsen Ao (Coupe 2003, 2007, 2009). The term is particularly apt for depicting a nominal or verbal root that retains its original lexical meaning and function while additionally expressing a related grammaticalized function due to layering, divergence and persistence (e.g. Hopper 1991). One major difference is that the lexical suffixes of TB languages mostly have sources in verbal lexical roots, whereas nominal sources (and particularly body part terms) are much

more common in the Salishan languages. Yet another difference is that it is rare for a Salishan lexical suffix to be related to an independent root, whereas this is a common finding in TB languages. Most lexical suffixes retain their functions as lexical verbs, representing what Hopper (1991) refers to as 'layering'. To date, seventeen lexical suffixes have been identified in Mongsen Ao (Coupe 2007: Ch. 8). Subsequent research has revealed that other Trans-Dikhuic and Southern Patkaian languages demonstrate very similar grammaticalization patterns in their verbal morphology.

Verb structure becomes more complex through the grammaticalization of lexical suffixes from verb roots in series. As the V_2 heads of V_1V_2 sequences lose their lexical independence, their semantic specificity undergoes bleaching (Givón 1979: 265, 316). The outcome is that verb roots expressing lexical content transition to expressing functional categories metaphorically linked to the original meanings of their sources. The process can apply repeatedly, resulting in agglutinative chains of morphological suffixes whose layers represent a chronology of grammaticalization. As new lexical suffixes grammaticalize out of the V_2 position, previously grammaticalized suffixes representing older chronological layers are pushed to the periphery of the verb stem.

Example (13) below demonstrates a complex verb stem consisting of five agglutinated morphemes. The initial morpheme expresses the lexical content, and the following four suffixes respectively express physical contact (from √*tsʰəŋ* 'affix, wear'), resultant state (possibly from √*ʧūk* 'leave, abandon'), causation (originally from √*pīʔ* 'give'), and the final suffix is the sequential converb suffix, whose diachronic source is the agentive nominalizer previously discussed in §4.

(13) Mongsen Ao (Trans-Dikhuic, Nagaland)

ā-ʧā	*táŋ*	*ʧū*	*ʧā-ʧəm*	*ʧū*	*səŋtūŋ*	*à*	*kū*
NRL-rice	just	DIST	rice-packet	DIST	tree	one	LOC
ɹàk-tsʰəŋ-ʧūk-īʔ-əɹ↗		*ā-nū*	*ʧū*	*ʧūk-īʔ-əɹ↗*		*wā-ʧūk.*	
tie-ATTACH-RSM-CAUS-SEQ		NRL-child	DIST	leave-CAUS-SEQ		go-PFV	

'[The father] tied and left a packet of just rice attached to a tree, and leaving the child, he went away.' (author's unpublished field notes)

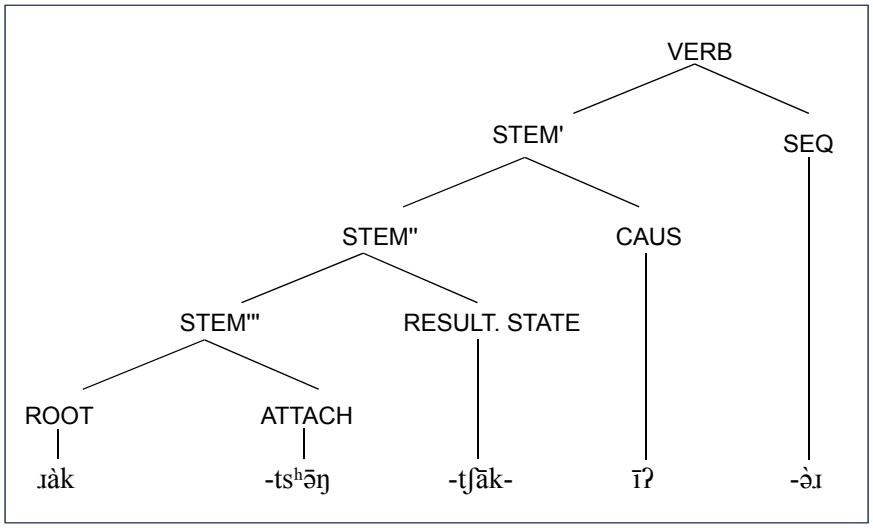


Figure 1. Historical development of lexical suffixes

The schematic model presented in Figure 1 assumes that the causative *-īʔ* was the first lexical suffix to grammaticalize due to its current peripheral position in the stem, and *-tsʰəŋ* is the most recent grammaticalization because it occupies the V_2 slot. The sequential converb *-ə̀ɹ* develops from a separate process and attaches clause-finally.

Khiamniungan is another language with an extensive inventory of lexical suffixes that has grammaticalized via identical compounding processes. In the example of (14a) below, *kèi* functions as the clause's matrix verb and expresses a meaning of 'walk'; in this lexical function it serves as an independent root able to host other dependent morphemes. As noted above, a characteristic of lexical suffixes in TB languages of northeast India is that they often retain a lexical main verb function alongside the grammaticalized function. The grammaticalized ambulative lexical suffix *-kèi* (AMB) of Khiamniungan occurs as a bound morpheme to verbs of (loco)motion such as *tshìng* 'fly by means of wings' in (14b), where it encodes progressive aspect. Synchronically, *-kèi* can also modify various other classes of verb that do not express motion in space – such as *thūoh* 'scold' in (14c); other examples offered by consultants are *ā-nōi-kēi* (NMLZ-sit-AMB) 'be sitting', *ā-hìe-kèi* (NMLZ-eat-AMB) 'be eating', and *līang-kēi-vā-kū̄* (think-AMB-PFV-SIM) 'has/had been thinking'. This suggests that *-kèi* has developed a degree of semantic generalization and abstraction that is a characteristic feature of grammaticalization (Bybee, Perkins and Pagliuca 1994: 6). However, its range of application does not extend to verbs whose Aktionsart does not potentially

encode the protracted duration of an event, as native speakers rejected examples of *-kèi* suffixed to *ìhlò* 'understand' and similar verbs of cognition when this was tested.

(14) Khiamniungan (Patkaian, Nagaland)[6]

a. *jâng-tshòu* *nō* *àp-kǜ* *thùo-kǜ* ***kèi**-yō* *jé.*
cattle-DIM DEF bear-SIM end-SIM **walk**-INCEP COP.PRS
'A calf starts to walk as soon as it is born.' (Patsho Nyu-English Dictionary)

b. *nyā* *kōuh* *khēi* *lē* *nòi-và;* *èi*
2SG.ABS earth inside LOC stay-PFV 1SG.ABS
kōi *lē* *tshìng-**kèi**-và.*
air LOC fly.by.wings-**AMB**-PFV
'You live inside the earth; I fly around in the air' (said the pigeon to the rat).
(AC4-20050127_KIX1_005)

c. *âtsī* *nòng* *jǖ-kī-kǖtāh* *jǖ-mêi*
sun deictic NEG-have-SEQ NEG-be.good
tǖ *shâu* *ōh* *nyǖ-thūoh-**kèi**-shī*
thus who ERG PROH-scold-**AMB**-RESMPT
'Without having the sun rise is not good, so nobody should scold the sun again.'
(AC4-20170109_KIX1_002)

One of the pleasures of working on an undocumented language is that one sometimes encounters unusual pathways of grammaticalization that may not have been reported in the literature. The grammaticalization of a verb meaning 'walk' as a progressive marker is such an example. While constructions involving motion verbs are known targets of grammaticalization that can evolve into tense and aspectual markers (English *gonna* being the much-cited canonical example), the ambulative lexical suffix of Khiamniungan represents something of a rarity, as there is no discussion of a similar grammaticalization trajectory in Kuteva et al. (2019). Bybee, Perkins and Pagliuca (1994: 128) fleetingly

[6] These Khiamniungan examples are rendered in the practical orthography created for the Patsho Nyu-English Bilingual Dictionary (Coupe, forthc).

mention in a table that Tok Pisin expresses a progressive aspectual meaning via 'walk' plus a locative, this being the only language in their typological survey that demonstrates a similar development.

Despite the absence of discussion of *walk* > PROG in the typological literature, a wider investigation suggests that it is not so unusual in this region of South Asia. A related grammaticalization pattern targeting the root *bera* 'roam; wander' is found in Nagamese, the Indo-Aryan lingua franca of Nagaland, and a compounded verb root originally meaning 'roam, wander' can similarly be used with a related progressive aspectual meaning in Assamese.[7] These developments may constitute cases of parallel grammaticalization (LaPolla 1994). Alternatively, they represent the transfer of a cognitive schema from one language to another in the mind of the bilingual speaker that results in verbs of similar lexical content becoming targets of grammaticalization in the replicating language (Coupe 2023b).

The verb root 'kill' (< PTB ***g-sat**) is a common target in the northeastern border region for the grammaticalization of a lexical suffix from the V_2 position of verbs in series. It is assumed that this lexical suffix initially encoded events that result in death, but as the bleaching process progressed, it came to be more broadly used to express extreme physical or psychological discomfort. The Mongsen Ao examples of (15) respectively demonstrate the two interpretations of the meaning of *-sàt* AFFECT as a lexical suffix in these contexts.

(15) Mongsen Ao (Trans-Dikhuic, Nagaland) *tepsàt* 'kill' > *-sàt* lexical suffix

a. *tà* *zā-ə↗* *pā* *ā-tsə* *sə* *kū* *āhɹə̄k-**sàt**-Ø*
thus enter-SEQ 3SG NRL-water ANAPH LOC drown-**AFFECT**-PST
'Thus, entering the water he drowned to death.'

b. *tsəpʰā-**sàt**-əkə* *pā* *nə* *hmāpāŋ* *tə-tsəʔ* *āà*
fear-**AFFECT**-SIM 3SG AGT time NZP-be.short one
mənu-tʃuk-Ø
be.late-PFV-PST
'Being scared to death, she was late for a short time.' (Coupe 2007: 317)

Rather than encoding an event that ends in death or produces discomfort, *-sàt* can

[7] I am grateful to Priyankoo Sarmah for his native speaker insights.

alternatively express a generalized intensification of emotion completely divorced from the original sense of 'kill', suggesting a further bleaching of its original meaning:

(16) Mongsen Ao (Trans-Dikhuic, Nagaland) *tāpsàt* 'kill' > *-sàt* lexical suffix

pī	*tʃʰī-mì-**sàt**-ā*	*áŋ*	*lī-pàʔ*	*ūtà*
PROX	take-DESID-**AFFECT**-SIM	just	be-NMLZ	PTCL

'This is just [the one I've] been wanting!' (Coupe 2007: 318)

This semantic shift reflects cognitive conventions in the speech community: as speakers repeatedly use *-sàt* in emotionally charged contexts, the metaphoric mapping between physical intensity (death, injury) and psychological states (fear, desire) enables abstraction of the morpheme from its concrete meaning.

Meithei is a Tibeto-Burman language of Manipur that has grammaticalized an extensive collection of lexical suffixes. It similarly uses a reflex *-hət* to express grammaticalized meanings ranging from physical or psychological discomfort to intensified perception.

(17) Meithei (Unclassified TB, Manipur) *hát* 'kill' > *-hət* lexical suffix

a.

má-ki	*mə-máy-tu*	*nuŋ-sa-nə*	*ká-**hət**-pə*
3SG-GEN	3SG-face-DEF	sun-hot-INST	roast-**AFFECT**-NMLZ

mal-lə-e
seem-PFV-ASSERT
'His face seems to have been sunburned.'

b.

thə́m-pál-ki	*ləy-nəm-nə*	*mí-pum*	*khudiŋ-mək-pu*
place-flower-GEN	flower-smell-ADV	man-all	each-each-PAT

*sum-**hət**-pə* *nəm-í*
thus-**AFFECT**-NMLZ smell-NHYP
'The smell of lotus charmed everyone.' (Chelliah 1997: 208)

A comparable range of grammaticalized meanings is associated with the AFFECT lexical suffix of Chang. The textual example of (18d) demonstrates that it can be used to express an outcome that does not necessarily end in death. In this respect its semantic scope appears to be widening, in common with its analogues in Mongsen Ao and Meithei.

(18) Chang (Patkaian, Nagaland) >*-ə́t* lexical suffix[8]

a. *pʰə̀n-**ə́t**-tì-pù* (hang-**AFFECT**-CAUS-NMLZ) ‘hang to death’

b. *kìp-**ə́t**-tì-pù* (shoot-**AFFECT**-CAUS-NMLZ) ‘shoot to death’

c. *ŋə̀m-**ə́t**-tì-pù* (beat-**AFFECT**-CAUS-NMLZ) ‘beat to death’

d.	*kʰə́tʃînəɪ*	*kéɪ*	*kʰò*	*tʰúŋtò*	*kʰò*	*kʰù*	*á*
	at.that.time	dog	that	vessel	that	head	LOC
	lòn-ân	*wíntòʊ*	*kàʔ*	*át-**ə́t**-kàɪ*			
	put.on-SEQ	window	ABL	fall-**AFFECT**-DECL			

‘At that time, the dog with its head stuck in the vessel fell from the window.’

(AC4-20051121_NBC1-006)

6. Conclusion

Much of the morphological complexity of the TB languages of northeastern India appears to develop from the grammaticalized heads of noun and verb compounds. This can be a cyclical process that produces concatenated chains of lexical suffixes expressing new grammatical categories in morphologically complex verb stems. Grammaticalized lexical suffixes are metaphorically related to their lexical sources, which may constrain their productivity. Grammaticalized morphemes can undergo additional grammaticalization processes resulting in further grammatical complexity, or they may be subject to the reanalysis of their constructions that does not involve structural change. Reanalysis of nominalizations accounts for the diachronic development of tense/mood marking morphology and converb constructions. Through a non-structuralist lens, these diachronic trajectories underscore that grammar is not an autonomous, pre-given system but an emergent product of recurrent grammatical use (LaPolla 2022). Construction-specific grammaticalization pathways thus account for the diverse morphosyntactic complexity characterizing individual TB languages, where repeated usage embeds these constructions

[8] Chang has no lexical exponent for ‘kill’. The event is expressed via causativized *héɪ* ‘die’ (see 10b), or by preceding the lexical suffix with a verb describing the manner of killing, as in the examples of (18).

into their grammars.

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Abbreviations

ABL	Ablative case
ABS	Absolutive case
ADV	Adverbial
AFFECT	'Affect' lexical suffix
AGT	Agentive case
AMB	Ambulative lexical suffix
ANAPH	Anaphoric demonstrative
ANMLZ	Agentive nominalizer
ASSERT	Assertive
ATTACH	'Attach' lexical suffix
ATTRIB	Attributive
AUG	Augmentative
CAUS	Causative
COP	Copula
DECL	Declarative
DEF	Definite determiner

DESID	Desiderative
DIM	Diminutive
DIST	Distal demonstrative
ERG	Ergative case
EXCLM	Exclamation
GEN	Genitive case
INCEP	Inceptive aspect
INST	Instrumental case
IRR	Irrealis mood
LOC	Locative
M	Masculine semantic gender
NEG	Negative
NHYP	Non-hypothetical
NMLZ	Nominalizer
NRL	Non-relational noun prefix
NZP	Nominalizing prefix
PAT	Patientive case
PFV	Perfective aspect
PN	Personal name
PROH	Prohibitive
PROX	Proximate demonstrative
PRS	Present tense
PST	Past tense
PTCL	Illocutionary force particle
REMOVE	‘Remove’ lexical suffix
RL	Relational noun prefix
RSM	Resultant state marker
RSMPT	Resumptive aspect
SG	Singular number
SIM	Simultaneous converb suffix
SEQ	Sequential converb suffix
TOP	Topic

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Flat syntax: a simple syntactic annotation —and its theoretical implications

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Abstract: Descriptive linguistics as well as theoretical approaches such as typology have converged on a general scheme for morphological annotation of sentences. Morphological annotation has recently been codified in the Leipzig Glossing Rules. Morphological annotation is essentially concatenative in segmenting the target language. Although nonconcatenative morphological processes exist, morphological annotation has proved effective and is widely accepted. Syntactic annotation is more challenging. There are many different theories of the representation of syntactic structure, leading to conflicting annotations. Even the simplest annotations used in computational linguistics, such as phrase structure grammars or dependency grammars like Universal Dependencies, are more complex to represent, visualize and annotate than the linear concatenative morphological annotation familiar to linguists. We propose here an even simpler syntactic annotation. Like morphological annotation, it is linear and concatenative, adding only clause (#) and phrase (+) boundaries to the implicit word and sentence boundaries in morphological annotation (space and period respectively). The syntactic units are essentially the same as construction elements (CEs) in computational constructions. Two other annotations are added, for multiword expressions (^) and for "interrupting" syntactic units ({ }, analogous to < > for infixation). The annotation is nonrecursive, that is, no embedding is annotated. There are exactly four "levels" of syntactic structure above the morpheme: word, phrase, clause and sentence. A labeling scheme for CEs, similar to that of Universal Dependencies, is proposed; but the essential annotation is the set of boundary markers for CEs of the target language. In fact, this nonrecursive four-"level" practical annotation scheme appears to have empirical and theoretical reality. Morphosyntax that specifically encodes embedding is not found in languages.

What is represented as syntactic embedding should be represented only as asymmetric semantic relations between the denotations of CEs. Multiple "levels of embedding" (i.e., interruptions within interruptions) very rarely occur, particularly in spoken language. Word order patterns and specialized constructions "conspire" to minimize interruptions of CEs. Finally, grammaticalization processes "lower the level" of CEs so that they no longer interrupt CEs of the same "level" in a sentence.

1. Introduction

The ideas to be presented below began as an attempt to solve a practical problem in annotating sentences for descriptive and computational purposes. Practical tools such as sentence annotation schemes necessarily trade off theoretical complexity and/or empirical exceptions for simplicity and ease of use. This was the intention for developing the scheme presented here. In developing this syntactic annotation scheme, though, I concluded that the "flat" syntactic structure of this practical scheme might actually be the only syntactic structure that is theoretically necessary or desirable. This is the story to be told here.

1.1. Morphological annotation in descriptive linguistics

In descriptive linguistics, it is standard practice to provide a morphological annotation of a text corpus of the language being described (the object or source language). At a minimum, a morphological segmentation of the object language sentence or intonation unit[1] consists of: an interlinear gloss with translation of each morpheme into a metalanguage (here, English), either a metalanguage word or a set of abbreviations for technical labels of morpheme categories (e.g. SG for 'singular', PRS for 'present'); and a translation of the entire sentence/utterance into the metalanguage.[2] An increasingly accepted morphological

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[1] Or other unit of spoken language. Many published text collections, even of transcribed spoken language until recently, use "sentence" units, that is, do not fully specify intonational or other properties that segment the stream of spoken language, and use sentence-like punctuation. For purposes of explication, we will assume a "sentence-like" transcription and use only period/full stop.

[2] There may be additional lines for distinguishing orthographic, phonetic, phonological, and morphophonological structure of the utterance. We leave these aside here.

annotation scheme is the Leipzig Glossing Rules.[3] Since we are focusing on the morphological annotation of the source language, we will present just the rules for that line only.

For concatenative morphemes, two segmentation (morpheme boundary) markers are used: hyphen for affixes/compounds and equals sign for clitics (Rule 2). Example (1) is from Lezgian (Haspelmath 1993:207) and example (2) is from West Greenlandic (Fortescue 1984:127):

(1) Gila abur-u-n ferma hamišaluğ güğüna amuq'-da-č.
now they-OBL-GEN farm forever behind stay-FUT-NEG
'Now their farm will not stay behind forever.'

(2) palasi=lu niuirtur=lu
priest=and shopkeeper=and
'both the priest and the shopkeeper'

Infixes interrupt another morpheme, and hence are not concatenative. They require a different annotation, specifically an annotation with a beginning symbol and an end symbol: open and closed angle bracket respectively (Rule 9). Example (3) is from Tagalog (from the Leipzig Glossing Rules, no source given):

(3) b<um>ili
<ACTFOC>buy
'buy'

The beginning and end symbol indicate both the boundary of the infix, and the fact that the morpheme interrupted by the infix is itself a single morpheme, not two morphemes.

Another nonconcatenative morpheme that is represented in the morphological annotation of the Leipzig Glossing Rules is reduplication: the reduplicated part of the morpheme is separated from the base morpheme by a tilde (Rule 10). Example (4) is from Tagalog (from the Leipzig Glossing Rules, no source given):

(4) bi~bili
IPFV~buy
'is buying'

[3] http://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf, accessed 12 April 2025.

Of course, this isn't the end of morphological annotation: the mapping of morphological form to meaning is complex. However, this complexity is represented in the Leipzig Glossing Rules by the annotation on the interlinear gloss line. We are interested only in the annotation of morphological form, so we will leave that aside as well.

From the perspective of the segmentation of sentence form, there are two additional annotations of sentence segmentation that are implicit in the Leipzig Glossing Rules, but should be included in any description of its annotation scheme. Words, that is, morphologically free forms, are separated by spaces. (We ignore the very tricky issues in developing a cross-linguistically valid definition of 'word'; see inter alia Dixon and Aikhenvald 2003; Haspelmath 2011; Zingler 2020.) Finally, the sentence and/or utterance is separated from neighboring sentences/utterances in the text by period (full stop), or other punctuation used in writing (e.g. question mark, exclamation point) and in the transcription of spoken language (e.g. comma vs. period for nonfalling and falling intonation units).

In sum, there are boundary markers for segmentation of four types of concatenated morphological units—affixes (hyphen), clitics (equals sign), words (space) and sentences/intonation units (period and sometimes other markers). In addition, there are two types of boundary markers for two types of nonconcatenative units—infixes, which interrupt other units (open and close angle brackets) and reduplication (tilde).

This annotation scheme for language description does not indicate any syntactic structure, apart from the levels of the word and the sentence. It is possible to add part-of-speech labels to glossed text, e.g. in the Summer Institute of Linguistics fieldwork software; the part-of-speech labels are entered into the lexical entry for the word in the associated dictionary, and can be added automatically as a separate line in the glossed text. We will return to the issue of labels of syntactic units in §3.

1.2. Syntactic annotation in computational linguistics

There are a couple of reasons why descriptive linguists do not typically annotate syntactic structure in corpora, at least not beyond part-of-speech labeling. It is an added burden on top of the very laborious task of transcribing audio recordings, making translations, and constructing interlinear glossed text. Syntactic structure, at least those based on formal syntactic theories, are quite complex. Worse, there is no consensus on what syntactic theory to use—in practical terms, what syntactic annotation to add to a text corpus—and whether

the theory on which the syntactic annotation is based will quickly disappear and therefore the effort devoted to annotation will have been wasted.

In contrast, although morphological theories have changed over time, and there are competing theories, the basically concatenative morphological model used in interlinear glossing is still widely understood and accepted, although there are problematic issues about defining words and clitics, and about the appropriate representation of nonconcatenative morphology. For the latter, annotation schemes like the Leipzig Glossing Rules provide workarounds for some problematic cases for the simple morphological representation assumed by the annotation scheme.

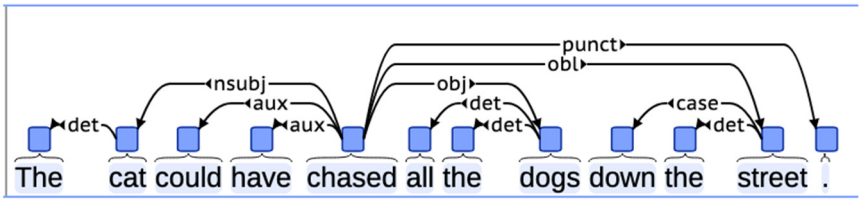
In computational linguistics, annotation of syntactic structure is more common. A basic paradigm is to use a relatively simple syntactic annotation to annotate a corpus, and then use machine learning techniques to learn the annotation and apply it automatically to a much larger corpus; this is a type of supervised learning. Recently, there has been interest in developing a syntactic annotation scheme that is applicable across languages, not tailored to a specific language.

Computational linguists focus on practicality in annotation schemes. They are willing to exploit any additional information provided by a syntactic or semantic annotation scheme for natural language processing purposes; it does not have to conform to the latest syntactic theory, formal or otherwise. A first place to look for a practical syntactic annotation scheme, then, would be an existing, widely used cross-linguistic scheme, that is, the Universal Dependencies project.

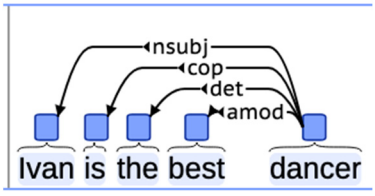
Universal Dependencies (UD; Nivre et al. 2016, 2020; de Marneffe et al. 2021), as the name implies, uses dependencies rather than the constituent structure (phrase structure) familiar to noncomputational linguists, at least in the Anglophone world, from their introductory syntax classes. Dependencies are syntactic relations between two words, one of which is the head and the other a dependent, i.e. an asymmetric or directed relation between the two words. UD labels the relations with a small set of relations developed and refined over the years. These relations are mostly familiar to linguists, though they retain a tinge of Lexical-Functional Grammar relations—LFG uses a combination of constituency and dependency to represent syntactic structure.[4] Examples (5a-c) illustrate UD dependency trees:

[4] https://universaldependencies.org/u/overview/syntax.html, accessed 13 April 2025.

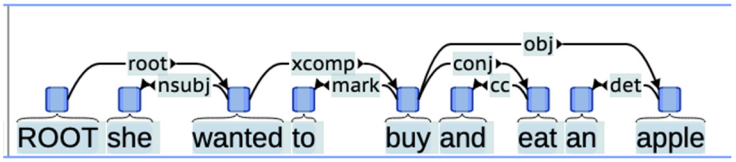
(5) a.



b.



c.

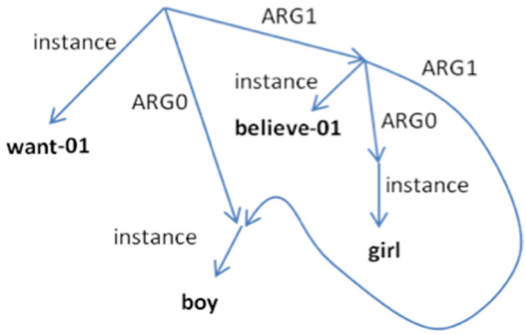


In addition to this structure, UD also employs a very small set of parts-of-speech labels attached to words, and adds a larger set of morphological features similar to those used in the UniMorph project; both the parts-of-speech labels and morphological features are attached to words in the dependency structure.

UD represents a general shift in computational linguistics to dependency relations from the constituent structures familiar to many descriptive linguists thanks to American structuralism and generative grammar. The same shift to dependencies underlies a cross-linguistic semantic annotation project, Uniform Meaning Representation (UMR), which is an extension of Abstract Meaning Representation (AMR; van Gysel et al. 2021), which was developed specifically for English. UMR is partly independent of syntax, though the annotations are linked to individual words. UMR uses a graph structure, like UD, but is not restricted to dependency trees like UD is. Example (6) is an example of an AMR dependency graph:[5]

[5] https://github.com/amrisi/amr-guidelines/blob/master/amr.md, accessed 17 April 2025.

(6) The boy wants to believe the girl.



UD and AMR/UMR representations can also be represented in a text-based notation. UD uses the CoNLL-U convention, a tabular format illustrated in (7):[6]

(7) They buy and sell books.

1	They	they	PRON	PRP	Case=Nom|Number=Plur	2	nsubj
2	buy	buy	VERB	VBP	Number=Plur|Person=3|Tense=Pres	0	root
3	and	and	CCONJ	CC	_	4	cc
4	sell	sell	VERB	VBP	Number=Plur|Person=3|Tense=Pres	2	conj
5	books	book	NOUN	NNS	Number=Plur	2	obj
6	.	.	PUNCT	.	_	2	punct

The rows in (7) represent each word. The columns in (7) represent the order (sequence) of words; the word; the lemma for the word; the UD part-of-speech tag; a language-specific part-of-speech tag; the UD morphological features (a list separated by |, with _ for an empty list); the word that is the parent in the dependency tree; and the UD dependency relation. (UD allows for language- or corpus-specific part-of-speech tags, and also additional parents in an enhanced dependency tree, not shown here.)

AMR's (and UMR's) graph structure is often represented in Penman notation, a text-based notation, illustrated in (8):[7]

[6] https://universaldependencies.org/format.html, accessed 17 April 2025.
[7] https://penman.readthedocs.io/en/latest/notation.html, accessed 13 April 2025.

(8) He drives carefully.

```
(d / drive-01
   :ARG0 (h / he)
   :manner (c / care-04
              :polarity -))
```

The explanation of this notation is provided below (recall that this notation is being used for semantics, hence the representation of concepts, attributes [features] and constants):

(9)

```
;    ┌──────────────────────────── Variable (this one is the graph's top)
;    │     ┌─────────────────────── Instance relation
;    ┴ ────┴─────
    (d / drive-01
;     ┬ ──┬─────
;     │   └─────────────────────── Concept (node label)
;     └─────────────────────────── Indicates the node's concept
;           ┌─────────────────────── Edge relation
;     ──────┴────────
      :ARG0 (h / he)
;     ──┬──
;       └─────────────────────────── Role (edge label)
      :manner (c / care-04
;                    ┌──────────── Attribute relation
;                ────┴─────
                 :polarity -))
;                        ┬
;                        └──── Atom (or "constant")
```

UD (and AMR) are widely used in computational linguistics. They are rich enough representations to capture much of the syntactic (or semantic) structure that linguists as well as computer scientists are interested in. However, from the point of view of expanding syntactic annotation to descriptive linguistics, they appear to be still too complex for widespread use, especially given the resource constraints on field linguists (not to mention community members) for the vast majority of languages of the world.

The dependency structure representation, while quite powerful, is rather complex to represent. Its most readable representation is graphical, as in (5) and (6). One can use a text-based representation of a word-based dependency structure, such as the CoNLL-U format in (7) that underlies UD dependency trees or the Penman representation in (8) that underlies

AMR/UMR graphs. But these text-based representations require additional "behind the scenes" notation to construct the tree or graph from a linear text-based notation. Entering annotations for a graph structure on a computer requires specialized software, and a fair amount of effort even with a good user interface. My experience working with field linguists on development of the software tool for UMR suggests that annotation with a good user interface is still quite effortful. This is partly because of linguists' unfamiliarity with the notation in either graphical or text form, and partly due to challenges in entering data structured as a dependency tree or graph. Even for text-based representations of phrase structure with square brackets, as found in the generative literature, a representation like [*A* [[*very large*] *tree*]] *fell* [*on* [*my* [*house*]]] is rather difficult to parse or even enter without errors.

Another major issue for syntactic (or semantic) annotation comes from the nature of syntactic (and semantic) representations used in both linguistics and computational linguistics: the structures are recursive. That means that the structures may be of indefinite depth—a relative clause inside an adverbial clause inside a main clause, for example—and also that a particular syntactic type, in this case a clause, must be annotated at multiple levels. The recursive nature of these representations of syntax (and semantics) poses significant challenges for developing a simple data format that will be readable and recoverable in the distant future.

A linguistic data format that is simple and lasting is the Cross-Linguistic Data Format (CLDF) project.[8] CLDF aims to represent linguistic data in a plain text format that is valid across platforms. It uses a comma-separated value (CSV) format to create tabular data, that is, a text file where each row represents cells in a table separated by commas,[9] and a carriage return separates successive rows in the table. The type of each row and each column are also specified in the text file, using full word (not abbreviated) labels. Many rows provide metadata for the examples, or the text. Here we focus only on the rows that give the analysis,

[8] https://cldf.clld.org, accessed 27 May 2025.

[9] Tabs may also be used instead of commas; see https://github.com/cldf/cldf, accessed 13 April 2025. Note that tabs basically substitute for space used to separate words in interlinear glossed texts, in order to align the gloss with the source language words. Note also that UD's CoNLL-U text representation is a tabular csv format.

gloss and translation of a text, as typically found in published descriptive data.

The CLDF format for glossed examples, also used for glossed texts, represents a typical morphological annotation of a sentence. The first row is a description of what is in each column: "Primary Text", "Analyzed Word" [morphological segmentation], "Gloss" [interlinear gloss] and "Translated Text". The following rows are lines of the text (sentences, in the case of written text), giving the sentence in the primary text; analyzed words (in the sentence); the gloss; and the free translation. The Analyzed Word and Gloss values separate words and their glosses by spaces. Users may follow the Leipzig Glossing Rules for the Analyzed Word and Gloss rows.

The CLDF format for (1), repeated as (10), is close to the text format typically displayed in publications, albeit with comma-separated values representing each version of the text line, and not formatted to align words and their glosses:

(10)

a. *Typical published text format*

Gila	abur-u-n	ferma	hamišaluǧ	güǧüna	amuq'-da-č.
now	they-OBL-GEN	farm	forever	behind	stay-FUT-NEG

'Now their farm will not stay behind forever.'

b. *CLDF format (not including the Primary Text column) - one row, comma-separated values*

```
Gila abur-u-n     ferma hamišaluǧ  güǧüna  amuq'-da-č,
now  they-OBL-GEN farm  forever    behind  stay-FUT-NEG,
Now their farm will not stay behind forever.<CarriageReturn>
```

Is it possible to devise a syntactic annotation scheme that is simpler than a recursive graph structure (or phrase structure) representation, and could be easily added to a morphologically glossed text in CLDF format? And is such an annotation worthwhile for descriptive linguists as well as computational linguists? I argue here that the answer to both questions is "Yes".

2. Flat syntax: a very simple syntactic annotation scheme

Ideally, a simple syntactic annotation scheme would use syntactic concepts that are widely accepted; use a notation that is familiar to descriptive linguists; is relatively easy to enter on a digital keyboard; and is in a data format that is simple, transferable to new software platforms and programs, and lasting, such as the tabular csv format used in CLDF. The scheme proposed here satisfies these conditions to a great degree.

2.1. The only syntactic levels/types of units/constructions between sentence and word are clause and phrase

Interlinear glossed texts have two syntactic units or "levels", in the sense of a "higher" level construction including constructions at a "lower" level, namely sentences and words: a sentence is made up of words. Different syntactic theories propose a range of units between words and sentences. The only two that are very widely agreed on are **clauses** and **phrases**.

By 'phrases', I mean the prototypical referring phrases that are classified as subject, object and oblique, or other classifications, and usually have a head which denotes a referent, and possibly also modifiers. However, other multiword units that serve as elements of clauses are included as 'phrases'. The important point is that phrases are (sometimes multiword) units that serve as elements of clauses.

Clauses prototypically involve a predicate and a set of referring phrases (arguments in the broad sense). Clauses also contain other units, such as tense-aspect-mood-polarity "auxiliaries" and "adverbs". In *Morphosyntax* (Croft 2022), I argue that most non-argument units can be analyzed as parts of complex predicates; but that complex predicates often do not constitute a formal (syntactic) grouping of words into a contiguous phrase-like unit. Thanks to optionality, null anaphora/null instantiation, and ellipsis, not all of these elements of clauses may be present.

Sentences may also include units other than clauses, most notably a heterogeneous category of units that Heine (2023) calls 'interactives'. Heine lists the following subtypes of interactives (drawn from Heine 2023:49-50, Table 1.6):

(11) a. Attention signals: *look, hey,* etc.
b. Directives: *hang on, wait!* etc.

c. Discourse markers: *anyway, I mean,* etc.
d. Evaluatives: *good gracious, oh no!* etc.
e. Ideophones: *bang!, boing* etc.
f. Interjections: *oops, ouch* etc.
g. Response elicitors: *right? huh?* etc.
h. Response signals: *alright, certainly not* etc.
i. Social formulae: *hello, goodbye* etc.
j. Vocatives: *dad, honey* etc.

Some of Heine's interactives stand alone as utterances, while others may be parts of sentences.

In other words, sentences consist of clauses and other elements, which are often words but may be phrases (e.g. *certainly not*). Clauses consist of phrases and other elements, which are usually words, or other types of phrases (e.g. *right now*). Phrases are made up of words. For this reason, we have to broaden the description of what sentences, clauses and phrases are made up of. We will describe sentences, clauses and phrases as **constructions**, as in construction grammar and the digital constructicon projects (Lyngfelt et al. 2018). These are actually construction "supertypes", in that there are many different types of sentence, clause and phrase constructions. The digital constructicons describe the parts of constructions as **construction elements**, or **CEs** (following FrameNet, which describes parts of semantic frames as Frame Elements or FEs). We will also call the parts of sentences, clauses and phrases 'construction elements'/CEs.

When we say that clauses and phrases (and sentences) are the only widely accepted syntactic units, this is not to deny the existence of controversial or debatable specific cases. Many clausal constructions grammaticalize from two clauses that become gradually more closely integrated, with the predicates of the two clauses eventually forming a complex predicate and then possibly fusing together as a verb plus affix. The line between two clauses and a single clause with a complex predicate is sometimes not clear, or at best a subtle judgment. Likewise, a phrasal construction may have grammaticalized from a headless modifier phrase and a headed referring phrase in apposition that come to form a single unit. Again, the distinction between two phrases in apposition vs. a single phrase with a modifier and a head is sometimes unclear. Finally, the separation of discourse into "sentence"

constructions is also a controversial choice, although in written language, groupings of clauses into sentences is usually accepted based on punctuation practices.

We make a significant simplification: we do not posit attributive phrases, made up of modifiers and admodifiers (modifiers of modifiers), such as *very tall* or *almost fifty,* as another level of syntactic unit or construction "below" (referring or "adverbial") phrases. These elements are represented as elements of the phrases they belong to, such as *very tall tree* or *almost fifty workers*. This is a practical simplification. Admodifiers are generally rare in discourse, and the creation of an additional "level" of syntactic construction adds complexity that would rarely be used in annotation. We may use another means to annotate admodification; see §3.1.

2.2. In addition to morpheme boundary markers, there are construction boundary markers (+ and #)

Interlinear glosses annotate affixes and clitics by the boundary markers hyphen and equals sign. These boundary markers separate words into morphemes. We also use boundary marker symbols to separate sentences into clauses, clauses into phrases, and phrases into words. More precisely, we use this notation to separate **sentence CEs** (often clauses), **clause CEs** (often phrases), and **phrase CEs** (words). Specifically, we use the hash symbol (#) to separate sentences into clauses and other sentence CEs, the plus symbol (+) to separate clauses into phrases and other clause CEs, and space to separate phrases into words (phrase CEs).

We are basically taking the type of notation already familiar to descriptive linguists in morphological annotation, and expanding it for syntactic annotation. One can think of it as "sentence segmentation". As noted in §1.1, space is already used to separate words in interlinear glossed texts, and period/full stop to separate (written) sentences as a whole. The only additions we are making here is to add + to separate phrases (or more precisely, clause CEs) and # to separate clauses (or sentence CEs).[10]

An example of the syntactic boundary annotation for English, without interlinear glosses, is given in (12):

(12) *The two brothers + might + lose + the game # and + exit + the competition*.

[10] In §2.4-2.5 we will introduce two other notations for syntactic units.

An example of the syntactic boundary annotation added to glossed text with tabs (used for space in interlinear glossing; see footnote 9), is given from Crow (Graczyk 2007:232):

(13) éehk huchalahúua shoopaá-t + kuss-chisshíi-wa-hche-k #
those directions four-DET GOAL-go_back-1A-CAUS-DECL

awé shíishiahe shoopa-t + kúh + koolá-k .
season different four-DET also be_there-DECL

'I made them go back to those four directions; the four different seasons are there as well.'

In the CLDF example/glossed text format, a line or sentence is a single value, and words in the line/sentence and their corresponding glosses are separated by spaces. In order to preserve the CLDF formatting, we combine the phrase and clause boundary markers with an analyzed word. Following English left-to-right orthography, where the sentence boundary marker period is appended to the last word of the sentence, in examples (12) and (13), and in following examples, phrase (+), clause (#) and sentence (.) boundary markers are appended to the last word of the syntactic unit. In the examples in this article, a space is put between the word and the syntactic boundary marker, but this is only for readability.

2.3. There is no recursion/embedding; there are exactly three levels above the word (phrase, clause, sentence)

Perhaps the most distinctive part of this syntactic annotation scheme is the absence of recursion or embedding. Specifically, this means that a construction of a particular type—clause or phrase, in particular—cannot have another construction of the same type as a CE. In other words, all clauses are at the same "level", and so are all phrases.

For example, coordination and adverbial subordination are annotated simply as two juxtaposed clauses:

(14) a. *after + I + ate # I + left*
b. *I + ate # and + I + left*

Also, a genitive referring phrase and its associated head referring phrase, coordinated

referring phrases, and appositive referring phrases are annotated simply as two juxtaposed phrases:

(15) a. *the dog's + toy*
b. *the books + and the CDs*
c. the mayor + Tim Keller

In other words, # and + boundary markers simply distinguish one clause from the next, and one phrase from the next respectively. They do not indicate any specific relation between the neighboring clauses or phrases.

It is also the case that relative clauses, which as modifiers in phrases are usually represented as a clause embedded under a phrase, are annotated here as a clause next to a phrase:

(16) *Bilbo + found + the ring # that + Gollum + had + lost*

The important practical consequence of representing clauses and phrases as constructions but not representing their relations to other clause and phrase constructions in the sentence is that there are only three "levels" of representation of syntactic constructions:

(i) sentences, consisting of their CEs, which can be clauses, phrases, or words
(ii) clauses, consisting of their CEs, which can be phrases or words
(iii) phrases, consisting of their CEs, which are words

In §3.1, we will show a way to provide additional syntactic information on these three "levels". However, in §4 we will also argue that there are empirical reasons that suggest that recursion, represented by indefinite embedding of syntactic structures, may be unnecessary in representing syntactic structure.

2.4. So-called center embedding—constructions interrupted by other constructions—is represented like infixes (with { })

The annotation guideline in §2.2-2.3 only works if the clauses and phrases marked off by # and + are distinct spans of the text being annotated. This is not always the case, of course. In particular, relative clauses may interrupt the matrix clause that contains them. In

some cases, phrasal modifiers may interrupt the head referring phrase that contains them. These are generally analyzed as examples of "center embedding" in phrase structure syntax. In other cases, some phrases are analyzed as "discontinuous", that is, they are interrupted by other units that do not belong to the "discontinuous" phrase.

It is likely that many if not all "discontinuous" phrases are better analyzed as distinct phrase constructions, rather than parts of a single phrase. For example, in many cases that have been analyzed functionally, the two "discontinuous" parts have different discourse functions (Croft 2022:159-64 and references therein). In these cases, it is better to analyze and annotate the two parts as two distinct phrases, as in the annotation of the Polish example in (17) (Siewierska 1984:60, cf. Croft 2001:187):

(17)	Nie!	Piękny +	mają +	ogród.	Dom +	mają+	kiepski.	
	no!	beautiful	have	garden	house	have	crummy	
	'No! They have a beautiful garden. Their house is crummy.'							

In other cases, however, there is no reason to propose a split analysis and independent annotation of parts of an interrupted construction. Thus, we must have a way to accommodate the interruption of one construction by another construction in our otherwise concatenative syntactic annotation scheme.

Our proposal is to annotate examples of phrases and clauses interrupting other phrases and clauses in the same way that infixes are annotated. We propose using curly braces { } to show that the enclosed phrase or clause interrupts the phrase or clause that surrounds it, just as < > are used to show that the enclosed morpheme interrupts the root or other morpheme that surrounds it.

English examples of "syntactic infixes" are given in (18)-(19):

(18) *The tree {that + fell + on {my} house} had + died + last winter.*

(19) *The {over the hill} gang + met + at the tavern.*

In (18), the relative clause interrupts the main clause, and the pronominal genitive phrase interrupts the adpositional referring phrase (cf. *on {the neighbor's} house*). In (19), the preposed somewhat idiomatic adpositional referring phrase interrupts the referring

phrase serving as subject of the main clause.

Example (20), from Serbian-Croatian, is an instance of a "second position" marker placed after the first word, rather than the first phrase (Comrie 1989:22; cf. Croft 2001:224):

(20)	*taj*	*{mi}*	*pesnik* +	*čita* +	*knjigu* +	*danas*.
	that	to.me	poet	reads	book	today

'The poet reads the book to me today.'

In the CLDF example/glossed text format, the boundary markers for an interrupting phrase or clause must be combined with a word entry. The opening { is combined with the first word of the interrupting phrase/clause, and the closing } is combined with the last word of the interrupting phrase/clause. This is basically the same way as parenthetical phrases are annotated in English orthography.

In morphological parsing, the gloss line pulls out the infix's gloss and puts it either before or after the morpheme that the infix interrupts in the source language (see example (3) above). For practical reasons, however, we will leave the word order of the interrupting and interrupted clauses in the gloss as they are in the analyzed text line.

2.5. Multiword expressions ("words with spaces") are annotated distinctively (with ^)

Some expressions that are at least orthographically separate words function syntactically and semantically like a single word. For example, English *on top of* is often analyzed as a "complex preposition", and the combination *by and large* has a single meaning. These are called multiword expressions (MWEs) in computational linguistics. They are quite frequent, especially in languages like English and Chinese where much computational linguistic work is done.

Multiword expressions also pose issues in interlinear glossing, although there is no conventional annotation of them in the Leipzig Glossing Rules. I have seen a single word gloss align with a string of words in a source language, in order to indicate that the string of words is a multiword expression with a single meaning. However, such a solution makes it look as if the following words in the source language simply do not have a translation, rather than combining with the first word to express the meaning in the gloss.

It would be clearer to introduce an annotation in the source language annotation line

that clearly indicates that a string of words in the source language corresponds to a single gloss in the gloss line. We propose using ^ to join words in a multiword expression, as in (21):

(21) *We + put + the lamp + on^top^of the filing cabinet.*

This proposal only applies to fixed, contiguous multiword expressions. There are also many semantically idiosyncratic expressions that are more flexible, such as English *break up* (*She broke it up*) and *pull strings* (*Strings were pulled to get the job for him;* cf. Nunberg, Sag and Wasow 1994). Nunberg et al. call these 'idiomatically combining expressions', and argue that these combinations are semantically analyzable; it is just that the meanings of the parts are idiosyncratically specific to just these collocations of words. Idiomatically combining expressions are annotated like ordinary syntactic combinations (*She + broke + it + up; Strings + were + pulled # to + get + the job + for him*). However, their semantic idiosyncrasy would have to somehow be represented in the gloss line.[11]

Finally, there are discontinuous combinations that together express a meaning, such as the standard written French negative construction *ne VERB pas*. This construction should be annotated in the same way as bipartite morphological elements. Leipzig Glossing Rule 8 gives two options: repeat the same gloss (in this case, NEG) for the two elements, or use a special gloss for one of the elements to indicate that it accompanies the first element.

2.6. Summary of annotation scheme

The complete annotation scheme for morphosyntactic analysis in the annotated source text line, including the morphological annotations from the Leipzig Glossing Rules, is given below:

Boundary markers - morphological

-	affix boundary
=	clitic boundary
< >	infix boundaries
~	reduplicated syllable(s) boundary

[11] In the CLDF data format, multiword expressions would be entered as single words, that is, as parts joined by ^ without space; the words in the multiword expression will not be separated by commas or tabs in the csv format, and would have a single element in the Gloss line corresponding to the translation of the multiword expression.

Boundary markers - syntactic

space	boundary between phrasal CEs/words, including admodifiers
+	boundary between clausal CEs
#	boundary between sentential CEs
.	sentence boundary (or one can use intonation unit boundary markers)
{ }	interrupting ("center-embedded") unit boundaries
^	fixed contiguous multi-word expression

This scheme satisfies the conditions listed at the beginning of §2. It uses syntactic concepts that are widely accepted, namely sentence, clause, phrase and multiword expression. (Of course, these are challenging to apply in particular cases, but this is not unlike word, affix and clitic.) It uses a notation that is familiar to descriptive linguists, namely boundary markers, to separate syntactic constructions of different types, including an interrupting construction notation analogous to the notation for infixes. It is relatively easy to enter on a digital keyboard, using symbols found on a standard keyboard (#, +, { } and ^). It is in a data format that is simple, transferable to new software platforms and programs, and lasting, usable in a text format data structure such as the tabular csv format used in CLDF.

3. Adding CE labels for additional syntactic information—maybe automatically?

In §1.1, we noted that some descriptive software allows a user to enter a part-of-speech label for words in a glossed text, although this annotation is not generally given in published glossed text collections. In §2.3, we noted that by excluding recursion and embedding, the syntactic annotation lacks information about how clauses are related to each other, how phrases are related to each other, and how relative clauses are related to the phrase they modify. We also noted in §2.1 that we did not posit a "level" for attributive phrases, in order to simplify the annotation scheme. In this section, we propose a way to annotate additional syntactic information, namely the role played by the construction element in the construction, using the three designated "levels" of constructions: sentential, clausal and phrasal.

Manual annotation of CE labels would be more labor-intensive than just adding the syntactic boundary markers + # {} ^ proposed in §2 to the analyzed text line in a corpus. CE

labels belong to three levels: phrasal CEs, clausal CEs and sentential CEs. It is probably not realistic for a descriptive linguist to manually annotate CE labels for a large corpus, although software can be created to facilitate the data entry.

However, most of the information to generate the CE labels is already there in materials that a descriptive linguist would generate anyway, along with the flat syntax annotation scheme proposed in §2. In principle, one should not have to annotate information redundantly that is already present somewhere, in some form. Ideally, this information should be used to automatically generate CE labels in a three-level format. In practice, this is a highly non-trivial task, and it remains to be seen how much of CE labeling can be automated. In this section, we outline a suggested CE labeling scheme in a three-level format, and then summarize the description information (beyond the flat syntax annotation) that would allow the labeling to proceed automatically.

3.1. A suggested CE labeling scheme

Displaying labels for phrasal, clausal and sentential CEs is more complicated than just adding a single row for part-of-speech labeling as in the SIL language description software. There would be three rows for CE labeling: one for sentential CEs, one for clausal CEs, and one for phrasal CEs. Or at least, this is one relatively simple way to encode CEs at different levels. (In the CLDF format, these would be three additional columns for each row corresponding to a line of text.) The nonrecursive nature of the annotation scheme means that additional rows are never needed.

Ideally, there should be a small set of CE labels for CE roles, just as in UD there is a small set of part-of-speech tags for words. The set of CE labels introduced here is small, but not definitive.

Table 1 is the table with CE labels for a shortened version of the English sentence in (12) (we leave aside the morphological annotation in order to focus on the CE annotation):[12]

[12] I adopt the convention of putting the CE label for a multiword construction in the column for the first word of the construction. Although this means that the CE label is not necessarily above the head of a multiword construction, it seems better to have a consistent convention that applies to headed and non-headed constructions, and also applies to interrupted constructions where the CE label is on the first word of the first part (see below). I have removed the boundaries of empty cells in the Clausal CEs and Sentential CEs rows in the table for readability. In a CLDF format, there would be a symbol to indicate the empty cells for the remaining words in the construction. We suggest using underscore (_), as in UD's CoNLL-U text format.

Table 1: CE annotation of *The two brothers might lose and exit the competition.*

Analyzed Text	*The*	*two*	*brothers +*	*might +*	*lose #*	*and +*	*exit +*	*the*	*competition .*
Phrasal CEs	Mod	Mod	Head	Head	Head	Head	Head	Mod	Head
Clausal CEs	Arg			CPP	Pred	Conj	Pred	Arg	
Sentential CEs	Main					Main			

At the Phrasal CE level, the CEs primarily consist of **Mod**[ifier] and **Head** roles. Modifiers are not divided into subclasses (article, demonstrative, numeral, quantifier, adjective etc.). The one-word phrases are annotated "Heads" of their respective phrases; there are no modifying elements. Adding "Head" for one-word phrases may seem odd or unnecessary. However, in a language where single words can be headless phrases (e.g. a language where 'the red one' is simply 'red'), then it would be necessary to use Mod for such one-word phrases, to distinguish them from one-word phrases consisting of only the head. We have not treated *might lose* as a single complex predicate phrase, for reasons to be explained below.

In order to distinguish admodifiers from modifiers, we introduce an **Adm**[odifier] CE label, as in Table 2:

Table 2: CE annotation of *a very large tree.*

Analyzed Text	*a*	*very*	*large*	*tree +*
Phrasal CEs	Mod	Adm	Mod	Head

This provides a way to identify admodifiers and associate them with the modifier they modify, at least in conjunction with information about word order in the language (see §3), without adding an entire row for annotating attributive phrase structure.

Other CEs occurring at the phrasal level are independent words that are part of strategies for expressing a modification relation. These are **Adp**[osition], **Lnk** [linker], and **Clf** [classifier]. Another widely used strategy is indexation (also known as agreement). Indexes are almost always bound morphemes, but in cases where indexes are at least orthographically separate words, **Idx** [index] can be used to label them.

Overt conjunctions represent another strategy, used to link together modifiers, phrases and clauses; hence **Conj**[unction] will be found in the phrase and clause levels. At the phrase level, conjunctions may be used for modifiers as in *a rare but aggressive cancer,* or for phrases as in *the adults and the kids*; see Table 3.

Table 3: CE annotations of *a rare but aggressive cancer* and *the adults and the kids.*

Analyzed Text	*a*	*rare*	*but*	*aggressive*	*cancer +*
Phrasal CEs	Mod	Mod	Conj	Mod	Head

Analyzed Text	*the*	*adults +*	*and*	*the*	*kids +*
Phrasal CEs	Mod	Head	Conj	Mod	Head

At the clause level, the CEs include **Pred**[icate] and **Arg**[ument], where 'argument' is defined broadly as referring phrases denoting participants in the event (including so-called "adjuncts"). Arguments are not divided into subtypes (Subject, Object, Oblique, or alternative subtype classifications).

Complex predicates are somewhat problematic for a syntactic annotation scheme that divides a sentence into spans (continuous strings of words). The parts of complex predicates do not necessarily occur as contiguous strings. Thus, they cannot generally be assumed to form a "predicate phrase". Nevertheless, in the great majority of cases, there is a complex predicate part which is clearly the primary predicate in the clause, and the other complex predicate parts are related to the primary predicate. We have chosen to distinguish the primary predicate with Pred; to label the other elements **CPP** (for 'complex predicate part'); and to treat the Pred and each CPP as CEs of the clause, rather than to group contiguous Pred and CPP units as a type of phrase. As with Mod and Arg, we do not distinguish different subtypes of parts of complex predicates.

The Clausal CE level is where phrasal "modifiers" are found, since recursion is excluded in the annotation. Hence there are also CE labels for **Gen**[itive] phrases and for adpositional and case-marked noun modifiers; since the latter two are grouped together as flags in recent typological terminology, we call the latter **FPM** for 'flagged phrase modifier'. Finally, a (coordinating) **Conj**[unction] linking the two clauses is a CE at the clausal level.

At the Sentential CE level, there are two (or more) clauses. Both clauses in Table 1 are annotated **Main**, since the example in Table 1 is a coordinate construction of main clauses. Other CE labels are the standard trio of subordinate clauses, **Adv**[erbial], **Comp**[lement] and **Rel**[ative] clause. There also exist topic and focus phrases, sometimes analyzed as separate from clauses and hence sentence level CEs. We will label these as **Dtch** (for 'detached phrase'). Finally, there is Heine's category of **Int**[eractive] CE that occurs at the sentential

construction “level”.

An example of CE annotation with an interrupting relative clause and genitive phrase, based on example (18), is given in Table 4.

Table 4: CE annotation of *The tree that fell on our house also wrecked your car.*

Analyzed Text	*The*	*tree +*	*{that +*	*fall +*	*on*	*{our}*	*house}*	*also +*	*wrecked +*	*your +*	*car .*
Phrasal CEs	Mod	Head	Head	Head	Adp	Head	Head	Head	Head	Head	Head
Clausal CEs	Arg		Conj	Pred	Arg	Gen		CPP	Pred	Gen	Arg
Sentential CEs	Main		Rel								

As with the first table of CE annotations, I have removed borders around empty cells when they are part of a multiword construction. However, because of the interrupting constructions, cell borders corresponding to the closing curly braces for the interrupting construction are retained, again for visual readability.

The CE labels proposed here, and the construction types they are found with, are given in Table 5. There are 14 labels for CE roles, and 5 labels for CE strategies.

Table 5: Summary of CE annotation labels and the syntactic levels they are found in.

CE tier	*Construction types*	*Label*	*Description*
Phrasal CEs ("lexical")	***roles played by words, including fixed MWEs [X^Y^Z]***	Head Mod Adm	head of phrase modifier [Dem, Num, Adj etc.] admodifier
	strategies	Adp Lnk Clf Idx Conj	adposition linker classifier index conjunction
Clausal CEs ("phrasal")	***roles played by phrases (which may be single words); or words (predicates, CPPs/"adverbs")***	Pred Arg CPP Gen FPM	predicate argument phrase [Sbj, Obj etc.] complex predicate part genitive phrase modifier flagged phrase modifier
	[strategy	Conj	conjunction**]**
Sentential CEs ("clausal")	***roles played by clauses (which may be single words); phrases ("detached NPs"); words (interactives)***	Main Adv Rel Comp Dtch Int	main clause adverbial clause relative clause complement clause detached phrase (topic, focus) interactive

3.2. Automatic CE annotation

The information needed to automatically generate CE labels is already largely available in (i) the flat syntax annotation introduced in §2, (ii) the gloss line with the interlinear morpheme translation, (iii) descriptive information about word class and (iv) basic word order patterns. Word class and basic word order patterns are information that a descriptive linguist would document anyway in a lexicon and grammar and could be made available in a standard format. This information can be used to automatically generate the CE annotation via software developed for language description to a reasonable degree of accuracy. In this section, I will briefly summarize the sort of information that would contribute to the annotation of CE labels.

Phrases employ certain concepts which are expressed either as affixes that are glossed in the IMT or as closed-class function word categories which can be listed or linked from a lexical entry that already exists or is generated during text glossing. Table 6 lists these concepts and their options.

Table 6: Grammatical concepts occurring in phrase constructions.

Concept	*CE label*	*Function word class*	*Bound morpheme*
reference	Head		number, gender, definiteness, case affixes
modification	Mod	linker, classifier	modifier index, attributive marker
admodification	Adm	admodifier	instensifier, downtoner, hedging morpheme
[words for strategies]	Adp, Lnk, Clf, Idx, Conj	adposition, linker, classifier, index, phrasal conjunction	case affix, linking affix, bound classifier, indexation

Although the CE label Mod proposed in §3.1 does not distinguish subtypes of modifiers, such as Art[icle], Dem[onstrative], Num[eral], Adj[ective] and possibly other modifier types, this information could be derived from a basically semantic classification of modifier words in the lexicon.

In addition, word order patterns would indicate for instance that the admodifier in *a very large tree* in Table 2 modifies the adjective *large* because of the Adm-Adj order of English.

Clauses, like phrases, employ certain concepts that are expressed as affixes glossed in the IMT or closed-class function word categories that can be listed in a lexical entry. Table 7 lists such concepts and their expression. Adpositions, linkers and phrasal conjunctions are parts of phrases, but are actually used to indicate clause-level CEs. They are indicated by * in Table 7. Some morphosyntax is associated with a head on which the labeled CE is dependent (serving as an argument or a possessor). These are indicated by † in Table 7.

Table 7: Grammatical concepts occurring in clause constructions.

Concept	*CE label*	*Function word class*	*Bound morpheme*
predication	Pred		tense, aspect, modality, polarity affixes
participant, argument	Arg	adposition*	flag (case marking), indexation†
possession	Gen	adposition*, linker*	genitive flag/linker, indexation†
object modifier	FPM	adposition*, linker*	spatial/other flag
predicate part	CPP	auxiliary, manner adverb	flag, predicate inflections
joining	Conj	phrasal conjunction*	bound conjunction morpheme

*phrasal CE

†found on Head (predicate, or possessed head noun for Gen)

Although the CE label Arg proposed in §3.1 does not distinguish specific grammatical roles such as Sbj, Obj, Obl—or other classifications such as Erg, Abs or P[rimary]O[bject], S[econdary]O[bject]—the flags and indexes often associated with Arg and the Pred head of the clause can provide that information.

Basic word order patterns such as the order of subject, verb, object and oblique, the order of genitive and (head) noun (phrase), and the order of flagged phrase modifiers will help in identifying genitive modifiers vs. argument phrases, and which referring phrase serves as the head of the genitive construction.

Sentences, like clauses and phrases, employ concepts expressed as affixes or closed-class function words. Table 8 lists the concepts and their expression. The elements indicated by * are parts of clauses, but are actually used to indicate sentential CEs.

Table 8: Grammatical concepts occurring in sentence constructions.

Concept	*CE label*	*Function word class*	*Bound morpheme*
assertion	Main	coordinating conjunction*	predicate inflections†, deranked predicate (chaining form, switch-reference)†, absence of subordinating conjunctions
non-asserted ovent (adverbial)	Adv	adverbializer*	deranked predicate (converb)†
action as argument (complement)	Comp	complementizer*	derauked predicate (action nominal, infinitive, etc.)†
action as modifier (relative clause)	Rel	relativizer*	deranked predicate (participle)†
pragmatically defined referent	Det	topic/focus marker	topic/foous affix
interactive	Int	interjection, discourse marker ideophone, etc.	[reduplication for ideophone function]

*clausal CE

†occurs on Pred clause CE in sentence construction

Here, some sentence CE (i.e. clause) types are identified by a clause CE contained in the clause, such as the different conjunctions. In other cases, the sentential CE types are

identified by affixes on the predicate that heads the sentence CE (clause).

As with other automatic labeling algorithms, the results will not be perfect. Affixes, associated function word classes, and word order patterns are cues to the identity of basic syntactic constructions used to communicate information. Not all these cues are available in every language, although there is some evidence suggesting that the absence of some cues is made up by the presence of other cues (Shcherbakova et al. 2024). Some cues are polyfunctional: for example, the English subordinator *that* may introduce a relative clause (*the bicycle that I bought*) or a complement (*I told her that I bought a bicycle*).

The cues will provide more or less information for CE labeling depending on how they are annotated in IMTs and lexicons. For example, glossing English *that* as COMP (complementizer) vs. REL (relativizer) in a text, instead of SUBR (subordinator) or CNJ (conjunction) for both, will facilitate labeling the corresponding clauses as Comp vs. Rel. Finer-grained classification of polysemous function words in terms of their grammatical functions will also improve CE labeling. Also, the use of standardized abbreviations for affixes that reflect the comparative concepts they instantiate will allow for a general cross-linguistic algorithm for labeling CEs. It is our hope that manual correction of CEs will be minimal enough for automatic CE labeling to be useful, along with the annotation of the syntactic boundary markers in §2. However, at this point this is a hope for the future.

4. Do we need recursion or embedding to represent syntactic structure?

The flat syntax annotation scheme described in §2 eschewed recursion for practical reasons. It simplified the annotation of the majority of phrases and clauses by treating them all as if they were at the same syntactic "level" (phrasal or clausal). This allows the use of boundary marker annotations that function in basically the same way as morphological boundaries in glossing words. Although a special notation for interrupting ("center-embedded") phrases and clauses was required to keep track of the two parts of the phrase or clause that is interrupted, this allows us to annotate all phrases at one "level" and all clauses at another "level" by using the same notational device that is used for infixes at the morphological level. This annotation provides a very simple syntactic structure with a minimum of notational means that is already familiar to descriptive linguists from morphological segmentation in interlinear glossing.

Having confined all syntactic annotation to three "levels", representing a sort of "concatenative syntax", we proposed a set of construction element (CE) labels that restores much of the structural information to the annotation, for users willing to add CE labels on the three levels. These CE labels resemble many of the Universal Dependencies labels for relations between words. (In some cases, labels are less specific, such as Mod covering the UD relations *amod, nummod*, and *det*, and Arg covering the UD relations *subj, obj, obl*.) However, the UD relations are relations between a dependent word and its head word, while the CE labels are roles, i.e. a relation between the construction role in question and the construction it plays a role in. In constructions with heads (likely a majority of construction tokens) the translation from the flat syntax notation to UD notation should be fairly straightforward.

However, the information typically represented by recursive syntax is less easy to reconstruct, due to the limitations of the flat syntactic annotation. The question I wish to address here, is if this limitation of the flat syntactic annotation is a bug—or is it perhaps a feature? Is there any reason to have recursion in the syntactic representation? I will suggest here that it is not.

4.1. "Main" vs. "subordinate" clauses

I will start with multiclause sentences, probably the most common type of construction that is represented by recursive or embedded syntactic structures. The point of including recursion is that a clause can be in an asymmetric relation with another clause which can in turn be in an asymmetric relation with yet another clause, and so on indefinitely in principle.

Constructions that invite representation by multiple embedding are rare. But another question to ask is: how are they encoded? I do not know of a language that morphosyntactically distinguishes multiple embedding from single embedding, or indicates depth of embedding. That is, I do not know of a language that indicates morphosyntactically, for example, that an adverbial clause is embedded under another adverbial clause, or another subordinate clause, rather than a main clause; or distinguishes single, double, or triple embedding.

We linguists, or we hearers, interpret a sentence as involving multiple "embedding"; but that is based on the semantic and/or pragmatic relations between the events expressed by the different clauses. As Dryer (2009) observes in a paper considering a flatter (but still

recursive) syntactic structure in explaining word order patterns, hearers are primarily parsing a sentence for meaning. They must figure that out based on the information in the utterance: the words and how they are combined. But they aren't given any clues from the syntactic structure of the sentence about relations between events, apart from word order (more on which later).

It does appear that there is morphosyntactic structure that indicates a single level of embedding of clauses, i.e. main clause vs. subordinate clause. Deranked verb forms—verb forms that overtly code their relation to the sentence—and subordinating conjunctions distinguish putatively "subordinate" clauses from main clauses, and sometimes there are differences in word order between main clauses and subordinate clauses.

However, the semantic relations between events do not inherently indicate a recursive, as opposed to a chaining relation. The same semantic relations—temporal, causal, conditional etc.—are found in coordinate constructions and in adverbial subordination constructions. English examples of some of the semantic relations are given in (22) (Croft 2022:466, from Table 15.1):

(22) a. He washed the car before driving to the party.
a′. He washed the car **and** drove to the party.
b. She went to bed **because** she was exhausted.
b′. She was exhausted **and (so)** she went to bed.
c. He got into the army **by** lying about his age.
c′. He lied about his age **and** got into the army.
d. **If** you do that, the terrorists have won…
d′. Murphy, you do that **and** the terrorists have won… [attested example]
e. **Although** John had no money, he went into this expensive restaurant.
e′. John had no money, but he went into this expensive restaurant. (König 1988:151)

Therefore, one must look somewhere else than the semantic relations between events to capture the difference between main clauses and subordinate clauses.

Cristofaro (2005), following others, argues for a pragmatic or information-packaging distinction between main and subordinate clauses. The event expressed in main clauses is

pragmatically asserted, while the event expressed in subordinate clauses is pragmatically non-asserted. This pragmatic contrast is then reflected in the morphosyntactic contrast between main clauses and subordinate clause constructions.

Except that sometimes it isn't. Coordinate clause constructions assert the events in each clause, and yet use a deranked strategy typical of "subordinate clauses" (Stassen 1985; Haspelmath 1995, 2004). Compare example (23), from Japanese, with its English translation (Yuasa and Sadock 2002:92; cf. Haspelmath 2004:34):

(23) ojiisan-ga yama-de hatarai-**te** obaasan-ga mise-no
old.man-NOM mountain-at work-**CO** old.woman-NOM store-GE
ban-o shi-ta
sitting-ACC do-**PST**
'The old man worked at the mountain, **and** the old woman tended the store.'

The phenomenon described as 'insubordination' (Evans 2007; Evans and Watanabe 2016) is another instance of the use of morphosyntactic structures associated with subordinate clauses to express an asserted event, or a speech act that is normally expressed by a main clause. For example, the imperative constructions illustrated below use the Spanish Subjunctive in (24), the English Gerund in (25) and the Russian Infinitive in (26) (Croft 2022:479):

(24) Díg-an-se-lo Ustedes.
tell:3SG.**SUBJ**-REFL-3SG.OBJ 2PL.FORMAL
'Tell them about it.'

(25) No smok**ing**.

(26) Ne kur-it'.
NEG smoke-**INF**
'No smoking.'

Matisoff (1972) describes a Lahu nominalizing particle *ve*, also used for subordination, that can occur with main clauses. Example (27) illustrates both the subordination function and the main clause use (Matisoff 1972:245, gloss added [cf. Matisoff 1988]):

(27) làʔ tha ve šɨ̂ ɛ̀ qay ve
hand clap NOM make_noise go NOM
'The hand-clapping was boisterous.'

Conversely, certain constructions that are standardly associated with main clauses, such as the English inversion constructions in (28), do not normally occur in subordinate clauses, as in (29); but can occur in what is morphosyntactically a subordinate clause in the right syntactic and pragmatic context, as in (30) (the (a) examples are from Green 1976:383, the (b) examples from Lakoff 1984:472):

(28) a. Never before have prices been so high.
b. Here comes my bus.
(29) a. *Nixon regrets that never before have prices been so high.
b. *I'm leaving, if here comes my bus.

(30) a. I knew that never before have prices been so high.
b. I'm leaving, because here comes my bus.

Broadly, the purported main clause morphosyntactic structures in the (a) sentences are what Lakoff calls 'speech act constructions': 'constructions that are restricted in their use to expressing certain illocutionary forces that are specified as part of the grammar of English' (Lakoff 1984:473). However, in certain contexts, these illocutionary forces may be expressed in syntactically subordinate clauses, in (30a-b) but not in (29a-b). The contexts are fine-grained and difficult to characterize precisely (see Green 1976, Bolinger 1977 and Lakoff 1984 for qualifications). The main point for us, however, is that the morphosyntactic structure in question cannot be a sufficient indicator of main clause status.

All of these phenomena demonstrate that certain morphosyntactic strategies are not in themselves signals of syntactic main clause vs. subordinate clause, that is, clause recursion, or even clause embedding. They are at best fairly but not perfectly reliable indicators of certain asymmetric semantic relations or certain pragmatic statuses (assertion and other speech acts, vs. non-asserted propositions). There is no necessary reason to represent the distinction in syntax as one between a matrix clause and an embedded clause, i.e. one-step

recursion.

In fact, there may not be a necessary reason to represent the semantic or pragmatic distinction itself by a recursive structure either. We already noted that the semantic relations between events may be expressed by coordinated main clauses—or simply sequence in discourse—or by main clause + subordinate clause. There is an asymmetric semantic relation between events—anterior-posterior time, cause-result, protasis-apodosis, and so on. There is also an asymmetric pragmatic relation between events, albeit one of contrast in pragmatic status (asserted vs. non-asserted), not a relation between those two different statuses. But just as asymmetric semantic relations between two events can be expressed by coordination of two main clauses, our semantic representation of an asymmetric relation between two events does not need to involve an embedding relation, such that one event (the embedded event) is **part of** the other event. Likewise, the pragmatic contrast between asserted and non-asserted events does not need to be represented in pragmatic structure such that the non-asserted event is **part of** the asserted event. The assumption that an asymmetric relation between entities (syntactic, semantic, or pragmatic) should or must be represented by a part-whole embedding relation can be called the **representing asymmetry by recursion assumption**. It is not a necessary assumption for syntactic representation; and it is not a necessary assumption even for semantic or pragmatic representation.

4.2. Interrupting units: why do they exist?

In §4.1 I argued that relations between syntactic units at the same "level", i.e. relations between clauses or relations between phrases, do not need to be represented in an asymmetric fashion such that one is syntactically recursively embedded in the other. However, it is true that one unit at a particular "level" may sequentially interrupt another unit at the same "level": a clause may interrupt another clause, or a phrase may interrupt another phrase (see §2.4).

There are two sets of grammatical constructions that commonly give rise to interruption, and are usually analyzed as involving syntactic embedding. At the clause "level", complex sentence constructions which are most likely to appear to involve clause embedding are complement clause constructions and relative clause constructions. A complement functions as the argument of the matrix clause predicate, and a relative clause functions as a modifier of an argument of the matrix clause predicate. Hence both appear to be parts of the matrix clause, although they are clauses themselves. Adverbial clauses are much less likely to

interrupt their matrix clauses.

At the phrase "level", complex referring phrase constructions that appear to involve phrase embedding are genitive phrase modifiers and spatiotemporal phrase modifiers. In both cases, a referent is used to modify the referent of the matrix phrase. Functionally, in both cases the modifying referent is functioning as the anchor (Fraurud 1990; Hawkins 1991; Koptjevskaja-Tamm 2002) or reference point (Langacker 1993; Taylor 1996). Genitive modifiers are better described than spatiotemporal phrase modifiers, so our suggestions will apply largely to those.

The fact of sequential interruption has led syntacticians to conclude that recursive embedding is necessary to represent the fact that what precedes and follows the embedding structure belongs to a single syntactic unit (clause or phrase). Karlsson (2010:50) states that recursion is necessary for a center-embedded (interrupted) structure; apparent recursion at the left or right edge can be converted to iteration. This is not a necessary conclusion for representing syntactic structure, as the representation of infixation in morphology shows (this is, however, contrary to the assumptions of formal language theory that Karlsson describes). We adopt the same representation for interrupting units in syntax.

Nevertheless, one might want to ask, why do speakers allow for interrupting units, and relatively commonly? After all, infixation is rare in morphology, whereas it is likely that even with the flat syntax analysis argued for in §4.1, probably all languages accommodate interruption. In this section, we suggest some reasons why interruption is found widely, but not that frequently in actual language use.

Interruption is basically an issue for processing. In spoken language, with rapid real-time sequential presentation and then decay of grammatical units, the processing load is great enough that interruption can be problematic. In writing, the reader can view strings of grammatical units at once, and so interrupted structures may be more frequent (cf. Karlsson 2010:64).

Karlsson (2007, 2009, 2010) presents evidence that interruption, and even asymmetric relations between contiguous but not interrupting units, is quite limited in depth of embedding, more common in written than in spoken language, and evolved later than coordination in emerging written languages (Karlsson 2009). We focus on center embedding, although Karlsson provides evidence that recursion at left and right edges is only slightly less constrained. Karlsson's evidence is based on texts from several "Standard Average

European" languages. He concludes that 'no evidence for nested [center-embedded] syntactic recursion of degrees greater than 3 is at hand, neither on clause level nor on phrase level' (Karlsson 2010:63). Phrasal center-embedding has been less well studied, but even in written language, a depth of 2 is 'utterly rare' (Karlsson 2010:58).

Multiple clausal center-embedding in spoken language occurs only extremely rarely at a depth of 2 (Karlsson 2010:53): 'only one cycle of clausal center-embedding is normally to be found in conversation, the most basic and evolutionarily primary form of language' (Karlsson 2019:315). That is, in the latter case at least, interruptions of interruptions at the clause level are close to nonexistent in spoken language.

Interruption of syntactic units, and even multiple asymmetric relations in a string of syntactic units, is thus relatively uncommon. Why is this possible? That is, what allows speakers to express what may be complex asymmetric functional relations between semantic or pragmatic components such as events or referents in a sequential manner without many interruptions? I suggest here and in the following section that grammatical constructions have evolved in such a way to at least allow for a speaker to avoid interrupting syntactic units with other syntactic units at the same "level". In §4.2.1, I suggest that common word order patterns frequently allow for noninterrupting sequencing of syntactic units at the same "level". In §4.2.2, I suggest that grammaticalization processes lead to the reanalysis of a syntactic unit that is functionally dependent on another syntactic unit so that it belongs to a lower syntactic "level".

4.2.1. Word order "conspiracies" to minimize interruption

One consequence of a flat syntactic model is that word order plays a greater role in syntactic processing than embedding. Most languages have a basic word order for different kinds of clausal and phrasal units that are related to other CEs at the same "level", e.g. Verb-Complement order, Genitive-Noun order, Relative Clause-Noun order, or Subject-Verb-Object order. Many if not all languages also allow for alternative word orders for some of these units, even when they express the same semantic or pragmatic relation between these units. Interruptions only occur under some circumstances given common word order patterns. Alternative word orders, and certain strategies for constructions that are found in some languages, provide means to combine clauses or phrases without one interrupting the other. In this section I describe some general word order patterns that do or do not lead to one

phrase or clause interrupting another.

We begin with phrases. In example (18) in §2.4, the English possessive phrase *my* interrupts the referring phrase with a preposition: *on {my} house*. This occurs because the English pronominal possessive, as well as the nonpronominal *-'s* possessive, precedes the noun, and so do English adpositions (i.e., prepositions). This pattern, which we can summarize as GenN and Prep, following the common abbreviations used in word order studies, is actually a rare word order combination. The overwhelming pattern is for languages to have either GenN order and postpositions, or NGen order and prepositions. These combine as in example (31), without one phrase interrupting the other:

(31) a. PrepN and NGen: + Prep N + Gen +
b. NPostp and GenN: + Gen + N Postp +

In fact, English also has another genitive construction, the *of* phrase (*the surface of the table; a book of John's*), which has NGen order. The other major phrasal modifier construction of nouns in English, an oblique phrase with a preposition that generally expresses spatiotemporal relations (annotated FPM in §3), also follows the noun in English. I am not aware of crosslinguistic studies of the word order patterns of non-genitive referring phrases functioning as modifiers of referents. However, the genitive construction pattern suggests that genitive phrases interrupting adpositional phrases is crosslinguistically uncommon. The anomalous English pattern illustrated in (18) is discussed further in §4.2.2.

The situation with clauses is more complex. As noted in §4.2, adverbial clauses are usually peripheral to their matrix clause, and rarely interrupt it. Complement and relative clauses serve as arguments of the matrix predicate, or modifiers of arguments, respectively. The default ordering places such clauses in the same position as the corresponding phrasal arguments. This can lead to the complement/relative clause interrupting its matrix clause under some circumstances. But crosslinguistic word order patterns, text frequency patterns, and the existence of alternative strategies suggest that this may not be that common a phenomenon.

The two most common word order patterns for arguments and their predicate are Subject-Object-Verb and Subject-Verb-Object, usually abbreviated SOV and SVO. Assuming that complement clauses occur in the same position as the corresponding phrasal

arguments, the complement clause sometimes interrupts the matrix clause, and sometimes does not:[13]

(32) a. SVO, subject complement: # Comp # V + Obj #
b. SVO, object complement: # Sbj + V # Comp #
c. SOV, subject complement: # Comp # Obj + V #
d. SOV, object complement: # Sbj {Comp} V #

Only in (32d) does the complement clause interrupt the matrix clause. However, there are two text frequency patterns that suggest that complement interruption may not be that frequent. First, transitive clauses in general are no more common, and perhaps less common, than intransitive clauses. Object complements are not found in intransitive clauses by definition.

Second, there is an asymmetry in the expression of transitive subject referents—the A grammatical role, in typological parlance—in comparison to transitive object referents (P) or intransitive subject referents (S). This pattern has been described as Preferred Argument Structure (DuBois 1987; DuBois et al. 2003). In other words, interruption of a matrix clause by a complement clause occurs only in transitive matrix clauses with an overt subject phrase—a textually rare pattern. (And this happens only in SOV languages.)

The situation with relative clauses is more complicated. The vast majority of relative clauses, crosslinguistically, are externally headed (other relative clause strategies are discussed below). The external head is an overt argument of the matrix clause. The relative clause may occur either before or after the external head; however, preposed relative clauses are crosslinguistically very rare in SVO languages. Leaving this rare case aside, the pattern of interrupting relative clauses is given in (33)-(34):

(33)

a. SVO & NRel, relative clause on subject phrase: # Sbj {Rel} V + Obj #
b. SVO & NRel, relative clause on object phrase: # Sbj V Obj # Rel #

[13] This discussion does not address the occurrence of CEs of the matrix clause other than subject, object and verb/predicate. For many of the non-argument, non-predicate CEs of the clause, not enough is known about their typological word order behavior. It is my impression that the presence of other CEs than arguments and predicate does not substantially increase the occurrence of interrupting/center-embedding of clauses and phrases.

(34)

a. SOV & RelN, relative clause on subject phrase: # Rel # Sbj + Obj + V #
b. SOV & NRel, relative clause on subject phrase: # Sbj {Rel} Obj + V #
c. SOV & RelN, relative clause on object phrase: # Sbj {Rel} Obj + V #
d. SOV & NRel, relative clause on object phrase: # Sbj + Obj {Rel} V #

There are more situations in which a relative clause may interrupt its matrix clause than for a complement clause to interrupt its matrix clause. In particular, there are many more situations in which a relative clause could interrupt its matrix clause in SOV languages. However, one of those cases, (34c), would only cause interruption if the transitive subject/A referent is expressed by an overt phrase, which is less common.

Nevertheless, there are alternative strategies for expressing relative clauses that do not interrupt the main clause. In some languages such as English, a relative clause on a subject phrase can be extraposed, as in example (35):

(35) *The tree + was + dead # that + fell + on {my} house.*

English also allows postposing of complement clauses, albeit with a different construction using the pronoun *it:*

(36) a. *That + he + resigned # isn't + surprising.*
b. *It + isn't + surprising # that + he + resigned.*

Although neither (36a) nor (36b) interrupt the matrix clause, postposing a relative or complement clause can make a bigger difference in SOV languages, where both argument positions are normally before the verb or predicate. Some SOV languages are "nonrigid", that is, some CEs of the clause may follow the verb (Greenberg 1966:79-80). In nonrigid SOV languages, if complement and relative clauses were also postposed, then they would not interrupt a matrix clause containing a predicate and an overt argument phrase (as well as other CEs of the matrix clause). In this context, it is also worth noting that the direct report strategy for utterance complement-taking predicates (which is extended to propositional attitude predicates in some languages), also postposes or sometimes preposes the utterance

complement to the matrix clause.

There are also other, albeit crosslinguistically rare, strategies for relative clauses that reduce the likelihood that a relative clause will interrupt the matrix clause. Adjoined relative clauses express the relative clause similarly to an adverbial clause. Correlative relative clauses juxtapose the relative clause to the matrix clause. These two strategies lead to the relative clause not interrupting its matrix clause.

Finally, internally-headed relative clauses do not have an externally expressed head; the head referent is expressed as an argument phrase inside the relative clause. In both SOV and SVO languages, an internally headed relative clause on the subject phrase does not interrupt the matrix clause. In SOV languages, an internally headed relative clause on the object phrase does not interrupt the matrix clause if the matrix subject referent is not expressed as an argument phrase—the common case, according to Preferred Argument Structure. Given that internally headed relative clauses minimize interruption in three out of four cases for SOV languages, it might not be surprising that internally headed relative clauses, while crosslinguistically rare, are overwhelmingly more frequent in SOV languages.

Internally headed relative clauses are very rare in SVO languages. Likewise, RelN word order is very rare in SVO languages. Thus, (37), a postposed relative clause on a subject argument phrase in an SVO language, will almost always interrupt the matrix clause:

(37) *The man {who's + picking + pears} comes + down + from the tree.*

In fact, as has frequently been noted, postposed relative clauses in English are always broken into a separate intonation unit, while internal relative clauses are always kept in the same intonation as their head (Croft 1995:847-48 and references cited therein; X,Y is speaker number, intonation unit number):

(38) 10,29 *a--nd put them in a couple of [.25] barrels,*
10,30 *that he's got down there.*

(39) 7,78 [1.35 + [1.35 *Meanwhile...*] *the man who's picking pears,*
7,79 [.35] *comes down from the tree.*

The regularity of this pattern, in English at least, indicates that although the relative

clause on the subject phrase in (39) is morphosyntactically externally-headed, the speaker's prosodic production suggests that the subject phrase is construed as part of the relative clause, despite the conventional syntactic analysis of the construction.[14]

These general word order patterns, and in some cases alternative strategies, for expressing clauses and phrases that are traditionally analyzed syntactically as embedded strongly suggest that interruption of one phrase or clause by another is a disfavored strategy, at least in spoken language. In some cases, it may even suggest a different syntactic analysis of the construction, as with example (39). These conclusions can, and should, be tested further by text counts that would more definitely confirm that interruptions are minimized, but this task is beyond the scope of this chapter.

4.2.2. Interrupting units: "downgrading" an interrupting unit to a lexical dependent or even an affix

The typological and text frequency phenomena described in §4.2.1 indicate that phrases or clauses that interrupt other phrases and clauses may be relatively rare in actual language use, although they undoubtedly occur (hence the need for the { } annotation for syntactic boundaries). But another factor that may reduce interrupting units is a reanalysis of the interrupting unit itself, in the course of grammaticalization processes that affect many such structures.

The main problem with interrupting units is when they consist of multiple words. In that case, it is clear that they form a phrase, or a clause, and that creates a potential jumble of two (or more) syntactic units of the same "size". But in fact, very often the interrupting unit is a single word, or at most a single content word combined with a word that is part of the interrupting construction's morphosyntactic strategy, such as a relativizer or a linker. This is not necessarily an accident or random factor in production. The single-word "phrase" or "clause" may actually be grammaticalizing into a form that is better (re)analyzed to belong at the lexical "level". Additional evidence of this reanalysis is that the form may further grammaticalize into a bound affix which is no longer a syntactic unit.

A good example of this involves genitive phrases. As noted above, English has an

[14] It is possible to interpret the prosody of (39) as capturing the combination of the external head and the relative clause as the subject phrase. However, this interpretation would not explain why this prosodic pattern always occurs with relative clauses on subjects, but never with relative clauses on objects (or obliques that occur at the end of a clause).

anomalous word order of GenN and Prep, leading to the preposed possessor interrupting the referring phrase, as in + *on* {*our*} *house* +. This pattern is found for pronominal possessors across many European languages, even those where nonpronominal possessors are expressed in a postposed flagged phrase (i.e. using adpositions or case affixes). In functional terms, pronominal possessors are like prototypical phrases: they express referents. Hence our analysis as a phrase, and in the English example, a phrase that interrupts the prepositional phrase it modifies.

But pronominal possessors are almost always single words. They sometimes are expressed using modifier strategies typical of lexical modifiers, such as the nonperson indexation typical of adjectives and demonstratives, as in Russian: compare *mo-**ja** kniga* 'my book [FSG]' to *krasna-**ja** kniga* 'red book [FSG]'. In many languages, pronominal possessors have grammaticalized to person indexation affixes on the head noun denoting the possessed item. In languages such as English or Russian, it might be better to consider at least possessive pronouns to be lexical modifiers rather than phrasal modifiers, in which case the annotation would be, for instance, + *on our house* +.

At the clausal level, things are a bit more complicated but similar. Property concepts in many languages recruit the relative clause strategy found with action concepts as modifiers, with verbal inflections and perhaps a relativizer. However, most property concepts do not have any arguments apart from the role filled by the head noun referent that the property concept modifies. As a result, property concept "relative clauses" usually consist of just the property concept word (possibly with verbal inflections), and perhaps also a relativizer serving as a linking strategy to the head noun. In such languages, it might be better to consider property concept modifiers as lexical modifiers, despite the relative clause trappings that they bear.

Complement clauses are found with a wide variety of matrix clause predicates (complement-taking predicates or CTPs). These include utterance ('say'), propositional attitude ('believe'), perception ('see', 'hear'), desiderative ('want'), manipulative ('make', 'let'), modal, aspectual and negation CTPs. Semantically, the CTP denotes anything from an event independent of the event expressed in the complement clause (utterance, propositional attitude) through more or less connected events (perception, manipulative) to semantic properties of events (modal, aspectual, negation).

The argument structures of the matrix clause and the complement clause range from

being independent or partly independent (utterance, propositional attitude, perception) to being partly shared (manipulative) or fully shared (modal, aspect, negation). In some cases, it is not always clear which clause the argument phrase belongs to, or whether there are even two clauses or just one.

Finally, even the CTPs that denote independent or partly independent events may grammaticalize to a lexical form that does not, or no longer, look entirely like an independent clause predicate (i.e., auxiliaries) to an invariant form and ultimately an affix on the complement clause predicate, as indicated in (40):

(40) a. utterance CTPs > quotatives
b. propositional attitude CTPs > hearsay, inferential evidentials and epistemic modals
c. perception CTPs > sensory evidentials
d. desiderative CTPs > desideratives
e. manipulative CTPs > causatives
f. modal, aspectual, negation CTPs > modal, aspectual, negative markers

Again, it is plausible to analyze constructions at a certain intermediate stage in this grammaticalization process as no longer consisting of a two-clause complement clause construction. Instead, the CTP would be analyzed as a complex predicate part (CPP), such as an auxiliary, instead of a predicate heading a separate "matrix" clause. This is more justifiable when there is a single argument structure (or some sort of merged argument structure), and the "former" matrix clause lacks other CEs than the CTP.

5. Conclusion

In this chapter, I propose a practical syntactic annotation scheme, consisting of four types of boundary markers in addition to word boundary (space) and sentence boundary (period) already used in glossed texts: + for phrases, # for clauses, { } for phrases or clauses that interrupt other phrases or clauses, and ^ for fixed contiguous multiword expressions. In addition, I proposed a small general set of labels for constructional roles for construction elements or CEs, for the syntactic units defined by the boundary markers. These are optional and it is hoped that annotating the roles can be automated to a great extent, given a glossed

text including the syntactic boundary markers proposed here.

In order to make the syntactic annotation simple enough, it simplifies syntactic structure to a point beyond most syntactic analyses of constructions, even those in a construction grammar or descriptive linguistic tradition, or in dependency-based syntactic annotation, that generally eschews the highly complex phrase-structure trees of generative grammar. In particular, it does without recursion of syntactic units, which allows us to use a fixed set of syntactic "levels" (sentence, clause, phrase, word, plus the sublexical morphological analysis of traditional text glossing). This simplification was made for practical reasons. But it raises an interesting question: how much complex syntactic structure is really justifiable? The last section of this chapter suggests that perhaps linguists, even those of us of a functional bent, are still asking syntax to do too much work. Randy LaPolla has long led us in questioning how much formal structure do we need to assume in understanding how speakers are able to communicate in language; I am making a small contribution here to his longstanding research programme.

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The Transformative Impact of Randy J. LaPolla's Research on Chinese Language Teaching and Translation

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Abstract: This article highlights some key contributions of Professor Randy J. LaPolla and his influence on the teaching of Chinese as a foreign language and on literary translation. It also addresses issues inspired by his work, such as the limitations of using English as the sole language of scientific communication and a critical reassessment of the claim that Chinese is an isolating language.

1. The impact of considering Chinese as a topic–comment language

Participating in this volume in tribute to Professor Randy J. LaPolla is not only a great honor for me; it also allows me to present my perspective on how his research has had a direct and enormously relevant impact on the practice of teaching Chinese as a foreign language and on literary translation. Moving beyond the traditional subject–predicate paradigm and adopting the topic–comment framework opens new perspectives that make learning Chinese easier and enable more coherent contrastive analysis, especially for those of us who speak and approach Chinese with any Romance language as a mother tongue.

1.1 In Chinese language teaching

With more than thirty years of experience as a teacher of Chinese and translator of Chinese literature, I have often found myself facing more questions than answers. Many of the most important answers I sought emerged from the writings of Professor Randy LaPolla. His work proposed a paradigm shift: Chinese is not a subject–predicate language but a topic–comment language. Discovering his articles—explained in a way accessible even to non-

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linguists—was truly illuminating.[1] Moving away from the subject–predicate model toward the topic–comment framework allowed me to understand Chinese language grammar as far more coherent and accessible.

Three key points from Professor LaPolla's analysis help make sense of Chinese grammar. First, understanding Chinese as a topic–comment language and recognizing misunderstandings arising from early interpretations of the work of Yuen Ren Chao and other linguists who were pioneers in making this proposal. Second, acknowledging the fundamental role of word order in Chinese and, consequently, recognizing that assigning fixed categories to individual words is inappropriate, even if it is customary in Chinese textbooks and dictionaries. And third, understanding the importance of focus constructions in Chinese.[2]

As a teacher of Chinese as a second language, adopting this new paradigm does not eliminate all challenges. Spanish-speaking students are often unfamiliar with topic–comment structure, as the subject–predicate dichotomy dominates in their primary and secondary education. My first task, therefore, is to show them that spoken Spanish frequently uses clear and similar topic–comment patterns to spoken and written Chinese. For example:

(1) *El libro, lo dejé en casa.* (The book, I left it at home.)
书啊，落家里了。

Switching to the topic–comment paradigm means, on the one hand, breaking with everything conveyed in Chinese language textbooks, but it also means getting Spanish-speaking students to understand that all of the grammar they have been taught at school corresponds to the written language and is formalized within traditional grammatical analysis. Therefore, it is difficult to break away from such a deeply rooted mental framework. That's why several classes must be devoted to helping the students themselves understand it. However, once they recognize similarities in Spanish spoken language and Chinese topic-comment structures, the progress in learning Chinese is extremely positive.

The other two tasks on which I focus my efforts are word order and focus construction. Word order in Chinese shows that assigning fixed lexical categories to individual words

[1] See especially LaPolla (2009, 2013, 2015, 2017).
[2] The last two points are developed in LaPolla (1995).

leads to significant errors. Nevertheless, this practice remains common in many teaching materials, and instructors must continually work against it in order to avoid inconsistencies. Moreover, recognizing the central role of focus constructions in Chinese helps clarify a range of patterns, including the *shì...de* 是……的 construction and the frequent use of *dōu* 都 and *jiù* 就 and others, that are not clearly explained in textbooks. All of this implies that students must become familiar with terms and definitions different from those they are accustomed to using. Although this may initially require considerable effort, it ultimately yields substantial benefits for the successful acquisition of Chinese as a second language.

1.2 In Literary Translation from Chinese

The influence of Professor LaPolla's work is equally significant in the field of literary translation, whether of classical or contemporary texts. I recall a conversation with the Chinese writer Yan Lianke (1958-), who once asked me why the French translator of his novel *Sishu* 四書 (*The Four Books*) (2011) had consulted him about the meaning of the opening sentence:

（2） 大地和脚，回来了。
Dadi he jiao, huilai le.

Yan Lianke could not understand why such a simple sentence might pose difficulties. At the time, I was translating the novel into Spanish and found I was facing the very same problem. In written Spanish, "la madre tierra y los pies" (the Mother Earth and the feet) automatically becomes the grammatical subject of the sentence because in written language placing a comma after the topic is generally avoided except in dialogues or highly informal contexts. However, understanding that a topic may be followed by any comment, and recognizing the comma simply as a pause marking the topic, makes it clear that this sentence follows a topic–comment structure.

Nonetheless, translating such a structure into Indo-European languages almost always alters the original meaning. The French translator, likely without considering the topic–comment possibility, introduced a subject that is not present in the Chinese text. Other translators used different strategies. The results appear below:[3]

[3] The English translation by Rojas (2015), the French translation by Gentil (2012), the German

Original Chinese: *Dadi he jiao, huilai le*. “大地和脚，回来了。”

- English translation: “*The great earth and the mortal path returned together.*”
- French translation: “*Ses pieds ont foulé la terre, il est revenu*.” [His feet have stepped on the ground, he came back.]
- German translation: “*Die Erde kehrte heim und mit ihr alle Kreatur*.” [The earth returned home and with it all creation.]
- Italian translation: “*I suoi piedi calpestavano la terra: era tornato*.” [His feet stepped on the earth: he had returned.]
- Spanish translation: “*La madre tierra y los pies habían regresado*.” [The Mother Earth and the feet had returned.][4]

This type of sentence is a typical example of a Chinese topic–comment construction offering symbolic flexibility and enriching the narrative with multiple layers of meaning. Yan Lianke’s writing is filled with such structures, posing unique challenges for translators into European languages.

The French and Italian translations both opted to personalize the sentence in the third person, referring implicitly to a character in the novel: the Child (*haizi* 孩子). The English and German translations retained “earth” (*dadi* 大地) but omitted “feet” (*jiao* 脚), introducing interpretative additions such as “mortal path” or “with it all creation” (*mit ihr alle Kreatur*). Though in spoken Spanish a pause after the topic is possible, it is generally regarded as incorrect in formal writing.

As some linguists observe, “grammatical categories might carry a high semantic import, especially in poetry” (Jakobson 2012). In the same breath, not only a lack of semantic but also a lack of syntactic equivalents in languages makes literary translations much more complex and poses a significant challenge. In this respect, grammatical features of the Chinese language itself provide Yan Lianke with a range of poetic narrative devices loaded with significance that are difficult to translate into Indo-European languages and require an interlingual transposition.

translation by Hermann (2017), the Italian translation by Regola (2018), and the Spanish translation by Fisac (2016).

[4] An English translation of the various versions is provided, aiming to remain as faithful as possible to the original, although some subtle nuances may be lost in each translation.

2. On the distance from the object of study and the problem of English as the reference language in linguistic research

2.1 Problems in Chinese language textbooks

A systematic review of Chinese language textbooks currently used in teaching reveals explanations that are at least often fragmented and, in many cases, incorrect. Vocabulary lists provided in each lesson typically assign fixed grammatical categories to each word without defining the categories themselves. It is incorrectly assumed that these labels carry the same meaning across all languages. Glossaries frequently provide translations that do not match those found in the dialogues of the same lesson. Moreover, many textbooks insist that in Chinese, the Subject must always appear before the Predicate and that the simple sentence in Chinese is like in English or in Spanish: Subject-Verb-Object or Subject-Predicate.

The vocabulary and dialogue of the first lesson in numerous textbooks clearly illustrate these issues: [5]

Table 1: Dialogue vs. Fixed Categories: A First-Lesson Textbook Example

Pinyin	***Chinese***	***Dialogue Translation***
Nǐ hǎo!	你好!	Hello!
Nǐ hǎo ma?	你好吗？	How are you?

Table 2: Category Mismatch: When Grammar Labels Contradict Translations

Vocabulary		***Grammatical Category Assigned***	***Translation in English***
nǐ	你	Pronoun	You
hǎo	好	Adjective	Good; well; fine; O.K.
ma	吗	Interrogative Particle	Interrogative particle for question expecting yes-no answer

For native speakers, these explanations may seem unproblematic. For learners whose native language is an Indo-European language, however, the explanation is not clear, and many questions naturally arise:

[5] These examples are taken from the first volumes of Liu *et al.* (2013) and Jiang *et al.* (2013). These two textbooks are still widely used in Spain.

–Why is a third tone written on *nǐ* 你 when it is actually pronounced with a second tone?

–If two third tones are pronounced in succession, the first triggers what is called "tone sandhi." Does *pinyin* not represent the actual pronunciation?

–What is the purpose of tones in *pinyin* if they are not written as pronounced?

–Why is *hǎo* 好 labeled as an adjective, when no adjective appears in the English translation?

–What does adjective mean in Chinese grammar?

–Is the verb omitted in Chinese?

–What exactly is a particle?

A supposedly simple explanation thus generates numerous unresolved questions. While the difficulty of learning written Chinese cannot be denied, the difficulty of spoken Chinese is often exaggerated. Unfortunately, this is due to habitual explanations given in textbooks or by instructors, making Chinese much more difficult than it actually is. As LaPolla and Poa (2006: 270) state:

> *"…there are no universal categories of grammatical relations instantiated in all languages, and the principles that determine word order are not the same for all languages… Each language is a unique set of language-specific conventions, and so each language should be described in its own terms".*

Most existing Chinese grammars used for teaching assign fixed grammatical categories to words without providing definitions. Even in the manuals published for the HSK examination, the practice of assigning fixed grammatical categories to vocabulary items continues to be used, sometimes with perplexing results. In some cases, terms are labeled as verbs but are subsequently translated as adverbs, or they are assigned the category of noun and yet translated as adverbs, as can be observed in the following examples[6]:

[6] The English translations of *precisamente* and *últimamente* are my own. These two terms and their definitions appear in the Spanish version adapted from 国际中文教育中文水平等级标准 *(Proficiency Grading Standards for International Chinese Language Education* GF 0025–2021), originally published in 2021 by Beijing Language and Culture University Press. In this Spanish version, grammatical categories and Spanish translations have been added: Center for Language Education and Cooperation. 2022. *Estándares Internacionales de los niveles de la lengua china*, 80–81.

Table 3: Semantic-Syntactic Mismatch in HSK Textbook Vocabulary Categories

Chinese	***Pinyin***	***Translation in Spanish (English)***	***Category Assigned***
正是	*zhèngshì*	*precisamente* (precisely / exactly)	verb
最近	*zuìjìn*	*ultimamente* (recently/lately)	noun

Through years of learning other languages, I realized that grammatical categories could differ greatly across linguistic traditions, even when they share the same name. Because most Chinese textbooks apply terminology directly as it is used in their tradition, their grammatical explanations often become confusing or contradictory. Spanish-speaking learners struggle when a term labeled as a noun in one sentence appears as the main verb in another. In my view, much of the grammar presented in Chinese textbooks obscures rather than clarifies the nature of the language.

A key question is why many Chinese language teachers rarely challenge these explanations. One likely reason is that most teachers are native speakers of Chinese and, therefore, lack the necessary distance to critically examine them. Although they may feel unfamiliar with them, most people tend to accept the grammatical explanations because they believe that they are suitable for speakers of European languages, as the studies and grammatical categories used also originated from Europe.

2.2 The significance of clear definitions and the challenges of relying exclusively on English as the reference language for Chinese

Linguists who have offered the clearest analyses of Chinese grammar tend to be those with broad comparative knowledge of many languages.[7] Randy LaPolla's contributions to the study of the Chinese language and other languages of the world arise not only from his profound expertise in linguistics but also, in my view, from the critical distance he maintains from his object of study. This distance has allowed him to perceive with great clarity important considerations, such as when he states:

[7] Chao, Yuen Ren knew many of the world's languages, and it is said that in addition to these, he knew more than 30 varieties of Chinese; see URI: https://www.chinanews.com.cn/cul/2014/04-17/6077049.shtml (accessed 14 November 2025).

> *"there is no assumption of a universal genetically-encoded grammar, and each language is seen as a unique entity reflecting a unique society, and so in doing linguistic work, we must look at each language on its own terms and determine which functional domains it obligatorily constrains the interpretation of, to what extent it constrains them (if it does), and what formal mechanisms it uses to constrain the creation of the context of interpretation. It is in these ways that languages differ." (LaPolla 2003:114)*

No doubt, one problem is the use of grammatical categories that have been left undefined. This happens so often that even explicit definitions are ignored; Yuen Ren Chao, for example, reframed Subject–Predicate as Topic–Comment. Despite their importance, few people pay attention to these definitions, as the work of Professor LaPolla has underlined.

Yuen Ren Chao notes in the preface to *A Grammar of Spoken Chinese* that when he decided to study Chinese grammar in Europe, "Everybody laughed at my going to Europe for Chinese grammar" (Chao 1970[1968]: vii), yet he found it immensely beneficial. Now, I realize that, in my own analysis, having a mother tongue other than English has played an important role in prompting me to question the grammatical explanations of Chinese. Using Spanish as a contrastive reference has also made clear that relying solely on English as the dominant scientific language is problematic. Viewing Chinese through the lens of Spanish has allowed me to see some aspects of the language more clearly, though it may also cause me to overlook features absent in Spanish.

For a foreign learner whose knowledge of Chinese will never reach the level of those who have learned it as their mother tongue, it is disconcerting to see Indo-European grammatical frameworks applied directly to Chinese, producing unclear and unsystematic descriptions. All of them stem from the superimposition of English onto Chinese in the early decades of the twentieth century, carried out on the basis of linguistic categories that did not consider the specific features of the Chinese language on its own terms.

3. When writing has shaped the study of languages

Anyone who begins learning Chinese is immediately fascinated by its writing system. At the same time, mastering it is one of the greatest challenges for speakers of alphabetic

languages. The central role of writing in Chinese culture is undeniable, but its unique visual form has also generated many misunderstandings. Some scholars argue that Chinese writing has been overvalued in discussions about Chinese language (Alleton 2009). The classification of Chinese as an isolating language has its roots not in the spoken language but in the nature of the writing system. In much of Chinese linguistic scholarship, writing has shaped conclusions in ways that sometimes obscure the reality of spoken language. Yet speech is the primary medium of linguistic communication. As Moreno Cabrera notes:

> *"In casual, informal speech, words and morphemes tend to be grouped together in intonation units of several elements having a highly synthetic nature; in contrast to that, in many writing systems, the grammatical units tend to be isolated and carefully distinguished, giving to the language a more analytic appearance." (Moreno Cabrera 2008)*

And further on, he adds:

> *"…one of the major advances in modern linguistics has been the claim that letters do not necessarily represent phonemes and this seems to be agreed upon by most linguists. Unfortunately, this recognition does not mean that the written language model has ceased to influence heavily linguistic analysis." (Moreno Cabrera 2008)*

3.1 Word boundaries in Chinese

In Chinese, each written character appears isolated on the line, without any indication of whether it is an independent word or forms part of a multisyllabic word. This visual separation has had a strong impact (perhaps excessively so) on grammatical analysis. For learners of Chinese as a second language, identifying word boundaries is often challenging. Yet when listening to spoken Chinese, such boundaries become far clearer: multi-character words are pronounced as unified units. When speaking Chinese, one does not perceive a separation between the distinct sound segments that form a word, since what is heard are words that extend beyond a single syllable and are far from being pronounced in isolation.

It was precisely when I began studying German that I encountered the opposite phenomenon. German is known for its very long written words formed by compounding.

Many of these components have independent meanings and, in some cases, can be written together or separately. However, in speech, German compounds do not merge phonetically into a single uninterrupted cluster. My surprise was that when trying to identify a written word formed by several words, I found it difficult to recognize it when hearing it. Upon hearing that term in German, I couldn't connect it to such a long-written term. That's when I realized that, even though words are joined together, a German speaker must know where one word begins and another ends in order to pronounce it correctly. For instance, *wiederaufleben* (rebirth) is pronounced as *wieder–auf–leben*, with clear internal boundaries.

This contrast led me to reconsider assumptions about Chinese. In Chinese, although individual characters are written separately, speakers pronounce certain sequences as unified lexical items. For example, when *xiàndàihuà* 现代化 is pronounced, there is no separation into *xian–dai–hua*; rather, it is heard as a single word. There are no pauses between the characters comprising a word, and the pronunciation does not correspond to isolated syllables.

This fact about German writing and its differences with German pronunciation, where the joined writing of words is not fused in speech, led me to wonder whether the opposite phenomenon might occur in Chinese. That is, even though words are written with several separate characters, in reality, speech treats them as a single word. There is no pause between each of the characters that make up such a word, and although a character can be identified with a sound segment equivalent to a syllable, no syllabification is perceived in pronunciation.

Thus, in both German and Chinese, the written representation can obscure the true structure of the spoken word. In Chinese, written separation may mislead learners into perceiving fragmentation that does not exist in speech. This overemphasis on writing has contributed to the widespread classification of Chinese as an isolating language[8]. Nevertheless, considering modern Chinese to be an isolating language, in my humble opinion, is a mistake.

3.2 Verb boundaries in Chinese

[8] Considering Mandarin Chinese as "an isolating language with practically no grammatical morphology" has been a very common statement. See Li and Thompson (1978).

Rereading Yuen Ren Chao, one realizes that the correspondence between writing and speech was called into question long ago, although perhaps we have interpreted his ideas only partially and not to their full depth. In the words of Yuen Ren Chao:

> *"There is no close, detailed correspondence between the written and the spoken word. […] A written word is in principle a frozen instance of the spoken word in much the same way as a word on a phonograph record. There are various degrees of fidelity in phonographic reproduction. There are also more or less accurate recordings of speech in writing. Just as the writing of one period of history can be misread or not understood at all by readers of another, so a phonograph record designed for one model of player can be distorted or not reproduce at all by a machine of another mode." (Chao 1976)*

It is necessary to reconsider certain assumptions imposed on natural languages through grammars based largely on written forms. Certain myths originating from the written language must be abandoned, as they were in fact created without taking pronunciation in spoken language into account (DeFrancis 2002). While modern Chinese forms words through the juxtaposition of syllabic morphemes, the claim that Chinese lacks morphological change should, at the very least, be qualified. Chinese is not as inflectional as Latin or Greek, but it does exhibit agglutinative and even, in some cases, mildly fusional tendencies. [9] Examples include the nominalizing suffix *-r* 儿 (as in *huàr* 画儿 'painting', *gàir* 盖儿 'lid', or *jiānr* 尖儿 'tip, point') and the prolific suffix *-zi* 子, which in Chinese dictionaries appear in more than a thousand lexical terms[10]. Many more examples could be mentioned.

Nevertheless, a particularly persistent misunderstanding—one with serious consequences for teaching—concerns Chinese verbs. Traditional grammar manuals describe Chinese verbs with complements and objects as isolated parts, implying that they are difficult and unusual features compared to other languages. Some researchers even claim that it is rare to find in other languages anything comparable to Chinese verb complements, and they emphasize the difficulty foreigners have in mastering them (Liu *et al.* 2001).

The absence of tense, voice, or person has led to treating certain morphemes as

[9] Numerous examples can be found in Yip (2007).
[10] See Zhongguo Shekeyuan Yuyan Yanjiu Suo Cidian Bianzhuan Shi (ed.) (1987).

complements, which creates great confusion both in their analysis and in the learning process for any second-language student. In this regard, studies should be undertaken that delve into aspectual morphemes and other types of Chinese compound verbs, in order to facilitate the learning of Chinese and of the various verbal combinations that are currently taught under the general label of "complements" (Fisac and Moratto 2024). Chinese is not a full fusional language in the morphological sense, but it is not an isolating language either. Perhaps it is time to abandon the terminology of isolating language proposed long ago by Wilhelm von Humboldt (1767–1835), which has now been clearly shown to be outdated.

4. Conclusion

The work of Professor Randy J. LaPolla represents a major contribution to contemporary linguistics and has highly practical implications, especially for the study and teaching of Chinese. His recognition of Chinese as a topic–comment language provides a more accurate analytical framework and sheds light on structures that otherwise appear opaque when approached through European grammatical traditions.

His emphasis on studying each language on its own terms underscores the importance of distancing oneself from inherited assumptions. This perspective helps correct misconceptions arising from applying foreign categories to the analysis of Chinese and for excessive reliance on written forms.

For language teaching, LaPolla's insights suggest that educators should move away from rigid grammatical categories derived from European languages and instead emphasize Chinese-specific structures such as topic–comment organization, word order, and focus constructions. For translation, acknowledging these structural differences enables translators to avoid distortions and preserve essential elements of Chinese literary expression.

Building upon LaPolla's contributions, we can affirm that a more coherent, accurate, and culturally informed approach to Chinese linguistics is not only possible but necessary. His work continues to guide researchers, teachers, and translators in understanding the true complexity and richness of the Chinese language.

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Going beyond the 'Boasian trilogy': Cultural anchoring and the creation of descriptive grammars

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Abstract: This study examines the scope of grammatical description and proposes that descriptive grammars would benefit from a concept termed 'cultural anchoring', rather than aiming to describe languages as modular systems isolated from their various contexts. Drawing from linguistic ecology, cultural anchoring is an approach for producing grammatical descriptions that place the described languages into their various contexts (e.g., socio-cultural, historical, and geographical). The interplay between grammar and culture has been discussed at least since the 20th century 'Americanist tradition' in linguistics, yet the discussions have generally had limited influence on the produced grammars. Also, there has been a lack of sufficient methodological exploration to clarify what 'writing culture in grammar' entails in both theoretical and practical terms, two key issues that the present study addresses. By adopting a multi-contextual approach to creating grammatical descriptions, we can achieve a more holistic understanding of languages and increase the relevance and utility of such work in research, education, and possible maintenance and revitalization. In sum, the traditional 'Boasian trilogy' can be further expanded into a 'quartet of culturally anchored description' that moves beyond a modular understanding of language.

1. Introduction

This brief methodological study on 'grammaticography' or grammar writing investigates the scope of grammatical description from the viewpoint of 'cultural anchoring',

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a notion that is proposed here for enriching descriptive grammars as a linguistic text genre. Given its centrality in linguistics, grammar writing has been examined methodologically from numerous perspectives. Among others, such discussions have extensively addressed the apparent tension between form-based and function-based approaches, along with their respective advantages and disadvantages (see e.g., Payne 2014: 98–103). Similarly, the role of theory (or lack thereof), together with the essence of 'Basic Linguistic Theory' have featured prominently in the discussions (see e.g., Dixon 2010a, 2010b, 2012; Dryer 2001, 2006). Additionally, the 'completeness' or 'comprehensiveness' of a grammar has also come under scrutiny (see e.g., Rice 2007), a topic closely linked to the issue of what linguistic features a grammar should include (see e.g., Rice 2006).

However, the question of how far a grammatical description should extend beyond a modular account of the target language's phonological and morphosyntactic systems has not been addressed sufficiently. While the relationship between grammar and culture has been discussed at least since the 20th century 'Americanist tradition' in linguistics, this theorizing has had limited influence on the grammar-writing practices, even among the founding figures of the tradition, with the result that a boundary between 'writing grammar' and 'writing culture' typically characterizes most contemporary linguistic orientations (Hill 2006: 609, 622). In sum, while perusing an average descriptive grammar likely reveals important information concerning the sound system of the language and its patterns of forming possessive constructions, for instance, one is less likely to find information concerning the various extra-linguistic contexts of the language, aside from perhaps some brief sociocultural notes included in the introductory chapter.

This study proposes that modular descriptions maintaining the established dichotomy outlined above are not the only way for structuring descriptive grammars. On the contrary, it is argued that since languages never exist context-free, incorporating relevant contextual information into a grammar can benefit a wider readership both in the present time and in the future. The way a language is structured is often rooted in its speakers' culture, everyday life, and belief systems (Dixon 2010a: 209). By acknowledging this, cultural anchoring thus helps various stakeholders to gain more from the grammars that descriptive linguists produce.

With cultural anchoring as a novel approach to grammar writing, this study also seeks to stimulate discussion about descriptive grammars as a linguistic text genre. The rationale behind this lies in acknowledging that descriptive grammars are an evolving text genre,

much like any other genre that remains in active use and thus evolves to correspond to the needs of new generations and sociocultural change. Drawing borders around genres is both an exercise of inclusion and exclusion. In other words, genre classification necessarily specifies which texts qualify as members of the genre and conversely, which texts do not. At the same time, establishing genres is also an act of setting prototypes of properties texts within the genre are expected to contain.

Throughout history, the genre of grammars has undergone significant development. For instance, the Western tradition is founded on the goal of describing (Greek and Latin) word classes systematically (Luhtala 2025: 324). On the other hand, it took long for phonology and syntax to reach the central positions that they now hold in modern descriptive grammars. Until the first half of the 20th century, the focus of description lay primarily on phonology and morphology, syntactic analysis being comparatively limited, unlike in more recent grammars (inter alia Cristofaro 2006: 138; Mithun 2014: 35; Rice 2006: 239). In sum, the proposal of cultural anchoring for descriptive grammars should be seen against the long and evolving history of grammar writing and the evolving shape of grammars as a text genre.

This chapter is structured as follows: After this introduction, Section 2 focuses on how cultural anchoring stands vis-à-vis the 'Boasian trilogy', which is usually considered the standard approach to comprehensive linguistic description. In turn, Section 3 reflects on the principles and practices of cultural anchoring as a part of grammar writing. Section 4 further develops the arguments of the study by introducing an intergenerational issue termed as the 'Rosetta stone problem', the existence of which argues for the need of wide and extensive linguistic descriptions. Finally, Section 5 concludes the study and includes a brief discussion on the challenges associated with implementing cultural anchoring, along with proposed solutions to mitigate and overcome these challenges. Many of the examples offered throughout the paper originate from the author's grammar of Geshiza (Honkasalo 2019) that experiments with implementing cultural anchoring into grammar writing.

2. From the 'Boasian trilogy' to a quartet of culturally anchored description

To provide background for cultural anchoring, this section begins by examining the 'Boasian trilogy', typically considered an ideal for linguistic description (2.1). Building on this, it is shown that a 'quartet of culturally anchored description' offers a broader alternative

descriptive framework for descriptive linguists (2.2). Finally, a case study of Geshiza and Khinalug directional marking in verbs is offered as an example to illustrate the necessity and benefits of cultural anchoring (2.3).

2.1 The Boasian trilogy

The "Boasian trilogy" is considered the "gold standard" of linguistic description (see e.g., Evans & Dench 2006: 10–16). Such a trilogy typically comprises a grammar, a dictionary, and a text collection.[1] As Epps et al. (2017: 42) argue, texts play a pivotal role in the framework, since they offer insights into the target language's grammar and into the culture of its speakers. The Boasian trilogy has remained relevant to the present day, and for a reason.[2] At its core it is an approach to linguistic description that is easy to understand, although often difficult to put into practice.[3] Nevertheless, the Boasian trilogy reflects the notion of modularity in language. In other words, the underlying assumption is that by describing the subsystems of phonology with morphosyntax, offering a lexicon, and further illustrating how grammar works in practice by copious examples in the shape of a 'text'[4]

[1] While the Boasian trilogy consists of three interlinked parts, in practice, not all such parts are considered equal by all stakeholders. At the time of writing, linguists are generally not incentivized to produce dictionaries and text collections. While the academic community pays lip service to their creation, in practice, theoretical work and grammatical descriptions are considered "higher" scholarly accomplishments. In many regionally or genealogically based fields of linguistics, a gap consequently exists between grammatical description and other types of contributions that belong to the Boasian trilogy. To illustrate from the study of Gyalrongic languages (Sino-Tibetan), many highly usable grammars of the various Gyalrongic languages exist, such as Gates (2021) on Stau, Jacques (2025) on Japhug, and Lai (2017) on Wobzi Khroskyabs. At the same time, dedicated lexicographic treatments of the languages lag noticeably behind, Jacques (2016) on Japhug being the only comprehensive dictionary that has been produced for a Gyalrongic language. Highly uneven realizations of the Boasian trilogy are attested more broadly and should be considered almost rule-like, rather than an exception.

[2] However, Boasian descriptive linguistics is not the only framework for empirical fieldwork-based investigation. Language documentation has emerged as an alternative paradigm particularly since Himmelmann's (1998) foundational study. As a result, there has been some shift of focus from the Boasian trilogy toward language documentation (Meakins et al. 2018: 122).

[3] Producing a dictionary and a text collection in addition to a grammar requires considerably more time when compared to the task of producing a descriptive grammar only. This increased demand of time may not align well with the expectations of funding agencies or PhD programs, if a grammar is created for the purposes of a dissertation.

[4] The fact that the specimens of recorded and transcribed speech are frequently called texts is yet another manifestation of the written language bias in linguistics (see Linell 2005 for an influential examination of the bias). Most spoken languages of the world do not possess established practices of written communication, a situation that particularly applies to minoritized languages whose speaker communities are typically small.

collection, a language can be sufficiently described.

2.2 'Quartet of culturally anchored description'

Most grammars tend to provide only brief introductory remarks on the extra-linguistic contexts of their target languages. This is typically expressed in the form of a brief cultural sketch at the beginning of the grammar, prior to the key chapters on phonology and morphosyntax. The latter two, in turn, are treated as autonomous systems, and receive the lion's share of focus in a descriptive grammar.[5]

Cultural anchoring is the opposite of this modular approach. I define cultural anchoring as an approach to linguistic description and grammar writing where the language is described together with its various extra-linguistic contexts, rather than being forcibly separated from these. This term was originally used in Honkasalo's (2019) description of Geshiza where it was inspired by Prins's (2016) notion of 'web of relations', namely the network of connections a language holds with the non-linguistic realities such as culture, geography, and categorization of the world. More broadly, the notion resonates with LaPolla's (2015: 43) observation that the culture and cognition of the speakers shape all aspects of language — a perspective central to his view of language not as a static, encoded system but as emergent behavior shaped by cognition, culture, interaction, and environmental context (LaPolla 2022; see also the introduction to this volume).

Cultural anchoring is theoretically founded on linguistic ecology, also known as language ecology. Linguistic ecology examines the relationships among a language, its speakers, and their environment, emphasizing that languages are never isolated systems but interact with social, cultural, and ecological contexts of the speaker communities (Bastardas-Boada 1996: 22; Grenoble 2011: 30). The metaphor of ecology was introduced into linguistics by Voegelin et al. (1967) and developed further by Haugen (1972). Mirrored against the theoretical support offered by linguistic ecology, the goal of cultural anchoring can consequently be defined as describing a whole ecology of a target language. In short, this approach stands in stark opposition to the modular view of language and linguistic description discussed above.

[5] See also LaPolla's (2022) critique on 'Bloomfield-Chomsky Structuralism' that conceptualizes language as "a single autonomous system (langue/competence) that can be studied divorced from its actual context".

Although the factor of causality has not been investigated in full detail, language endangerment and language shift have serious consequences for cultural knowledge, the latter being frequently lost in the event of former (Michael 2011: 136).[6] In other words, linguistic endangerment is frequently linked with drastic changes in linguistic ecology, such as the disappearance of sociocultural practices and traditional knowledge (e.g., use of plants and tools, local history, ancestral religious practices).[7] Simply put, when languages disappear, whole epistemic systems may vanish. The whole human knowledge base embodying accumulated wisdom derived from humans' interaction with their environment across millennia is thus severely eroded, often irretrievably (Harrison 2007: 16–17). This highlights the need for 'rich description' in grammar writing in the spirit of cultural anchoring. It would be regrettable if a linguist perusing a descriptive grammar in a distant future could access every major grammatical detail of the language by then long extinct but got to know nothing about its speakers, how they used it, or the underlying worldview it reflected (Honkasalo 2019: 34).

Because of its goals of a holistic description of a language's ecology, cultural anchoring is important for revitalization. Through the produced broad descriptions, it has the potential for both recording and transmitting culturally relevant information and how it is encoded in the language. This approach is already followed in some pedagogical resources for minoritized languages, such as the Navajo textbook of Parsons Yazzie & Speas (2007), based on the principle that developing Navajo language skills should go hand in hand with deepening learners' understanding of the Navajo culture, traditions, history, with elders serving as key sources and transmitters of this knowledge.

Via negativa, it is essential to clarify what cultural anchoring is not. In this study, cultural anchoring is proposed as an approach to description, not as an explanatory theory that explains causal links between individual components in the network of connections. Consequently, cultural anchoring should not be interpreted as a revival of 'linguistic determinism' in the spirit of the strong form of Sapir-Whorf Hypothesis or other deterministic explanatory approaches (e.g., X in culture invariably causes Y in language, or vice versa). Rather, the aim of cultural anchoring is to make explicit the extralinguistic

[6] I.e., whether endangerment and language shift directly cause the loss of cultural knowledge or whether these all are results of broader processes.

[7] In an extreme form, such changes in linguistic ecology may also involve physical destruction or destructive transformation of the ancestral homeland, or forced displacement therefrom.

connections the described language possesses. In the following subsection, a case study of two mountainous linguistic communities illustrates this in practice by examining the connection between the grammaticalization of direction in the verbal system and the geographic setting of the speakers' homeland.

2.3 Encoding direction and the geographic setting: a case study

Geographical realities of a speech community may affect the language they speak. More precisely, such realities may affect the ways the speakers conceptualize spatial relationships and the aspects of spatial layout that are cognitively important and may thus become linguistically encoded. This can be exemplified with two genealogically unrelated languages, Geshiza (Sino-Tibetan) and Khinalug (Northeast Caucasian)[8]. While the two are spoken almost five thousand kilometers apart, the respective mountainous homelands of both languages' speakers share geographic similarities.

Geshiza is a Gyalrongic language of Southwestern China spoken by a population who identify as ethnic Tibetans. The grammar of the language encodes movement as mapped on the features of a river valley that characterizes the homeland of the language's speakers. Movement is marked by verbal prefixes possibly grammaticalized from spatial adverbs, which may proceed along two axes (Table 1). Movement may be conceptualized parallel to the river at the bottom of the valley, either upstream gæ- or downstream wə-, as in gæ-ɕʰoŋ 'I went (upstream)' and wə-ɕʰoŋ 'I went (downstream)'. Alternatively, movement can be conceptualized perpendicular to the river. Since moving towards the riverbed by default also results in moving lower and conversely, moving away from the river equals climbing to higher terrain, the meanings of næ- 'towards the river' and rə- 'away from the river' have evolved additional meanings of 'down' and 'up', as in næ-ɕʰoŋ 'I went towards the river/downwards' and rə-ɕʰoŋ 'I went away from the river/upwards'. A speaker also has the option of not mentioning the direction of movement with the neutral prefix dæ-, as in dæ-ɕʰoŋ 'I went'.

[8] While the classification of Khinalug as Northeast Caucasian is uncontroversial, its subclassification remains debated. As summarized by Khvtisiashvili (2013: 9), although the language has been classified as a member of the Lezgic branch, most contemporary scholars now consider the language as a separate sub-branch of Northeast Caucasian.

Table 1: Directional prefixes in Geshiza (after Honkasalo 2019: 536–541)

Prefix	Directional function
gæ-	upstream
wə-	downstream
næ-	towards the river, downwards
rə-	away from the river, upwards
dæ-	directionally neutral

Khinalug is a language spoken in a single village in the Quba district of Azerbaijan. Situated at approximately 2300 meters above sea level, the mountainous homeland of its speakers is one of the most isolated highland settlements in Azerbaijan (Garıbova & Zeynalov 2023: 30). Similar to Geshiza, the language possesses a deictic directional system marked by what are known as preverbs in the research tradition (Table 2). A speaker may conceptualize movement vertically either upwards or downwards, both categories being divided into cislocative (towards a point of orientation) and translocative (away from a point of orientation) subsystems (Rind-Pawlowski 2023: 92).

Table 2: Productive directional preverbs in Khinalug (after Rind-Pawlowski 2023: 92)[9]

Preverb	Directional function
k^ha ~ k^hi	neutral
al(a) ~ il(i)	downwards, cislocative
qal(a) ~ qil(i)	upwards, cislocative
t^hal(a) ~ t^hil(i)	same level, cislocative
a ~ i	downwards, translocative
za ~ zi	upwards, translocative
la ~ li	same level, translocative

In sum, the case study shows that in both Geshiza and Khinalug grammars, the grammaticalization of direction in the verbal complex of both languages reflects the geographical realities that the respective speaker communities face. Consequently, linking

[9] As described by Rind-Pawlowski (2023: 92), the longer allomorphs with a vowel inside the parenthesis occur before the consonants /χ/ and /š/.

the description of verbal orientation to that of the geographical setting helps the reader understand the larger contexts of the described languages and their speakers. As the example of Geshiza demonstrates, such linking goes beyond physical geography; the key role lies in cultural perception of geography. Rather than the mountains themselves, the core of the system is formed by physical and cultural space of the river valley. Such river valleys play a pivotal role in Tibetan cultures and conceptualization of space.[10] They not only supply water for settlements and possible agriculture, but also facilitate movement and trade, sometimes holding sacred and religious significance. To conclude, explaining the grammatical phenomenon of direction without discussing the larger geographic and cultural background of it presents a highly partial picture of its cultural meaning for the speakers of the language.

3. The principles and practicalities of cultural anchoring

Even if one accepts the need for cultural anchoring in theory, the argument would be left incomplete without addressing the practical means how this can be achieved in grammar writing. This section focuses on the following: terminological and descriptive sensitivity (3.1), background material and appendices (3.2); cross-references (3.3), and examples (3.4).[11]

3.1 Terminological and descriptive sensitivity

While issues of interpreting pure grammar may become sensitive, especially if the language community holds ideas about the structure of own language, such sensitivities grow manyfold in preparing culturally anchored descriptions. In other words, misrepresenting a locative enclitic as a dative one likely pales in comparison to misrepresenting a cultural concept in terms not acceptable to the community.

In his final contribution, Sahlins (2022) argues that unlike the "disenchanted" worldview of contemporary West, most societies inhabit an 'enchanted' cosmos where ancestors, gods, and "meta-persons" not only coexist with humans but also actively shape

[10] See, for example, the Standard Tibetan question *lung pa ga nas yin* 'Where are you from (lit. Which valley are you from)?'.

[11] Some of these have been briefly mentioned by Hill (2006), on which the present study builds regarding the practical steps of 'cultural anchoring'.

everyday life. He critiques western scholarship for largely treating these cosmologies and ontologies as mere beliefs and distortions of reality, thus failing to take them seriously. From the perspective of cultural anchoring, by the very least, this highlights the importance of terminological and descriptive sensitivity. For instance, discussing divinities and spiritual entities of an ethnic group in terms of 'imaginary creatures' or 'superstition', regardless of the author's own convictions and world view, would in most cases fail to grasp and convey the significance and practical role these beings hold in the lives of community members. A culturally anchored description, by contrast, seeks to represent these ontologies on their own terms, respecting the worldview embedded in the language and practices of the speakers.

3.2 Background material and appendices

Placed before the grammatical description proper, many grammars include some background materials on the various contexts where the described language is spoken. Such sections go under various, yet clearly related names, such as 'The language and its speakers' (Aikhenvald 2003 on Tariana), 'Lezgian and its speakers' (Haspelmath 1993 on Lezgian), and 'The people and their language' (Watters 2002 on Kham). A brief ethnocultural sketch has become a recognized common characteristic of descriptive grammars as a text genre.[12] In the words of Payne (1997: 13) in his guidebook for linguistic fieldworkers and grammar writers that has been highly influential in training specialists in these orientations since its publication almost three decades ago,

> *The first task of a grammar or grammar sketch is to identify the language being described, and to provide certain particulars concerning its ethnolinguistic context.*

Cultural anchoring builds on the existing practices but calls for more extensive background materials. The relevant topics vary across speaker communities, yet commonly address the geographical setting, kinship, social structure, religious practices, and local history. An average grammar dedicates a single digit percentage of its total length on such topics. While this is certainly better than omitting them entirely, it remains clearly

[12] For instance, Lehmann & Maslova (2004: 1869–1870) argue that a description of a language comprises two subsystems: 1. setting of the language and 2. language system.

insufficient for balanced cultural anchoring. Among relatively recent grammars, Turin's (2012) work with 'The Thangmi Ethnolinguistic Context' (130 pages) stands out as a striking exception and provides an exemplary model: the ethnolinguistic background accounts for nearly 13 percent of the grammar's total length. To conclude, like all other parts of a descriptive grammar, the ethnolinguistic background should also be balanced against the other parts, occupying perhaps up to ten percent of the grammar's total length.

Background materials are not the only way to build points of ethnolinguistic anchorage into a descriptive grammar. Some anchoring can also be done at the end of the descriptive grammar with the help of appendices. Some guides to grammar writing recommend using appendices to list all the bound morphemes of the described language. In the same spirit, appendices can be used to give an overview of e.g., culturally important figures, toponyms (in a multilingual format, if relevant), or culturally specific terms that are mentioned in the grammar.

Since cultural anchoring aims at describing languages in their own terms and in their ethnolinguistic contexts, it is only natural that the text and the accompanying examples include terms that may be unfamiliar to the reader. Appendices thus offer the readers a useful tool to gain quickly more information on a topic of their need, such as locating a mentioned toponym by confirming its corresponding form in a regional lingua franca or consulting a brief explanation concerning an important historical figure mentioned in an example sentence.

3.3 Cross-references

Cross-references are essential in descriptive grammars since grammatical phenomena are often interlinked and must thus be discussed in multiple sections of a grammar (Mosel 2006: 43). Likewise, extensive cross-references serve as a necessary and powerful tool to help the reader engage with cultural anchoring throughout the grammar. When the presented linguistic information contains elements of cultural relevance, the reader is encouraged to explore these aspects further.

(1) Geshiza

ŋa=tʰə	*ækə-stæmba*	*ŋoŋ-ræ.*
1SG=TOP	PN-PN	COP.3-SENS

'I am *a khu ston pa* (name of a legendary Tibetan trickster hero). (RN: folktale; see

§2.7.4 for the figure in Geshiza folklore)

(2) *skærva* *dæ-van* *ɲo* *ʈʂəu=ɲə* *dæroŋ.*
circumambulation PFV-LV:do.1PL after picture=PL PFV-LV:hit.1PL
'After circumambulating, we took pictures. (RN: chronicle/ethnographic description; see §2.7.1. *Pilgrimage* concerning circumambulation and pilgrimages among the Geshiza)

Examples (1) and (2) from Honkasalo (2019: 477, 585) illustrate copular clauses and the non-marked ego forms of verbs as a part of the epistemic system. While the two examples are primarily illustrations of grammatical behavior in Geshiza, they simultaneously exemplify the use of the language in its cultural contexts. For this reason, both examples are internally linked to the background materials where the respective cultural concepts of trickster *A khu ston pa* and the ritual of circumambulation are introduced, the latter of which is presented below in an abbreviated form (Honkasalo 2019: 86):

> *Bön, Tibetan Buddhism, and the mountain deity cult discussed below are connected through an important ritual,* skærva *'circumambulation, pilgrimage' (see Figure 2.23 at the end of the chapter). Typically,* skærva *involves a trip to a religiously important location, such as a holy mountain, a monastery, or a stupa, that is circumambulated, i.e. ritually walked around for gaining religious merit. ... While pilgrimages are inarguably a religious cult practice, they are also used by the Geshiza as religious holidays that offer a chance to spend time with one's family and friends while visiting new places, thus illustrating their evolved, secondary touristic function.*

3.4 Examples

The choice of examples, both at the level of individual words and glossed sentences, serves to construct an image concerning the language and its speakers, even when this is not intentional. Sapir is said to have asked an Ojibwe to say 'my skunk, your skunk' to elicit a paradigm, to which his consultant reacted by replying that "no Ojibwe owns a skunk" (Bright

2007: 16).[13] In the respective grammar, it would consequently go against the principles of cultural anchoring to use the word for 'skunk' for illustrating the possessive paradigm. The opposite of this is using culturally relevant examples throughout the grammar to illustrate its actual use in the speaker community. In short, the examples bring the various connections the language possesses alive, and as discussed above, are cross-referenced to more detailed descriptions. Conversely, overly relying on elicited material translated from English or another lingua franca is far less likely to illustrate all the ecology of the described language.

4. Going further: grammar writing and the Rosetta stone problem

Grammar writing faces what I term here as the "Rosetta Stone Problem". In brief, this refers to a paradox between creators and future users where the creators cannot be sure of the future purpose which their creation will be used, nor control this.[14] The Rosetta Stone was originally created to promulgate a decree of king Ptolemy V following his coronation, the stela describing the terms of agreement between the new king and a synod of Egyptian priests (Ray 2007: 132–133). However, the stela has later served an altogether distinct function by being the key document used in deciphering the hieroglyphic writing system, Jean-François Champollion's feat that has become a part of common historical consciousness. We can reasonably assume that neither Ptolemy V Epiphanes nor the actual engravers of the stone were aware of the future role of their work in (re)discovering the principles of hieroglyphic writing.[15] In sum, the central issue in the "Rosetta Stone problem" is that creators often cannot fully prepare for future or definitively determine the future uses

[13] This anecdote often attributed to Sapir is attested in alternative forms, such as an anonymous enquiry to a Chipewyan Indian (Nida 1949: 180–181).

[14] The 'Rosetta Stone problem' and its parallels are not unique to grammar writing. History is full of both concrete and more abstract human creations that have later come to serve a very different function, either fully replacing the original purpose or becoming complementary to it. For instance, the pyramids of Giza, which were originally built as royal tombs, but have later largely become tourist attractions devoid of any remains of the originally entombed bodies. Similarly, the *Satyricon,* authored in the first century by Petronius, was intended as a Roman literary work, but in addition to its literary value, has later been used to analyze the patterns of spoken Latin of the time. Consequently, it is only rational to expect that the cultural creations of our times will evolve additional uses in the future, not all of which are predictable.

[15] It is worth mentioning that the Western narrative focuses almost exclusively on Jean-François Champollion, and to a lesser degree, Thomas Young. While the role of Champollion in deciphering the hieroglyphic writing is indisputable, the pioneering contributions of Arabic scholars are even today largely overlooked in Eurocentric science and particularly its popular narratives.

of their creations.

Modern practice of grammar writing is generally not aware of the Rosetta Stone problem. In other words, it is taken mostly for granted that future generations will either use the descriptions for typical activities of our present era (e.g., linguistic analysis or development of materials for the speaker community or heritage learners) or that they will be interested in content similar to our current priorities. There is no reason to suppose that these would cease to be the core uses of descriptive grammars. At the same time, however, it is reasonable to predict that grammatical descriptions will be approached in some novel ways, or that future stakeholders will be interested in information that many, if not most, contemporary grammars omit. Other things being equal, a grammatical description founded on cultural anchoring is thus more ready to serve various future stakeholders than a descriptive grammar that follows a modular approach to language.

If the pace of linguistic description does not speed up and/or the speed of linguistic endangerment slow down substantially, perhaps 2000 languages will disappear in this century before being sufficiently described (Honkasalo 2026). Even for many languages with at least some documentation, a single grammar or a grammatical sketch, perhaps supplemented by a few articles, may constitute all documentation that ever remains after their extinction: no dictionaries, no text collections, and no online archives with rich metadata. Seen in this context, a grammar itself carries a heavy burden.[16] Providing rich contextual anchoring will thus only increase, not diminish, the potential value of our grammatical descriptions. A broad, culturally anchored description is therefore more prepared for diverse uses that may emerge in the future.

5. Reflection and conclusion

This section concludes the study by addressing the key challenges of cultural anchoring and ways to overcome them (5.1), and by summarizing the key arguments, proposing that our conceptualization of grammar writing is ultimately shaped by the used conceptual metaphors (5.2).

[16] In the words of Lehmann & Maslova (2004: 1861): “For all those languages that are threatened by extinction, a comprehensive description is the only chance for them to be revived and the only way to protect them from falling into oblivion after their extinction.”

5.1 Challenges of cultural anchoring

As stated by Payne (2014: 91), authors of descriptive grammars often face unrealistic expectations to accomplish seemingly conflicting needs, such as comprehensiveness vs. usefulness, all revolving around the question of what a grammar 'should' be. Adding cultural anchoring as a proposed key feature of the genre will consequently not lessen the burden of a grammar writer, quite on the contrary. Furthermore, cultural anchoring faces several challenges that cannot be ignored.

The key counterarguments against cultural anchoring can be formulated as follows: First, linguists, in many cases, are not simultaneously anthropologists or specialists of some related relevant disciplines, such as ethnography. It is consequently beyond the competence and scientific responsibility of a linguist to focus on topics that go beyond language as an abstract and self-standing system. Second, cultural anchoring is extremely time-consuming, and thus inherently incompatible with our present academic culture that focuses on rapid production and dissemination of knowledge.

It is true that cultural anchoring likely requires intensive and long-lasting *in situ* fieldwork where the researcher lives among the speakers and at least to an extent participates in their daily activities and shares their annual festivities and serendipitous events. If such intensive *in situ* fieldwork is followed, ideally with at least a partial monolingual approach (see Everett 2012 on the method and Thomas 2020 for its history and debated role in American linguistic fieldwork), the fieldworker will, to an extent, become familiar with the foodways, festivities, and religious practices of the linguistic community. Insights gained from daily interaction with the community members can thus be incorporated into a broad description.

Although such documentation may not attain the depth or scope of work produced by trained professional anthropologists, the observations will likely be of great value in cultural anchoring. In many cases, given the rapid changes currently affecting communities worldwide, these records may even become some of the only remaining documents of ways of life, cultures, and local histories, which may be ultimately lost.

Concerning the second objection listed above, it cannot be denied that cultural anchoring both requires more from the fieldworker and likely results in a longer

description.[17] Culturally anchored grammar writing would consequently greatly benefit from collaborative approaches with linguists working together with specialists from other disciplines, such as ethnobotany, anthropology, and ethnography.

5.2 Conclusion

The present study argued that a descriptive approach termed as cultural anchoring may enrich our grammatical descriptions by moving beyond the idea of language as a modular system, divorced from its various contexts. Cultural anchoring was shown to build on the theoretical foundations offered by linguistic ecology. Expanding the descriptive goals of the 'Boasian trilogy', it aims to describe the whole 'linguistic ecology' of the target language instead of a modular approach that conceptualizes languages as autonomous and separate entities separable from their various contexts.

Human thought is fundamentally metaphorical (Lakoff & Johnson 1980) and scientific reasoning is no exception (Brown 2008). Much of scientific inquiry and knowledge production therefore involves seeking metaphors that provide explanatory power. It is consequently no wonder that the views of descriptive grammars as a text genre reflect the metaphors of their time. In the past, grammars were conceptualized as logical machines designed to replicate our internal grammatical knowledge through rules that generate well-formed sentences from given inputs (Payne 2006: 367–368). Considering the nature of technological development particularly in the past century and the important role machines played in it, such a mechanistic metaphor is hardly surprising. Also, LaPolla (2022) reminds us that modeling language as a closed, algorithmic system generating outputs from inputs, independent of communicative context, risks drifting apart from how language is actually used in real life.

In contrast to the above, the view of grammar reflected in multi-contextual cultural

[17] Descriptive grammars are becoming longer, a development that reflects the overall progress and improvements in linguistics over the past few decades. A part of this is explainable by growing expectations: Since linguistic research has taken major steps forward in the recent decades, e.g. in terms of increased understanding of grammatical categories, such as evidentiality and related grammaticalized epistemic categories, this knowledge can now be applied in grammatical analysis. As a result, the range of topics included in descriptive grammars has both expanded and become more balanced since approximately the 1980s (Cristofaro 2006: 138). In simple terms, more extensive analysis encompassing more grammatical categories results in longer descriptions. In sum, cultural anchoring as a descriptive approach should be understood in the context of this ongoing expansion of the scope of descriptive grammars.

anchoring abandons the machine metaphor and replaces it with a network: an ideal descriptive grammar is not only a set of rules but also a web of interconnected structures, patterns, and relationships, not as a closed circuit, but reflecting how language operates within social, cognitive, and cultural spheres. With our rapid technological and societal change of humankind, this metaphor, too, will undoubtedly, eventually age and need to be replaced with something else. Until then, it offers a contribution to develop the genre of descriptive grammars further.

Ultimately, the proposal for culturally anchored grammar writing reflects an intellectual posture that LaPolla has long embodied: approaching linguistic description not as the extraction of a formal system, but as an act of engagement with the full cognitive, cultural, and ecological reality of a speech community.

Abbreviations

1 'first person', 3 'third person', COP 'copula', LV 'light verb', PFV 'perfective', PL 'plural', PN 'personal name', SENS 'sensory evidential', SG 'singular', TOP 'topic'.

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Non-fixed Argument Structure in Cuntou Tuhua: A Functional and Constructionist Perspective

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Abstract: This paper critically examines the notion of fixed argument structure and argues that Cuntou Tuhua instead displays a non-fixed system, in which argument realization is shaped primarily by semantic and pragmatic factors. Drawing on fieldwork data, the study identifies two central features of argument realization in this language. First, whether core arguments are overtly expressed depends more on semantic and pragmatic conditions than on verb valency. Second, the positioning of arguments is governed by information structure rather than syntactic relations. The paper further explores mechanisms of participant identification, demonstrating that Cuntou Tuhua relies primarily on the animacy hierarchy and discourse context. In addition, certain grammaticalized constructions, such as the passive, play a complementary role in disambiguating participant roles. These findings challenge the applicability of models based on the subject-predicate relation and call into question the analytic utility of the category "syntactic topic". As an alternative, the paper refines the word order principle proposed by LaPolla (1995), suggesting that topical or non-focal referring phrases occur in preverbal position, whereas focal or non-topical referring phrases may occur either in preverbal or postverbal position. This revised principle provides a more comprehensive account of variation across Sinitic languages.

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1. Introduction

Argument structure refers to the way a predicate and its arguments are organized within a simple clause construction (Croft 2022: 669). In discussions of basic argument structure, word order serves as a key strategy for identifying who does what to whom (Croft 2022: 186). In this sense, basic word order offers an important typological generalization, that is, the typical or dominant sequence of subject, verb, and object in a language's transitive clauses. The notion of basic word order is widely accepted and frequently employed in both language description and language typology. In the description of Sinitic languages, at least prior to this study, most scholars have tended to posit a basic word order and have generally acknowledged that both VO and OV orders are attested across the group.

However, the concept of basic word order has largely been shaped by the analytical categories of Indo-European languages, and its applicability to typologically diverse languages has increasingly been called into question. The underlying assumptions are that all languages possess grammatical categories such as subject and object, and that they are expected to exhibit a fixed argument structure. Yet, field-based research frequently shows that actual usage patterns often deviate significantly from these expectations. As LaPolla (2024) argues, linguists often attempt to impose Indo-European-style analyses on non-Indo-European languages, which ultimately ends up obscuring the true diversity of cross-linguistic clause structures.

This paper takes up this issue through a case study of Cuntou Tuhua, a less-studied Sinitic variety. It investigates how the assumption of fixed argument structure fails to adequately account for the patterns found in Cuntou Tuhua based on an inductive linguistic description of naturally occurring texts. The central claim of this study is that Cuntou Tuhua lacks a fixed argument structure. Instead, argument coding in this language is flexible, construction-specific, and often motivated by information structure.

Cuntou Tuhua is an endangered and unclassified Sinitic variety, belonging to the Shaozhou group of Tuhua, which is grouped under the "Pinghua and Tuhua" cluster in the *Language Atlas of China* (2012). It is spoken in Cuntou Village, located in Shaoguan City in northern Guangdong Province, China, and has almost 1,400 speakers. The data for this study were collected during fieldwork conducted between 2023 and 2025. They consist of recordings from seven native speakers, including approximately ten hours of natural speech,

such as conversations, storytelling, and procedural discourse. In addition, around forty hours of elicited data were obtained through various question-based and scenario-driven prompts. All recordings were made with the speakers' informed consent, and all examples of Cuntou Tuhua cited in this paper are drawn from first-hand data collected during this period.

This paper is structured as follows. Section 2 reviews the theoretical background on argument structure, with particular attention to the debate surrounding topic and subject in Chinese. Section 3 examines the features of argument structure in Cuntou Tuhua, focusing on transitivity and the syntactic positions in which arguments are encoded. Section 4 investigates the mechanisms of participant identification, addressing how speakers identify the semantic roles of participants in constructions where argument structure is not fixed. Section 5 discusses how argument structure can be described from a functional and constructionist perspective, including a critical assessment of the analytic validity of the category "syntactic topic". Section 6 concludes the paper by summarizing the main findings.

2. Theoretical background

In discussions of Chinese word order, much of the scholarly attention has focused on the status of topic and subject in clause structure. A foundational contribution to this line of inquiry was made by Li and Thompson (1976), who addressed the typological diversity of clause organization by proposing a four-way classification of languages: (i) subject-prominent languages, exemplified by Indo-European languages; (ii) topic-prominent languages, represented by Chinese; (iii) languages that are both subject-prominent and topic-prominent, such as Japanese; and (iv) those that are neither, such as Tagalog. This typological framework was later applied in greater depth to the analysis of Mandarin in Li and Thompson (1981). They argued that Mandarin word order is primarily shaped by the factors of meaning, and grammatical roles such as subject and object in Mandarin are not structurally defined categories, and that the notion of a "basic" word order is difficult to establish (Li and Thompson 1981: 19–23). Depending on the criteria used, Mandarin exhibits many properties associated with both SVO and SOV languages (Li and Thompson 1981: 23–26).

The concept of topic-prominence proposed by Li and Thompson (1976, 1981) undoubtedly advanced the typological understanding of word order in Sinitic languages and stimulated further inquiry into how clause structure operates beyond subject-predicate

models. Nevertheless, some scholars have argued that their analysis ultimately remains rooted in a subject-prominent framework, not fully capturing the structural role of topic in clause structure (Xu and Liu 2007: 236). In response, Xu and Liu (2007: 236) proposed a more refined typological approach that treats topic (T) as a syntactic category which is distinct from subject (S). They argued that a language's clause structure should be identified based on the relative ordering of T, S, O, and V within the sentence, allowing for a clearer representation of topic prominence.

This analytical framework, which explicitly distinguishes between subject and topic, has been accepted in many studies of Wu dialects, and applied to explore the structural features in different Sinitic languages. For instance, Xu and Liu (2007: 236) observe that Mandarin tends to favor a TSVO configuration, while Wu dialects more commonly exhibit an STVO pattern. Although this model reveals important word order differences among Sinitic languages, it is still established based on universal categories such as subject and object. In addition, this syntactic "topic" (T) differs from the notion of "topic" as defined by Lambrecht (1994). In essence, it refers to a non-actor semantic role occurring before the verb, as illustrated by the yellow croaker functioning as T in examples (1) and (2).[1]

(1) Wu (Liu 2001: 335)[2]
我 黄鱼 勿 买
1SG yellow_croaker NEG buy
I don't buy the yellow croaker.

(2) Wu (Liu 2001: 335)
黄鱼 我 勿 买
yellow_croaker 1SG NEG buy
I don't buy the yellow croaker.

Despite these refinements, the analytical frameworks discussed above continue to presuppose the existence of the subject as a syntactic category in Chinese clause structure

[1] In both examples, 黄鱼 'yellow croaker' is analyzed as the syntactic topic (T). However, in example (1), the topic is 我 '1SG', whereas in example (2), the topic coincides with T, both being 黄鱼 'yellow croaker'.
[2] In this example and the following one, no IPA was provided in the source.

and assume the presence of a fixed argument structure. In response to these issues, LaPolla (1993, 2009, 2024) argues that Chinese lacks grammaticalized categories such as subject and direct object, and that its clause structure is instead governed primarily by pragmatic relations. From this perspective, Chinese clause structure is simply topic and comment (see LaPolla 2009), and the notion of a fixed argument structure in Chinese becomes untenable (LaPolla 2024). This view offers an insightful solution to the issue noted by Li and Thompson (1981: 19–21) concerning the less well-defined nature of the subject and object categories in Chinese.

Analyzing Chinese as a topic-comment language does not imply that topic and subject are mutually exclusive categories. The notion of topic in this analysis corresponds to what Lambrecht (1994: 118) defines as "the thing which the proposition expressed by the sentence is about", and in many languages, topic and subject are closely related. The key claim is that Chinese has not grammaticalized restricted neutralizations of semantic roles (LaPolla 2009: 10), such as subject. Nevertheless, this analysis has been challenged, since in most syntactic analyses, syntax and pragmatics are treated as distinct levels, meaning that the topic, as a pragmatic notion, is assigned a different status.[3]

Building on the contributions of previous studies, this paper examines the argument structure of Cuntou Tuhua from both a functional and a constructionist perspective. The analysis adopts the framework of Radical Construction Grammar (Croft 2001, 2022), which treats constructions as the basic units of analysis and defines them as pairings of form and meaning, with "meaning" encompassing both semantic and pragmatic properties (see Croft 2001: 18–19). Within this framework, all constructions encode both semantic content and discourse function (also referred to as information packaging) (Croft 2022: 12). Consequently, pragmatic factors, including the information structure of constructions, are also taken into account in the analysis.

[3] Although this analytical approach remains prevalent in contemporary studies of Chinese syntax, it still appears to reflect a Eurocentric orientation. Cross-linguistically, the distinction between syntax and pragmatics is not always clear-cut. For example, in many Tibeto-Burman languages, the use of agentive case marking is pragmatically motivated rather than grammatically obligatory (Coupe p.c.). A more detailed examination of this issue will be undertaken in future research.

3. Features related to argument structure

In discussions of argument structure, the primary issues concern whether a given argument, especially a core argument, is overtly expressed and where it appears within the clause. With respect to these two aspects and based on Huang's (2026b) description, Cuntou Tuhua displays the following features.

3.1 Construction-specific transitivity

The presence or absence of an argument is closely related to transitivity, which has been defined as "a relationship that obtains throughout a clause" (Hopper and Thompson 1980: 266). LaPolla et al. (2011) provide an overview of various approaches to defining transitivity and argue that transitivity is a construction-specific phenomenon. This view is also supported by evidence from Cuntou Tuhua.

Specifically, transitivity in Cuntou Tuhua is not determined by syntactic criteria, and verbs do not constrain the number of arguments that may appear in a clause. In other words, the overt expression of a core argument depends primarily on the semantic and pragmatic properties of the clause, rather than solely on the value of the verb. For example, examples (3) and (4) represent the same event in the discourse,[4] involving the same action *muoʔ* 'wipe' and the same participants, namely the agent *ŋi* '3SG' (referring to the worker picking pears) and the patient *kɛn muo hi lo=ɛ* 'the one that was picked up'. In example (3), the A argument is omitted because it was already mentioned earlier in the discourse. In example (4), the P argument had been established as the topic in the preceding example, and the A argument had also been mentioned previously, so both arguments are omitted. Although the arguments are omitted to varying degrees in these two examples, this does not affect the hearer's ability to understand the meaning of the sentences, nor does it change the transitive status of the clauses. In other words, the verb *muoʔ* 'wipe' in this context does not require the overt expression of either the A argument or the P argument.

[4] In the original context, examples (3) and (4) are consecutive.

(3) Cuntou Tuhua (Huang fieldnotes)[5]

[*kɛn*^{23}	*muo*^{21}	*hi*^{23}	*lo*^{21}=*ɛ*^{0}]$_{P}$	*la*^{23}	*tʰiau*^{21}	*sŋ*^{21}*kan*^{21}	*muoʔ*^{5}
pick	then	up	come=NMLZ	take	CLF	handkerchief	wipe
tɛʰin^{22}	*lo*^{21}						
clean	come						

The one that was picked up is cleaned by the handkerchief. (Lit. The one picked up was took the handkerchief to wipe it clean.)

(4) *muoʔ*^{5} *muo*^{21} *tɛʰin*^{22}
wipe also clean
Wipe (it) clean.

Examples (5) and (6) likewise depict similar events, involving the same action *touʔ* 'carry' and the same central participants, namely the A argument *ŋi* '3SG' (referring to the boy who stole the pears) and the P argument *loŋ lou* 'a whole basket (of pears)', they are both transitive. In example (5), both core arguments are overtly expressed. In contrast, example (6) omits both arguments. In this case, however, both the A and the P arguments are referential and identifiable, and their omission is due to the fact that they had already been established in the preceding discourse, with the agent functioning as the topic and the patient as the secondary topic in example (5).

(5) [*ŋi*^{44}]$_{A}$ *tsu*^{22} [*loŋ*^{22} *lou*^{21}]$_{P}$ *tʰɛŋ*^{22} *ŋi*^{44} *touʔ*^{5} *hi*^{44}
3SG then all basket for 3SG carry PFV
He then carried away the whole basket from him.

(6) *touʔ*^{5} *hi*^{44} *tsu*^{22} *la*^{23} *tɛŋ*^{21}*tɛʰiɛ*^{21} *tuoʔ*^{5} *la*^{22} *tso*^{23}
carry PFV then take bicycle carry PFV away
After lifting it up, (he) carried (it) away on a bicycle.

Nevertheless, as shown in the English translation of example (6), English syntax requires that at least a referring phrase (hereafter RP)[6] be realized as the subject, which may

[5] Unless otherwise specified, all the following examples are from Cuntou Tuhua, and the data come from the author's own fieldnotes.

[6] It should be noted that the term "RP" in this paper refers to any constituent with referential function, including both phrases and clauses.

function as the A, as the free translation illustrates, or as the P.[7] This contrast illustrates a fundamental difference between Cuntou Tuhua and English in terms of the relationship between verbs and arguments. In Cuntou Tuhua, the presence or absence of arguments does not affect the meaning of the verb, nor does it alter the voice or argument structure of the clause.

Examples (7) and (8) both describe a pouring event, but they differ in terms of transitivity. The context of example (7) involves a worker pouring the pears which he picked from the trees into a basket. Therefore, despite the omission of both the A and the P arguments in the clause, the construction is transitive. In contrast, example (8) refers to a situation in which a boy who was stealing pears accidentally crashed his bicycle, causing the pears in the basket to spill out. In this case, there is no external agent responsible for causing the pears to fall, and the clause is intransitive. These examples illustrate that transitivity in Cuntou Tuhua is not only a relation established throughout the clause, but also one that is interpreted based on discourse context.

(7) *tau*^{23} *huo*^{22} *lou*^{21}
pour down basket
(He) poured (the pears) into the basket.

(8) [*loŋ*^{22} *lou*^{21} *lai*^{23}]$_S$ *tu*^{22} *tau*^{23} *liau*^{44} *hoi*^{21} *o*^{22}
all basket pears also pour whole away IND
The whole basket of pears poured out.

Another set of examples similarly demonstrates that even in comparable constructions, transitivity may vary. Both examples (9) and (10) describe an event in which *ŋi* '3SG' (referring to a cat) falls, and in both constructions *ŋi* '3SG' is the only overtly expressed argument. In (9), the cat falls on its own, making the clause intransitive, with *ŋi* '3SG' identified as the S argument. In (10), however, the cat falls into the water as a result of the eagle's claws, and *ŋi* '3SG' is identified as the P argument. The A argument, the eagle, has already been mentioned in the preceding clause and is therefore omitted, rendering this example transitive.

[7] In this way, the free translation would be "After lifting it up, (the whole basket) was carried away on a bicycle." Both of these free translations are acceptable in the context in Cuntou Tuhua.

(9) *ti^{5}* [*ŋi^{44}*]$_{S}$ *kuo^{22}* *lɛŋ^{22}la^{21}fu^{21}kuo^{22}t^{h}in^{22}*
fall 3SG CLF staggering
It (a cat) fell in a staggering manner.

(10) *ki^{5}kou^{23}* *i^{5}* *ti^{5}* *ti^{5}* [*ŋi^{44}*]$_{P}$ *huo^{22}* *ɕy^{23}*
as_a_result one fall fall 3SG down water
As a result, it was dropped and ended up in the water. (Lit. As a result, (the eagle) dropped it down to the water.)

As the above examples illustrate, transitivity in Cuntou Tuhua is not a pure syntactic phenomenon but rather one that is construction-specific. More specifically, the number of participants involved in an event, the roles they play, and whether the corresponding core arguments are overtly expressed in a construction are not determined by any single factor. Instead, they are determined by the meaning that the construction acquires in its discourse context. Even constructions with the same function (for example, predication) and containing the same semantic verb may exhibit different degrees of transitivity in different contexts. This phenomenon is not unique to Cuntou Tuhua. Thompson and Hopper (2001), through their study of English conversation, similarly observed that verb valency is highly flexible in actual usage and that transitivity is often indeterminate.

This property of transitivity means that the syntax of Cuntou Tuhua contains no indispensable RP. In other words, there is no obligatory syntactic marking that requires the presence of a particular RP (see LaPolla 1993: 785–788 for a detailed discussion of the dispensability of the subject category in Chinese).

3.2 'Flexible' position of arguments

The position of an argument, particularly a core argument, relative to the predicate within the clause is essentially what is typically referred to as word order. As discussed in Section 3.1, transitivity in Cuntou Tuhua is construction-specific, and there is no indispensable RP. Even central participants in an event may remain unexpressed in a clause or be expressed through zero anaphora. However, analysis of naturalistic data shows that the referents expressed through zero anaphora may nevertheless occupy different positions within the clause. For example, in example (6) (renumbered here as example (11) for

convenience), the P argument is unexpressed due to having already been presented in the previous clause. In this case, the only certainty is that its zero anaphor will not occur in the topical position preceding *tsu* 'then', since the topic (the boy) has already been established in the preceding clause. Apart from this restriction, it may be understood as appearing in any of three possible positions: before the instrumental argument (as $Ø_i$), before the verb (as $Ø_{ii}$), or after the verb (as $Ø_{iii}$). Therefore, the position in which this implicit argument appears is not predictable.

(11) *tou$ʔ^{5}$* *hi^{44}* *tsu^{22}* $Ø_i$ *la^{23}* *tɛŋ^{21}tɕ^{h}iɛ^{21}* $Ø_{ii}$ *tuo$ʔ^{5}$* *la^{22}* $Ø_{iii}$ *tso^{23}*
carry PFV then take bicycle carry PFV away
After lifting it up, (he) carried (it) away on a bicycle.

Even when core arguments are overtly expressed, their positions within the clause may still vary. For instance, examples (5) (renumbered here as example (12) for convenience) and (13) describe the exact same event, involving the same action and the same participants. A comparison of these two examples reveals that in example (12), the P argument *loŋ lou* 'a whole basket (of pears)' appears before the predicate, while in example (13), the patient *lou* 'the basket', which also refers to the same basket of pears in this context, appears after the predicate. The grammatical encoding of the patient argument is identical in both examples, with no change in terms of argument marking or verbal morphology, making it difficult to determine which of the two argument structures is more "basic". The difference in the position of the patient argument can be explained in terms of information structure. Specifically, in example (12), *loŋ lou* 'a whole basket (of pears)' functions as a secondary topic that lies outside the focus domain, whereas in example (13), *lou* 'the basket' is within the focus domain.

(12) [*ŋi^{44}*]$_A$ *tsu^{22}* [***loŋ^{22}*** ***lou^{21}***]$_P$ *t^{h}ɛŋ^{22}* *ŋi^{44}* *tou$ʔ^{5}$* *hi^{44}*
3SG then all basket for 3SG carry PFV
He then carried away the whole basket from him.

(13) [*lai^{21}* *kuo^{22}* *sɛi^{44}tsa^{23}*]$_A$ *t^{h}ɛŋ^{22}* *ŋi^{44}* *tuo$ʔ^{5}$* *hi^{44}* [***lou^{21}***]$_P$
DEM CLF child for 3SG carry PFV basket
This child carried away the whole basket.

The position of the agent-like argument relative to the verb can also vary. For example, examples (14) and (9) (the latter renumbered here as example (15) for convenience) both describe similar events involving the verb *ti˨* 'fall', and in both cases the clauses are intransitive. That is, *lai tɛŋtɕʰiɛ* 'this bicycle' in example (14) and *ŋi* '3SG' in example (15), which refers to a cat in that context, function as the S arguments of their clauses. In example (14), the S argument appears before the verb *ti˨* 'fall', whereas in example (15), the S argument follows the verb. Once again, the variation in the position of the S argument does not result in any corresponding changes to argument marking or verbal morphology. This structural difference can be accounted for in terms of information structure. Example (14) is a topic-comment construction, *lai tɛŋtɕʰiɛ* 'this bicycle' functions as the topic of the sentence, while example (15) is a thetic construction, the postverbal *ŋi* '3SG' falling within the focus domain, making the entire sentence a case of sentence focus that serves to report a new event.

(14) [***lai*^{21} *tɛŋ*^{21}*tɕʰiɛ*^{21}**]$_S$ *ti˨*^{5} *muo*^{21} *hi*^{23}
DEM bicycle fall also up
This bicycle also fell over.

(15) *ti˨*^{5} [***ŋi***^{44}]$_S$ *kuo*^{22} *lɛŋ*^{22}*la*^{21}*fu*^{21}*kuo*^{22}*tʰin*^{22}
fall 3SG CLF staggering
It (a cat) fell in a staggering manner.

The relative ordering of the agent and patient arguments is also not consistent, even when the patient appears before the verb. In example (16), the P argument *tʰoŋ tsin=ɛ kɛi* 'the chicken that had been slaughtered' precedes the A argument *ŋi* '3SG', whereas in example (17), the P argument *loŋ pau jan* 'the whole bag of salt' follows the A argument *ŋou* '1SG'. This difference in the relative positioning of the two core arguments is not determined by the verb, which does not impose any syntactic constraint on their order. Instead, their positioning can be attributed to differences in information structure. Although both clauses instantiate topic-comment constructions, the topical phrase differs: in example (16), the topic is *tʰoŋ tsin=ɛ kɛi* 'the chicken that had been slaughtered', while in example (17), the topic is *ŋou* '1SG'.

(16) [*tʰoŋ*^{21} *tsin*^{22}=*ɛ*^{0} *kɛi*^{21}]$_{P}$ [*ŋi*^{44}]$_{A}$ *foŋ*^{44} *ŋiʔ*^{4} *fɛn*^{22}*to*^{44}
slaughter clean=NMLZ chicken 3SG put into rice
kʰɛʔ^{4} *la*^{22}
steam DECL
He put the slaughtered chicken in with the rice to steam.

(17) [*ŋou*^{44}]$_{A}$ [*loŋ*^{22} *pau*^{22} *jan*^{21}]$_{P}$ *tu*^{22} *tau*^{23} *liau*^{44} *huo*^{44}*hoi*^{21}
1SG all CLF salt also pour whole down
I poured the whole bag of salt in.

From a broader discourse perspective, the relative ordering of core arguments is shaped by the context in which the utterances occur. In example (16), the speaker is describing the process of preparing a dish, and how to handle the slaughtered chicken constitutes one of the procedural steps. In example (17), the speaker is explaining why the dish turned out overly salty, which makes *ŋou* '1SG' more likely to function as the topic. Outside of these discourse contexts, reversing the positions of the agent and patient arguments in either example would still result in an acceptable clause.

The same observation also applies to the T role in transfer events. For instance, in example (18), the transferred item *iʔ tin mau* 'a hat' appears before the verb, while in example (19), *kuo mau* 'the hat' appears after the verb. This difference can be attributed to the discourse context. Example (18) represents a third-person narration, where the focus is on how the hat was handled. In contrast, example (19) involves a first-person narration, in which the speaker is informing the addressee of their own actions.

(18) [***iʔ***^{5} ***tin***^{23} ***mau***^{23}]$_{T}$ *saŋ*^{22} *muo*^{21} *kou*^{22} *ŋi*^{44}
one CLF hat give also to 3SG
A hat was given to him.

(19) *la*^{23} *muo*^{21} [***kuo***^{22} ***mau***^{23}]$_{T}$ *kou*^{22} *lai*^{44}
take also CLF hat to 2SG
(We) brought the hat to you.

These observations indicate that verbs in Cuntou Tuhua do not constrain the syntactic positions of core arguments within the clause. At the same time, the positioning of core arguments is largely influenced by information structure, which is itself shaped by the

discourse context and the speaker's communicative intentions. As a result, it is difficult to predict which argument structures are most likely to occur based on syntactic factors alone.

4. Mechanisms of participant identification

Both so-called basic word order and fixed argument structure rest on the underlying assumption that there exists a syntactic mechanism in language that facilitates the identification of participants. For instance, when we choose to describe a language as having a basic SVO word order, we are implicitly assuming that the language has grammaticalized certain restricted neutralizations of semantic roles (see LaPolla 2009: 10). In other words, specific syntactic positions in unmarked constructions are expected to allow only particular semantic roles. As a result, the hearer is able to infer the semantic role of a participant based on its syntactic position within the clause.

This mechanism clearly exists in English, but it does not hold in Sinitic languages (LaPolla 2009: 10). As demonstrated in Section 3, the presence or absence of core arguments and their syntactic positions can vary without causing any change in the morphosyntactic form of the clause in Cuntou Tuhua. That is, Cuntou Tuhua does not yet seem to have developed certain compulsory syntactic restrictions to help hearers identify participants in most clauses. For example, in example (20), the verb *tsʰou* 'sit' denotes a position event, which typically exhibits low transitivity and involves an argument that resembles an agent (i.e., an A role) (Croft 2022: 199). However, in the context of this example, the speaker is instructing the hearer to place a jar onto a surface. Therefore, *lai kuo aŋ* 'this jar' should be interpreted as the undergoer of the verb *tsʰou* 'sit', and the meaning of *tsʰou* 'sit' in this case approximates that of "put" or "place". This example clearly shows that this clause doesn't have a syntactic marker to differentiate semantic roles.

(20) *tsu*^{22} *lai*^{21} *kuo*^{22} *aŋ*^{22} *tsʰou*^{22} *soŋ*^{22}*hoi*^{21}
then DEM CLF jar sit up
Then put this jar up there.

This leads to a central question: if transitivity in Cuntou Tuhua is construction-specific, argument positions within the clause are flexible, and there are no obligatory syntactic markers such as case or agreement, how do hearers identify the participant roles in an event?

At the current stage of research, it appears that the primary mechanism for participant identification in Cuntou Tuhua is semantic and pragmatic, inferences based on factors including shared knowledge, discourse context, and other culturally based consensuses.

It is widely recognized that the agent and patient roles in many actions exhibit a degree of animacy prototypicality, meaning that their identification is often influenced by the animacy hierarchy. Specifically, participants that rank higher on the animacy hierarchy are more likely to be interpreted as agents, while those ranking lower are more likely to be construed as patients. Therefore, in most cases, when there is a clear animacy contrast between participants in an event, their semantic roles can be more easily identified and distinguished. In example (21), the referent of 'bamboo shoots' is inanimate and cannot plausibly perform the action of taking, thus it can therefore only be interpreted as the undergoer of the event.

(21) *son*^{23} *tau*^{44} *pɛn*^{22}*kuəʔ*^{4} *la*^{23} *a*^{44}
bamboo_shoots arrive where take IND
Where can I find bamboo shoots!

Similarly, in example (22), *vun* 'that bowl' is inanimate, while *ŋi* '3SG' is animate, leading to a natural interpretation of that bowl as the P argument and 'he' as the A argument of the verb *talɛŋ* 'break'. These role assignments are determined by the inherent semantic properties of the participants, particularly their animacy and plausibility as actors in the given event.

(22) *ku*^{21} *kuo*^{22} *vun*^{23} *ŋi*^{44} *ta*^{23}*lɛŋ*^{22} *la*^{22}
DEM CLF bowl 3SG break DECL
He broke that bowl.

In more complex cases, such as when the arguments encoding participants are not overtly expressed, or when multiple participants share similar degrees of animacy, discourse context and referential accessibility also play a crucial role in enabling the hearer to identify the participants and their semantic roles within the event. For example, in the discourse-based examples (23) and (24), both the A and the P arguments are omitted. However, when tracking within the broader context, example (23) can be understood as referring to a worker

who climbs down from a ladder and picks up the pears that had fallen on the ground, whereas example (24) describes the worker pouring the picked pears into a basket.

(23) *huo*^{22} *lo*^{21} *kɛn*^{23} *hi*^{23}
down come pick up
(He) comes down and picks them up.

(24) *tau*^{23} *huo*^{22} *lou*^{21}
pour down basket
(He) pours (these pears) into the basket.

Another example can be found in the discourse context of example (25), where the conversation concerns the accomplishments of a certain individual in the village. In this context, the speaker uses example (25) to convey that the person once held the position of village committee secretary. Here, the RP *ɛyki* 'secretary' refers to an institutional role rather than to an agentive participant in the event. In other words, when contextual information is sufficient, the hearer will not interpret *ɛyki* 'secretary' as referring to an agentive argument in the clause.

(25) *ɛy*^{21}*ki*^{44} *tu*^{22} *tsʅ*^{44} *kou*^{21}
village_committee_secretary also serve EXP
(He) has also served as the village committee secretary.

The evidence above reinforces the view that the participant identification of Cuntou Tuhua does not rely on grammatical relations such as subject or object, but instead is open to usage, discourse context and speaker intention, which allows for flexible argument realization patterns.

However, this does not imply that Cuntou Tuhua entirely lacks grammaticalized mechanisms for participant identification. A recent study by Huang (2026a) demonstrates that the passive construction[8] in Cuntou Tuhua has the function of disambiguating participant roles in specific discourse contexts. More specifically, when a non-actor participant appears in the topic position and has a position on the animacy hierarchy similar

[8] It is important to note that the term "passive construction" used here does not refer to a syntactic passive in the strict sense. For a detailed analysis, see Huang (2026a).

to or even higher than that of the actor, speakers tend to use a passive construction to eliminate ambiguity. For example, the two participants in examples (26) and (27) are the same, namely *ku kuo sɛitsa* 'that child' and *tɛŋtɕʰiɛ* 'the bicycle'. In example (26), the animacy of "child" is higher than that of "bicycle", which makes it more likely to be interpreted as either the possessor of the bicycle or the agent responsible for knocking it over. In contrast, in example (27), the use of a passive construction restricts the interpretation such that *ku kuo sɛitsa* 'that child' can only be understood as the patient, while *tɛŋtɕʰiɛ* 'the bicycle' is interpreted as the agent.

(26) *ku*^{21} *kuo*^{22} *sɛi*^{44}*tsa*^{23} *tɛŋ*^{21}*tɕʰiɛ*^{21} *tu*^{22} *tsoŋ*^{22} *tau*^{23} *la*^{22}
DEM CLF child bicycle also knock over DECL
That child's bicycle was also knocked over. / That child also knocked over the bicycle.

(27) *ku*^{21} *kuo*^{22} *sɛi*^{44}*tsa*^{23} *la*^{23} *tɛŋ*^{21}*tɕʰiɛ*^{21} *tsoŋ*^{22} *tau*^{23} *la*^{22}
DEM CLF child PM bicycle knock over DECL
That child was knocked down by a bicycle.

The grammaticalization of specific constructions that serve to identify participant roles is not a phenomenon unique to Cuntou Tuhua. Similar patterns have been observed in many Tibeto-Burman languages, where certain constructions exhibit a tendency to develop obligatory syntactic markers, such as agentive marking or anti-agentive marking, when the patient precedes the agent in the clause. These developments function to eliminate potential role ambiguity in clause interpretation (see LaPolla et al. 2011).

In summary, participant identification in Cuntou Tuhua is primarily governed by semantic and pragmatic factors. At the same time, certain constructions, such as the passive construction, also contribute to the identification of participant roles. This system of participant identification differs significantly from that of languages like English, where the syntactic category of subject plays a central role in organizing clause structure and marking grammatical relations.

5. A constructionist approach to describing argument structure

Above, several features of argument structure in Cuntou Tuhua were examined, including its patterns of transitivity and the flexibility of argument positioning, as well as the mechanisms for participant identification. These characteristics make it difficult to identify a fixed argument structure, or what is typically referred to as basic word order in Cuntou Tuhua. In response to this issue, LaPolla (1995: 310) and LaPolla and Poa (2006: 277) have proposed a principle of word order in Chinese:

"Topical or non-focal NPs[9] *occur preverbally and focal or non-topical NPs occur post-verbally."*

That is, the position of the RP is determined by its function, such as a topic or within the focus domain, rather than by its grammatical relation. This principle also appears to hold in Cuntou Tuhua. In this section, I will further demonstrate the explanatory power of this principle in Cuntou Tuhua and explore how it can be refined to accommodate the word order variations observed across Sinitic languages.

5.1 Reconsidering the 'syntactic topic'

As mentioned in Section 2, considering the distinct word order patterns observed in Chinese sentences, some scholars have proposed the necessity of distinguishing between syntactic topics and pragmatic topics. While in most cases the two coincide, syntactic topics are not necessarily pragmatic topics (see Chen 2004). Based on these observations, an important challenge arises for the word order principle proposed by LaPolla (1995) and others, namely how to account for the RPs that occupy the clause-initial "topic position" but do not function as pragmatic topics.

For proponents of the concept of "syntactic topic", one of the most important pieces of evidence is that not all clause-initial RPs in Chinese can be interpreted as pragmatic topics. Liu (2016) identifies at least seven types of cases in Chinese where the clause-initial RP does

[9] Same as the RP used in this paper.

not function as a topic.[10] Among these, six[11] involve instances where the initial RP serves as a narrow focus or appears within the focus domain. At first glance, such examples seem to contradict the word order principle proposed by LaPolla (1995) and others. This apparent contradiction arises from viewing the topic-comment as a syntactic relation that is analytically separate from pragmatic relations. In this study, I employ a constructionist approach to address this issue. Accordingly, the topic-comment structure is only the most common way of packaging information in Cuntou Tuhua, but this does not imply that all constructions use this type of packaging.

LaPolla (1995)'s word order principle is intended to account for unmarked clauses, whereas the so-called "exceptions" identified by Liu (2016) can be interpreted as marked clauses with less common types of focus structures, with "marked" understood in the statistical sense of being less frequent (LaPolla 1995: 310). In Cuntou Tuhua, clause-initial RPs that are not topics often require sufficient discourse or contextual cues to be interpreted appropriately. For instance, in example (28), *ŋou fulin* 'my wife' is not a topic because it forms a contrast with the previously mentioned *ŋou* '1SG', thereby functioning as a contrastive focus. This construction can thus be identified as an identification construction with narrow focus structure. In example (29), the indefinite RP *iʔ kuo laŋman* 'a farmer' also does not function as a topic; instead, it introduces a new referent into the discourse and is best analyzed as a thetic construction with sentence focus. These observations suggest that the thetic constructions and identification constructions in Cuntou Tuhua can be treated as marked constructions, where the clause-initial element is not necessarily a topic.

(28) a. *ŋou*^{44} *mau*^{44} *hoi*^{21} *koŋ*^{23}*tɕiu*^{21}
1SG NEG go Guangzhou
I didn't go to Guangzhou,

b. *ŋou*^{44} *fu*^{23}*lin*^{21} *hoi*^{21} *hi*^{44} *la*^{22}
1SG wife go PFV DECL
my wife did.

[10] These seven cases include: (1) the subject functions as a contrastive focus, (2) the subject functions as an information focus, (3) the entire sentence is in focus, (4) the subject is indefinite, (5) the subject is bound by a focus-sensitive operator, (6) the subject is determined by a minimal quantifier, and (7) the subject represents new information (Liu 2016: 259).

[11] Cases where the subject is determined by a minimal quantifier are not included.

(29) *iʔ*^{5} *kuo*^{22} *laŋ*^{21}*man*^{21} *tau*^{44} *kuaiʔ*^{4} *tsaʔ*^{5} *lai*^{23}
one CLF farmer arrive there pick pear
A farmer was picking pears over there.

However, it is important to emphasize that in Cuntou Tuhua, indefiniteness cannot be taken as a syntactic criterion for identifying whether a constituent is a topic. For example, in example (30), the indefinite phrase *san kuo ŋɛn* 'three people' clearly refers to three boys who appeared earlier in the discourse and helped pick up the pears, and thus certainly functions as a topic. Similarly, in example (31), *iʔ tin mau* 'a hat' refers unambiguously to the hat that had fallen to the ground, already known in the discourse context, so it functions as a topic too. These cases demonstrate that, contrary to Liu's (2016: 267–268) claim, indefiniteness does not preclude topicality in Cuntou Tuhua. Indefinite noun phrases can serve as topics when they are referentially anchored in the discourse.

(30) *san*^{21} *kuo*^{22} *ŋɛn*^{21} *t*^{h}*a*^{23}*kɛn*^{22} *ŋi*^{44} *mau*^{23} *mau*^{52} *kɛn*^{23}
three CLF people see 3SG hat NEG pick_up
Three people saw his hat wasn't picked up.

(31) *iʔ*^{5} *tin*^{23} *mau*^{23} *saŋ*^{22} *muo*^{21} *kou*^{22} *ŋi*^{44}
one CLF hat give also to 3SG
A hat was given to him.

In addition to the thetic constructions and identification constructions discussed above, which deviate from the topic-comment structure, there is another type of clause worth considering, namely constructions in which the whole clause functions as the comment of a topic. In such cases, the clause-initial constituent may also not function as the topic. For example, in example (32c), *iʔ ŋɛn* 'each person' expresses a universal or distributive meaning and clearly does not serve as the topic of the sentence. This is because the entire clause in (32c) constitutes the comment on the discourse topic that was introduced in example (32a), namely *kuo sɛitsa* 'that child'. The sentence in (32c) describes what the child did to express gratitude.

(32) a. ***kuo²²*** ***sɛi⁴⁴tsa²³*** *a⁴⁴* *tʰa²³kɛn²²* *ŋi⁴⁴*
CLF child TOP see 3SG
That child saw him,

b. *tɛŋ²³jy⁴⁴* *ka²³a²¹* *a⁴⁴*
equate gratitude IND
to show his gratitude,

c. *iʔ⁵* *ŋɛn²¹* *la²³* *iʔ⁵* *kuo²²* *lai²³*
one person take one CLF pear
gave each person a pear. (Lit. each person was given a pear.)

In this context, the predicate *la* 'take' and the constituents that follow it can be regarded as the focus domain, while *iʔ ŋɛn* 'each person' is a non-focal RP. The information structure of this sentence can therefore be represented as [Non-focal RP [Predicate focus domain]]$_{\text{comment}}$. From this perspective, the sentence in (32c) does not violate the word order principle proposed by LaPolla (1995) and others regarding Sinitic clause structure.

This analysis offers a possible explanation for the issue raised by Chen (2004: 501–503) and Liu (2016: 270–271) concerning the inability of universally quantified RPs to function as pragmatic topics. At the very least, the Mandarin examples provided by Chen (2004) and Liu (2016), in which universally quantified RP appear in the clause-initial position, can be interpreted as comments on an established discourse topic. Therefore, in unmarked clauses—those that are neither thetic constructions nor identification constructions—treating the preverbal RP as a topical or as a non-focal element can account for the majority of clause structures found in Cuntou Tuhua.

Based on the analysis above, all "subjects" identified as non-topics can be accounted for within the framework of this principle. This thus challenges the foundational necessity of establishing the category of "syntactic topic".

At this point, it is necessary to reconsider the validity of positing a "syntactic topic" in the analysis of Cuntou Tuhua. According to previous studies, the notion of "syntactic topic" appears to involve two dimensions. First, from a structural perspective, it refers to the leftmost or rightmost element in the clause (see Chen 2004: 494). Second, it presupposes the existence of a syntactic relation within the clause that allows any semantic role and any type of noun phrase to occupy this "syntactic topic" position, including constituents that some scholars argue do not qualify as pragmatic topics. In other words, this approach essentially assumes that there is an RP that must always appear before the verb, and that any preverbal

RP that cannot be adequately explained by the "subject" is categorized as a syntactic topic.

Some researchers have further distinguished between the syntactic topic and the subject, leading to word order models such as STVO and TSVO (see Xu and Liu 2007: 236). This distinction seems simply to equate the notion of "syntactic topic" with the P argument that appears before the predicate. For instance, Xu and Liu (2007: 250) argue that Mandarin constructions with preposed patients predominantly follow a TSV order, in which the patient functions as the main topic, while Shanghainese exhibits a STV order, where the patient serves as a secondary topic. According to this analysis, the "syntactic topic" seems to be either a pragmatic topic or a secondary topic, but what they share in common is their semantic role as patients. This suggests that the term "syntactic topic" is essentially being used to refer to pre-verbal patient arguments, and its distinction from the so-called "subject" lies primarily in their differing semantic roles.

Also, as demonstrated in the preceding analysis, it is currently difficult to confirm a syntactic relation in Cuntou Tuhua that would allow for the clause-initial position to be treated as a grammatical slot that can only be filled with certain semantic roles. If all observed clause patterns in Cuntou Tuhua can be accounted for by the word order principle proposed by LaPolla (1995) and others, then following the principle of Occam's Razor, there is no need to invoke an additional category such as the "syntactic topic".

5.2 Toward a more refined principle

Some scholars argue that positing a "syntactic topic" in Chinese has the advantage of capturing word order variation across different Chinese dialects, for example the order of Mandarin is distinct from Shanghainese's (see Xu and Liu 2007: 236). This view is undoubtedly insightful in some respects, as it highlights that even within the word order principle proposed by LaPolla (1995) and others, variation still exists across Sinitic varieties. Therefore, it is necessary to consider how this principle can be further refined in order to account for the variation observed across different dialects.

Based on the discussion in the previous section, the distinction proposed by some scholars, namely that Mandarin tends to exhibit TSVO order while Shanghainese favors STVO, ultimately hinges on whether the patient or the agent serves as the topic. However, which semantic role functions as the topic in a given sentence is largely determined by pragmatic considerations. At present, there is no conclusive evidence demonstrating that

Sinitic languages differ systematically in their topic selection preferences. Therefore, this alleged variation remains an open question for further investigation.

However, existing studies have shown that Wu dialects do exhibit certain word order properties that differ from other Sinitic languages. One such feature has been described as the presence of two distinct syntactic positions between the subject and the predicate in Wu dialects, each of which can host different types of constituents (see Sheng and Tao 2019). This structural characteristic is particularly evident in clauses involving three arguments, especially those that encode possessive relations. Compare example (33) from Wu with example (34) from Cuntou Tuhua.

(33) Shaoxing Wu (Sheng and Tao 2019:181)

ŋo^{4}	*beŋ*^{2}*ku*^{1}	*ɦɤ̃*^{4}*tɕiŋ*^{1}	*sɑ̃*^{1}	*gəʔ*^{8}	*pa*^{1}	*ho*^{1}	*toŋ*^{0}	*tse*^{0}
1SG	apple	already	three	CLF	put	away	DUR	PRF

I have already put away three apples.

(34)

ŋou^{44}	***pʰan***^{21}***kou***^{23}	*ji*^{23}*kan*^{21}	*la*^{23}	*tso*^{23}	*sɛn*^{21}	*kuo*^{22}	*la*^{22}
1SG	apple	already	take	away	three	CLF	DECL

I have already taken away three apples.

In these two examples, a part-whole relationship exists between "three CLF" and "apple", where "apple" functions as the secondary topic in both cases. The primary difference lies in the syntactic preferences for the placement of "three CLF". In example (33), Shaoxing Wu compulsorily encodes the *sɑ̃gəʔ* 'three CLF' in the preverbal position, whereas in Cuntou Tuhua, this RP can only be encoded postverbally. The contrast in information structure between the two constructions is illustrated in (33') and (34').

(33') Information structure of (33)

[*ŋo*^{4}]$_{\text{main topic}}$	[*beŋ*^{2}*ku*^{1}]$_{\text{secondary topic}}$						
1SG	apple						
[*ɦɤ̃*^{4}*tɕiŋ*^{1}	[*sɑ̃*^{1}	*gəʔ*^{8}]$_{\text{focal}}$	*pa*^{1}	*ho*^{1}	*toŋ*^{0}	*tse*^{0}]$_{\text{focus domain}}$	
already	three	CLF	put	away	DUR	PRF	

I have already put away three apples.

(34') Information structure of (34)

[*ŋou*^{44}]$_{\text{main topic}}$ [*pʰan*^{21}*kou*^{23}]$_{\text{secondary topic}}$

1SG	apple				
[*ji*^{23}*kan*^{21}	*la*^{23}	*tso*^{23}	[*sɛn*^{21}	*kuo*^{22}]$_{\text{focal}}$	*la*^{22}]$_{\text{focus domain}}$
already	take	away	three	CLF	DECL

I have already taken away three apples.

A comparison of (33') and (34') shows that both constructions exhibit a predicate focus structure. Although the RP "three CLF" appears in different syntactic positions, with preverbal placement in the Wu dialect in example (33) and postverbal placement in Cuntou Tuhua in example (34), in both cases it belongs to the focus domain.

This interpretation of the preverbal RP *sɑ̃gəʔ* 'three CLF' in (33) as an element within the focus domain is supported by the observation that it can occur only after the adverb *ɦɤ̃tɕiŋ* 'already'. The study by Sheng and Tao (2019) proposes that certain adverbs that modify the predicate, such as temporal adverbs and scope adverbs, [12] also serve a boundary-marking function that helps distinguish between RPs like *beŋku* 'apple' and *sɑ̃gəʔ* 'three CLF' in examples such as (33). Compared to some negators and degree adverbs (see Sheng and Tao 2019: 184), these adverbs can modify the widest predication domain. In other words, in Wu dialects, RPs that occur after these adverbs fall within the predication domain, namely the predicate focus domain. Furthermore, the properties of the RP in this position, as identified by Sheng and Tao (2019), such as the incompatibility with discourse-given information and similarity to a syntactic "object", suggest that this RP is part of the focus domain. Although this type of structure is highly restricted in Wu and is limited to complex predicate constructions (Sheng and Tao 2019: 185), it still seems rather common. Thus, this example of Wu prompts a broader consideration: an RP appearing before the verb may also function as a focal constituent.

This observation urges us to reconsider the boundaries of the predicate focus domain and to further refine the word order principle proposed by LaPolla (1995) and others. If certain specific adverbs can serve as effective diagnostics for determining the boundaries of the predicate focus domain, then the refined principle can be formulated as follows: topical or non-focal RPs occur in preverbal position, whereas focal or non-topical RPs may occur

[12] Temporal adverbs in Wu include items expressing meanings such as "already", "often", "just", and "sometimes", while scope adverbs include those expressing meanings such as "all", "again", "also", and "alone" (Sheng and Tao 2019: 184).

either in preverbal or postverbal position. This refined principle offers a broader possibility, namely that in some languages the domain of predicate focus may not be marked solely by the predicate, but under certain conditions may instead be marked by an RP, which can be tested through the use of adverbs. Of course, the latter situation may not occur in some languages, so the principle can be slightly adjusted when describing individual languages. In the available data of Cuntou Tuhua, whether the predicate is simple or complex, RPs within the focus domain do not occur before the verb. Therefore, the word order principle proposed by LaPolla (1995) can be satisfactorily applied to most clauses in Cuntou Tuhua.

However, it is important to note that the situation in Northwestern dialects may differ significantly, possibly due to language contact. As Liu (2015) suggests, Northwestern varieties may have developed grammatical categories such as object, which are typologically distinct from what is observed in Wu. Therefore, the applicability of this refined principle to Northwestern dialects remains an open question for future investigation.

6. Conclusion

This paper has examined two features of argument structure in Cuntou Tuhua, focusing on whether core arguments are overtly expressed within a construction and their syntactic positions within that construction. The first issue concerns transitivity in Cuntou Tuhua. It is argued that transitivity is construction-specific and that there is no grammaticalized category that requires the overt expression of arguments. The second issue relates to the positioning of core arguments, which is not determined by fixed syntactic relations but is instead governed primarily by information structure. That is, the position of an argument depends on the speaker's communicative intent and how information is structured within the clause. These two features indicate that argument structure in Cuntou Tuhua is not fixed, and that the relationship between arguments and verbs differs significantly from that found in languages like English, which are characterized by a grammatical subject-predicate relation.

Participant identification is also a crucial aspect of analyzing argument structure. In languages with a subject-predicate relation, the semantic roles of participants can often be identified through syntactic relations. However, in Cuntou Tuhua, syntactic mechanisms are not the primary means of participant identification. Numerous examples from naturalistic data demonstrate that participant roles in Cuntou Tuhua are primarily determined through

semantic and pragmatic cues, including the animacy hierarchy of the participants and discourse context. At the same time, Cuntou Tuhua has also developed certain constructions that assist in identifying semantic roles, such as the passive construction (see Huang 2026a). These partially grammaticalized constructions can therefore contribute to the identification of participant roles alongside semantic and pragmatic strategies.

Based on the features discussed above, a word order description grounded primarily in syntactic relations appears to be inadequate for a language like Cuntou Tuhua, which does not exhibit a fixed argument structure. Even the introduction of an additional category such as "syntactic topic" presents certain analytical difficulties. In light of this, the word order principle proposed by LaPolla (1995) and others seems to offer a more suitable framework. As discussed in Section 2, the acceptance of such a principle rests on the constructionist view that information structure constitutes part of syntax. Nevertheless, certain properties observed across Sinitic languages call for a reassessment of this principle. In particular, evidence from Wu suggests that referring phrases (RPs) occurring before the verb may also fall within the focus domain.

Taking these observations into account, this study proposes a refinement of the word order principle originally advanced by LaPolla (1995) and others. The refined principle allows for the possibility that RPs occurring in preverbal position may also function as focal elements, thereby making it necessary to apply more careful diagnostics to determine the predicate focus domain in different languages. Of course, the applicability of this principle to other varieties, such as Northwestern dialects that may have developed subject-predicate relations under the influence of language contact, remains an open question for future investigation.

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Abbreviations

1	first person
2	second person
3	third person
CLF	classifier
DECL	declarative
DEM	demonstrative
DUR	durative
EXP	experiential aspect
IND	indicative
NEG	negation
NMLZ	nominalizer
PFV	perfective
PM	passive marker
PRF	perfect
SG	singular
TOP	topic marker

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Lexical Items in Hmong-Mien and Lolo-Burmese: A Contact-Diffusion Perspective

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Abstract: Drawing primarily on the Swadesh lists, with reference to other basic-vocabulary lists, this study compares a number of lexical items in Hmong-Mien and Lolo-Burmese on the basis of data from modern varieties and earlier phonological reconstructions. The comparison shows that such items are few in number and vary considerably in both their distribution and phonological characteristics. They have not yielded recurrent sound correspondences and therefore cannot serve as evidence for a genetic relationship between the two groups, although a few exhibit relatively close phonological resemblance. In light of LaPolla's work on population movements and language contact, these similarities may be further investigated in terms of lexical transmission and diffusion through contact. Their precise sources, directions of transmission, and chronological strata, however, remain difficult to determine.

Keywords: Hmong-Mien; Lolo-Burmese; potentially related lexical items; language contact

1. Introduction

There has long been disagreement over whether the lexical connections between Hmong-Mien and Tibeto-Burman are attributable to common inheritance or to historical contact. Li (1973) classified Sinitic, Tibeto-Burman, Hmong-Mien, and Tai-Kadai as four branches of the Sino-Tibetan language family. Wu (2002) argued that some of the

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correspondences among Sinitic, Tibeto-Burman, Tai-Kadai, and Hmong-Mien may reflect historical relationships, whereas others are the result of borrowing. On the basis of basic-vocabulary comparisons, Pan (2007) proposed that Hmong-Mien shares a relatively large number of cognate elements with Sino-Tibetan languages. Sun (2018) examined the historical relationships among the languages conventionally classified as Sino-Tibetan by comparing their numerals, while also recognizing that numerals may have been borrowed between some of these groups. Approaching the question from the perspective of population migration and language contact, Benedict (1987) argued that Hmong-Mien separated from "Austro-Tai" at an early date and subsequently came into contact with Tibeto-Burman as its speakers migrated northward and westward. He interpreted some of the higher numerals and a small number of other lexical items as early loans. Taken together, these studies suggest that the lexical connections between Hmong-Mien and Tibeto-Burman are complex and cannot be treated uniformly as either common inheritance or borrowing.

In his discussions of the formation and development of Sino-Tibetan, LaPolla (2000, 2001, 2010) repeatedly emphasizes the roles of population movement and language contact. He argues that similarities between languages do not necessarily derive from a common ancestor: population movements and prolonged contact may also lead to the transmission of lexical and structural features. The relationships among Sino-Tibetan and neighboring languages should therefore be examined not only in terms of genealogical divergence but also with attention to the linguistic consequences of migration and interaction among different populations. LaPolla's work suggests that localized similarities among the languages of southwestern China may likewise be investigated from the perspectives of population migration, language contact, and areal diffusion. This approach, however, provides only an analytical perspective for the present study; it does not in itself demonstrate that the particular Hmong-Mien and Lolo-Burmese forms examined below are loanwords. The historical status of each item must be evaluated on the basis of the linguistic evidence.

The present study does not attempt to address the broader question of the genetic affiliation of Hmong-Mien and Tibeto-Burman as a whole. Instead, it focuses on a smaller set of lexical connections between Hmong-Mien and Lolo-Burmese. A limited number of semantically and phonologically similar forms can be identified in the modern languages, but their distribution across the respective branches is uneven, and they do not exhibit systematic sound correspondences. Drawing on data from modern varieties and

reconstructions proposed in earlier studies, this paper examines the phonological forms and distribution of these lexical items in the two groups. It considers whether the similarities can be explained in terms of common inheritance and explores whether some of the items may instead be associated with historical contact and lexical diffusion. More specific questions concerning the direction of transmission, the geographical setting of contact, and its chronological placement require further investigation of language-internal sound changes, together with comparative evidence from Sinitic, Tai-Kadai, and other Tibeto-Burman languages.

2. Distribution and Contact of Modern Hmong-Mien and Lolo-Burmese Languages

In China, the Hmong-Mien languages are primarily divided into two branches: the Hmongic branch and the Mienic branch (Wang & Mao 1995; Ratliff 2010; Chen 2013; Li 2018)[1]. The Hmongic languages are mainly distributed in the mountainous regions of Guizhou, Yunnan, Guangxi, Hunan, Sichuan, and Guangdong, and outside China, they are found in northern Vietnam, Laos, northern Thailand, and eastern Myanmar. The Mienic languages are chiefly distributed in Guangxi, northern Guangdong, southern Hunan, and northern Hainan. Huang (2005) suggests that the distribution of Hmong-Mien languages "reflects the historical migration process of the Miao-Man ancestors gradually moving southward from the Wuling Mountains region of Hunan and Hubei."

The Lolo-Burmese languages[2] are conventionally divided into the Loloish branch and the Burmish branch. The Loloish languages are mainly distributed in Yunnan, Sichuan, Guizhou, and Guangxi, with extensions into northern Myanmar, northern Laos, northern Thailand, and northern Vietnam. The Burmish languages are primarily spoken in Myanmar, extending into western Yunnan and northern Thailand.

In terms of present-day distribution, although Hmong-Mien and Lolo-Burmese languages overlap in localized areas of Yunnan, Guizhou, and Guangxi, they do not form a

[1] It is generally recognized in the scholarly literature that the Hmongic branch includes, in addition to Hmong, such languages as She, Jiongnai, Younuo, Baheng, and Pana; the Mienic branch includes only Mien.

[2] It is generally recognized that the Loloish branch mainly includes languages such as Yi, Hani, Lahu, Jinuo, Lisu, Nusu, Taliu, Tanglang, Bisu, Sangkong, and Pula; the Burmish branch mainly includes Burmese, Zaiwa, Lashi, Langsu, Pela, Achang, and Xiandao.

large contiguous contact zone. Observable contact between the two groups is mainly found between the Sichuan-Guizhou-Yunnan dialect of Hmong and some Loloish languages in Guizhou and adjacent areas. Mienic, Bunu, and the Xiangxi dialect of Hmong are geographically distant from the core Lolo-Burmese areas, which limits the conditions for sustained direct contact. Gai & Song (2010) also argue that overall contact between Hmong-Mien and Lolo-Burmese is relatively limited, and mutual influence remains constrained. For instance, the Dzao Min dialect of Mienic is distributed mainly in northern Guangdong, far from the core Lolo-Burmese area; such spatial separation makes prolonged and intensive contact unlikely.

However, the present-day geographical distribution of languages cannot fully reflect historical distribution patterns, nor can it be directly used to infer the scope and chronology of ancient language contact. LaPolla (2001), in discussing the formation and development of the Sino-Tibetan languages, emphasizes the role of population migration and language contact. Migration changes the geographical relationships among languages, and loanwords acquired through contact may subsequently spread with the migrating populations. Therefore, a distant distribution in modern times does not preclude historical contact between the languages in question, nor does geographic adjacency necessarily prove that certain shared lexical items are products of direct contact. The relationship between these lexical items in Hmong-Mien and Lolo-Burmese languages requires further investigation based on specific language data and the internal phonological developments within each branch.

3. Selected basic vocabulary in Hmong-Mien and Lolo-Burmese

Basic vocabulary is relatively stable and is generally less susceptible to changes in the environment and material culture. It has therefore often been used as important evidence in determining genetic relationships between languages (Xu 2014). Such stability, however, is only relative. Long-term sound change may obscure earlier correspondences among basic lexical items, while prolonged language contact may also result in the borrowing of basic vocabulary. Investigating historical relationships between languages consequently requires not only an appropriate basic-vocabulary list but also an examination of whether the proposed sound correspondences recur across multiple lexical items.

In Chinese-language research on Sino-Tibetan, the term *guanxici* "related lexical items" is commonly used for semantically and phonologically comparable words whose historical origins have not yet been established. These may include cognates, loanwords, and other contact-related elements (Huang 1997, 1998). In the present paper, potentially related lexical items indicate only that the forms concerned are comparable in meaning and phonological form; it does not presuppose that they are either cognates or loanwords.

The principal domain of comparison in this study is Swadesh's 207-item list (1952, 1955), which incorporates the items in his 100-word list. Because the items on the Swadesh lists are relatively independent of environmental and cultural variation, they are well suited to preliminary comparison across language families and branches. The analysis also draws on Huang's (1997, 1998) 360-item list, Jiang's (2008) 200-item list, and Zhengzhang's (2005) 300-item list, thereby extending the comparison to a number of items not included in the Swadesh 207-item list.

Candidate items were initially selected on the basis of identical or closely related meanings. The analysis then considered similarities in their overall phonological forms and in such major components as the onset, vowel, and coda. Their distribution across the relevant branches and the reconstructions proposed in previous studies were also taken into account. Forms attested at only a single location, or sharing only one or two common phonemes, were not treated as strong comparative evidence. Items whose phonological relationships remain unclear but which nevertheless show some potential for comparison are also included, so that it may be determined whether their similarities reflect historical connections or chance resemblance.

The forms presented in the tables are based on those recorded in the original sources. Where the original authors identify prefixes, suffixes, or other additional elements, their morphological segmentation is retained. Newly added data are generally presented in their complete forms. An additional element is separated only where there is clear language-internal or branch-internal evidence for doing so. Elements of uncertain status are not removed; where necessary, both the complete form and the morpheme selected for comparison are given.

The item-by-item comparison yielded eleven candidates: 'six', 'seven', 'eight', 'nine', 'liver', 'gallbladder', 'pus', 'fly', 'road', 'sun', and 'moon'. They differ considerably in their geographical and genealogical distribution, as well as in the degree of phonological

similarity they exhibit. The following subsections examine the forms and distributions of selected numerals, terms relating to the human body, and other basic vocabulary in Hmong-Mien and Lolo-Burmese, with reference to the relevant reconstructions.

3.1 Selected numerals

Numerals are among the more stable components of the lexicon, but they are also closely associated with systems of counting and social practices. Higher numerals, in particular, are relatively susceptible to borrowing in situations of language contact. The Swadesh 207-item list includes only 'one', 'two', 'three', 'four', and 'five', but not 'six', 'seven', 'eight', or 'nine'. Benedict (1987) proposed that early Hmong-Mien-speaking populations came into contact with Tibeto-Burman-speaking populations during their westward migration and that some of the higher numerals in Hmong-Mien may have been borrowed during this period. Numerals therefore constitute an important source of evidence for investigating the lexical relationships between Hmong-Mien and Tibeto-Burman.

A number of representative Hmong-Mien and Lolo-Burmese varieties were selected for comparison.[3] Reconstructions proposed by Wang and Mao (1995), Chen (2013), and Li (2011) were also consulted. The forms for 'six', 'seven', 'eight', and 'nine' are presented in Table 1.

Table 1: Numerals 6-9 in Hmong-Mien and Lolo-Burmese

Branch	location	'six'	'seven'	'eight'	'nine'
Hmongic	Yanghao	*ʇu*^{5}	*ɕʱoŋ*^{6}	*ʑa*^{8}	*tɕə*^{2}
Hmongic	Qibainong	*ʈu*^{5}	*sɔŋ*^{6}	*ʑo*^{8}	*tɕo*^{2}
Hmongic	Wenjie	*tɕʉ*^{5}	*tɕʱɑ̃*^{6}	*jʱi*^{8}	*kʱo*^{2}
Hmongic	Huxingshan	*tju*^{5}	*tɕa*^{6}	*ɕi*^{8}	*ko*^{2}
Hmongic	Chenhu	*kɔ*^{5}	*tsʰuŋ*^{6}	*zi*^{8}	*kʰju*^{2}

[3] The Hmong-Mien data are drawn from Yanghao in the Qiandong Hmong dialect, Qibainong in the Bunu variety of Bunu, Wenjie in the Sanjiang variety of Pa-Hng, Huxingshan Wunai, Chenhu She, Dapingjiang in the Iu Mien variety of Mien, and Daping in the Dzao Min variety of Mien. According to the source materials provided in the Chinese manuscript, the Wunai data are taken from Li Yunbing (1997), while the remaining Hmong-Mien data are from Wang and Mao (1995) and Chen (2013). The Lolo-Burmese data are from Zhizhiluo Nusu (Sun & Liu 1986), Liwudi Lisu (Xu, Mu & Gai 1986), Nasu and Bisu (Chen 2010), Written Burmese (Huang et al. 1992), and Zaiwa (Xu & Xu 1984). Where the original sources have already separated prefixes, suffixes, or other additional material, the segmented lexical morphemes are cited here. Newly excerpted materials are analyzed according to the same principles.

Mienic	Dapingjiang	*tɛu*^{7}	*sje*^{6}	*ɛet*^{8}	*dwo*^{2}
Mienic	Daping	*tɔu*^{7}	*nji*^{6}	*dzjat*^{8}	*ku*^{2}
Loloish	Zhizhiluo	*k*^{h}*ɹu*^{53}	*n̥ə*^{55}	*ʂaɹ*^{53}	*gu*^{35}
Loloish	Liwudi	*tʃho*^{31}	*ʃɳ*^{31}	*hɐ̲*^{31}	*ku*^{44}
Loloish	Nasu	*tɛ*^{h}*u*^{55}	*ɛi*^{55}	*hi̲*^{55}	*kuu*^{33}
Loloish	Bisu	*k*^{h}*u*^{31}	*ɛit*^{31}	*xet*^{31}	*kau*^{31}
Burmish	WrittenBurmese	*k*^{h}*rɔk*	*hnac*	*hrac*	*kuw*^{B}
Burmish	Zaiwa	*k*^{h}*juʔ*^{55}	*ŋji̲t*^{55}	*ʃit*^{55}	*kau*^{21}

The data in Table 1 show that these numerals do not all present the same pattern. The similarity of the forms for ‘six’ is relatively clear; ‘eight’ and ‘nine’ share certain phonological components; and the situation for ‘seven’ is considerably more complex. Here, similarity and comparability refer only to observable phonological connections between individual lexical items. They do not imply that recurrent sound correspondences have been established between Hmong-Mien and Lolo-Burmese.

‘Six’. Wang and Mao reconstruct Hmong-Mien ‘six’ as *ɻ̊ɔːk*^{7}, while Chen reconstructs it as *krɔk*^{D}. Li reconstructs the corresponding Lolo-Burmese form as *qhrŏk*. All three reconstructions contain either a consonant cluster or a complex onset, together with a back rounded vowel and a velar stop coda traceable to *-k*. Chen’s *krɔk*^{D} and Li’s *qhrŏk* are particularly close in syllable structure, differing primarily in the place of articulation and aspiration of the onset. The reconstructions are, however, based on different datasets and methodologies. Their similarity can therefore serve as a point of departure for comparison, but cannot by itself establish the etymological relationship between the forms.

In the modern data, the relevant Hmongic forms have generally lost the stop coda. The Mienic forms no longer retain *-k*, although their tone categories may reflect an earlier checked syllable. Within Lolo-Burmese, Written Burmese k^{h}rɔk retains the *-k* coda, while the glottal stop in Zaiwa *k*^{h}*juʔ*^{55} may likewise derive from an earlier stop coda. The two groups thus exhibit a certain degree of comparability in onset structure, vowel quality, and the historical source of the coda. ‘Six’ is consequently one of the more noteworthy numerals considered here. The phonological relationship is nevertheless represented by only a single lexical item. Additional examples exhibiting the same relationships among the onset, vowel, and coda are needed, together with an examination of the corresponding forms in Sinitic and

other neighboring languages.

'Seven'. The Hmong-Mien evidence for 'seven' is unusual. Wang and Mao reconstruct Hmongic 'seven$_1$' as dzjɒəŋ^6 and Mienic 'seven$_2$' as *ŋjɨ^6*. The two cannot be derived from a single Proto-Hmong-Mien form. Chen gives the reconstruction dzruŋ^D, whereas Li reconstructs the relevant Lolo-Burmese form as *ʃʰi*. Table1 also shows considerable variation within Lolo-Burmese. Some Loloish varieties have forms of the type *ɕi*, *ʃŋ*, or *ɕit*,[4] while Written Burmese has *hnac*^{5} and Zaiwa has *ŋjɨt^{55}*.

Mienic *ŋji^6* is relatively close to such forms as Zaiwa *ŋjɨt^{55}* in both onset and vowel. This similarity, however, is limited to particular languages. Since the Hmongic and Mienic forms for 'seven' cannot be traced to a single ancestral form, this numeral cannot demonstrate that the relevant item was already present before the divergence of Hmong-Mien. It may instead reflect localized borrowing after the split, separate borrowing from different sources, or transmission through another language; chance resemblance also remains possible. 'Seven' should therefore be treated as a special case requiring further investigation rather than as primary evidence for contact between Proto-Hmong-Mien and Proto-Lolo-Burmese.

'Eight'. Wang and Mao reconstruct Hmong-Mien 'eight' as *ʑʌ:t^8*, and Chen gives *jɛt^D*. Li reconstructs the corresponding Lolo-Burmese form as *ɻhas^D*. The proposed onsets differ considerably, and no clear relationship between them can yet be established. The principal similarities lie in the vowel and coda: the forms contain a low or low front vowel, while the Hmong-Mien reconstruction has *-t* and the Lolo-Burmese reconstruction has *-s*.

Yue (2010: 48) notes that 'eight' is written as *het*, *hrec*, *hjat* and *hjac* in Pagan-period inscriptions, reflecting alternation between *-t* and *-c* (or *-s*). Such orthographic variation primarily provides evidence for the internal history of Burmese and cannot be used directly to establish a correspondence between Hmong-Mien *-t* and Lolo-Burmese *-s*. Among the modern languages, Dapingjiang Mien *ɕet^8*, Daping Dzao Min *dzjat^8*, Bisu *xet^{31}*, and Zaiwa *ʃit^{55}* all retain a front vowel and a stop coda. The principal basis for comparing 'eight'

[4] Other Tibeto-Burman forms for 'seven' were also considered. The Hmongic form may possibly reflect the fusion of an earlier disyllabic form, comparable to the weakening or loss of a second syllable in such forms as Anong *sɿŋ^{35}*and Dulong *suu^{31}ɲĭt^{55}*.

[5] Li's (2011: 809-812) reconstruction of the codas *-as* and *-ăs* is based primarily on the pronunciation reflected in the Written Burmese spellings transliterated as *-c* or *-s*. These correspond to *-k* or *-t* in other languages of the same branch.

therefore lies in the rhyme and coda; the historical relationships among the onsets and codas require support from additional lexical items.

'Nine'. Wang and Mao reconstruct Hmong-Mien 'nine' as *dzwɔu*^{2}, Chen as *gju*^{A} and Li reconstructs the corresponding Lolo-Burmese form as *ɢoh*^{B}. Each reconstruction contains a stop or affricate component in the onset and a back or rounded vowel. Comparable features can also be observed in the modern forms, including Hmongic *k*^{h}*o*^{2}, *ko*^{2}, and *k*^{h}*ju*^{2}; Mienic *dwo*^{2} and *ku*^{2}; and Lolo-Burmese *gu*^{35}, *ku*^{44}, *ku*^{33}, *kuw*^{B}, and *kau*^{21}.

There are nevertheless substantial differences in place and manner of articulation among *dz-*, *gj-*, and *ɢ-*, and back rounded vowels are themselves typologically common. The similarity of the forms for 'nine' is therefore limited and does not establish a recurrent relationship between the relevant onsets and vowels. Moreover, tone categories A in the Hmong-Mien reconstruction and B in the Lolo-Burmese reconstruction are labels defined within their respective systems and are not directly comparable. The similarity or difference between these tone labels is consequently not used here as evidence for etymological affiliation.

Taken together, these four numerals do not carry equal comparative weight. 'Six' exhibits the closest phonological resemblance; the similarity of 'eight' lies mainly in its vowel and coda; 'nine' is of more limited comparative value; and 'seven' involves different lexemes in Hmongic and Mienic. Even if some of these similarities result from language contact, they need not have arisen in the same period or followed the same route of transmission. Their sources and chronological strata must be investigated in relation to language-internal sound changes within both groups and to the relevant evidence from Sinitic, Tai-Kadai, and other Tibeto-Burman languages.

LaPolla's (2001) discussion of population movements and language contact shows how lexical material may diffuse across linguistic boundaries and subsequently develop different phonological forms in different languages. From this perspective, the similarities in such numerals as 'six', 'eight', and 'nine' may be related to lexical diffusion resulting from early contact. These items, however, do not yet exhibit recurrent sound correspondences across multiple lexical sets. Their sources, transmission routes, and directions of borrowing therefore require further investigation on the basis of sound change within Hmong-Mien and Lolo-Burmese, together with evidence from Sinitic, Tai-Kadai, and other relevant languages.

3.2 ‘Liver’, ‘gallbladder’, and ‘pus’

Terms referring to the human body and bodily substances are generally stable and are frequently used in research on genetic relationships. They are not entirely resistant to borrowing, however, and the lexicalization of body parts and physiological phenomena may also be replaced over time. The forms for ‘liver’, ‘gallbladder’, and ‘pus’ show certain similarities in some Hmong-Mien and Lolo-Burmese languages, but they differ in both distribution and phonological form and must therefore be examined separately.

Table 2: 'Liver', 'gallbladder' and 'pus' in Hmong-Mien and Lolo-Burmese

Branch	location	‘liver’	‘gallbladder’	‘pus’
Hmongic	Yanghao	*xhi*^{1}	*ɕen*^{1}	*pʰu*^{6}
Hmongic	Qibainong	—	*si*^{1}	*pa*^{6}
Hmongic	Wenjie	*hĩ*^{1}	*tɕe*^{1}	*pei*^{6}
Hmongic	Huxingshan	*xjuŋ*^{1}	*tɕi*^{35}	*pi*^{6}
Hmongic	Chenhu	*hin*^{1}	*tsji*^{1}	*pʰu*^{6}
Mienic	Dapingjiang	*łan*^{1}	—	—
Mienic	Daping	—	*tɛu*^{44}	—
Loloish	Zhizhiluo	*tsʰə̃*^{55}	*kɹi*^{35}	*bə̃*^{35}
Loloish	Liwudi	*si*^{31}	*tʃi̱*^{33}	*bɯ*^{33}
Loloish	Nasu	*sɿ*^{55}	*tɕi*^{55}	—
Loloish	Bisu	*tɕʰin*^{31}	—	—
Burmish	WrittenBurmese	*tθaɳ*^{3}	—	*praɳ*^{2}
Burmish	Zaiwa	*siŋ*^{21}	*kji̱*^{51}	—

‘Liver’. Wang and Mao reconstruct the Hmong-Mien form as *ŋkʰlʌn*^{1}, whereas Li reconstructs the relevant Lolo-Burmese form as *sʰeŋ*^{B}. Within Hmong-Mien, Hmongic forms include *xhi*^{1}, *hĩ*^{1}, *xjuŋ*^{1}, and *hin*^{1}, while Dapingjiang Mien has *łan*^{1}. The onsets vary across the languages, although several contain frication, and the rhymes frequently exhibit nasalization or a nasal coda. Lolo-Burmese forms include *tsʰə̃*^{55}, *si*^{31}, *sɿ*^{55}, *tɕʰin*^{31}, *tθaɳ*^{3}, and *siŋ*^{21}. Their onsets are generally fricatives or affricates, and some forms retain a nasal coda.

The similarities between the two groups lie mainly in the fricative component of the

onset and the nasal element in some of the rhymes. Proto-Hmong-Mien *ŋkʰl-* nevertheless differs substantially from Lolo-Burmese *sʰ-*, while *-n* and *-ŋ* cannot be treated as directly corresponding codas. 'Liver' can therefore be said to show partial similarity in syllable structure, but it does not establish a clear sound relationship. An analysis in terms of borrowing would have to show that simplification of the complex onset and substitution of the nasal coda are compatible with independently established patterns of sound change in the two groups.

'Gallbladder'. Wang and Mao reconstruct the Hmong-Mien form as *ʦou*^{1}, while Chen gives *tsrou*^{A}. Li reconstructs the relevant Lolo-Burmese form as *kre*^{A}. Both Chen's *tsrou* and Li's *kre* contain complex onsets with a liquid *r*, but their principal onset and rhyme components differ: Hmong-Mien has *tsr-* and *-ou*, whereas Lolo-Burmese has *kr-* and *-e.*

Modern Hmongic varieties exhibit forms such as *ɕen1, si1, tɕe1, tɕi35,* and *tsji1*, while Loloish and Burmish varieties have *kɹi*^{35}, *tʃi̱*^{33}, *tɕi*^{55} and *kji̱*^{51}. Some forms in both groups have palatal or affricate onsets and front vowels of the *-i* or *-e* type, giving them a degree of surface similarity. This resemblance, however, may also have resulted independently from cluster simplification and palatalization before a front vowel.

'Pus'. Wang and Mao reconstruct the Hmong-Mien form as *beu*^{6}, Chen as *bɔic*, and Li reconstructs the corresponding Lolo-Burmese form as *briŋ*^{A}. All three reconstructions have a voiced bilabial stop *b-* as their onset. Modern Hmongic varieties have forms such as *pʰu*^{6}, *pa*^{6}, *pei*^{6}, *pi*^{6} and *pʰu*^{6}. Although the onsets have become voiceless, they can still be related to Proto-Hmong-Mien *b-*. Lolo-Burmese forms such as *bə̃*^{ˌ35}, *bu*^{33}, and Written Burmese *praŋ*^{2} retain bilabial stop onsets, with the Written Burmese form also retaining a liquid component. The reconstructed onsets and their modern reflexes thus provide a basis for comparing the Hmong-Mien and Lolo-Burmese forms for 'pus'.

The rhymes, however, differ. The Hmong-Mien reconstructions have *-eu* or *-ɔi*, whereas the Lolo-Burmese reconstruction has *-riŋ*, including a liquid medial and a nasal coda. These differences prevent the forms from constituting a complete onset-and-rhyme correspondence. Nevertheless, the rhyme of a loanword may be adapted to the phonological system of the recipient language, and the difference in rhyme does not in itself exclude a historical relationship. Overall, the shared onset characteristics are relatively clear, and 'pus' may be retained as a candidate for investigating contact between Hmong-Mien and Lolo-Burmese.

In summary, 'liver', 'gallbladder', and 'pus' exhibit different types of localized

similarity. For ‘liver’, the main similarities lie in fricative onsets and nasal rhymes; for ‘gallbladder’, they lie in complex-onset components and the palatalized forms found in some modern languages; and for ‘pus’, they lie primarily in the bilabial stop onset. These similarities have not yet yielded sound correspondences that recur across multiple lexical items, and their evidential value is consequently weaker than that of such items as ‘six’.

3.3 ‘Fly’, ‘road’, ‘sun’, and ‘moon’

In addition to the numerals and terms relating to the human body discussed above, the Hmong-Mien and Lolo-Burmese forms for ‘fly’, ‘road’, ‘sun’, and ‘moon’ also exhibit varying degrees of comparability. All four items are included in the Swadesh 207-item list, and ‘sun’ and ‘moon’ also occur in the 100-word list. Their phonological relationships are not uniform. ‘Moon’ exhibits the closest overall resemblance; ‘road’ shows some comparability in its complex onset and rhyme; the principal similarity in ‘sun’ lies in the nasal onset; and ‘fly’ involves different lexemes in Hmongic and Mienic.

Table 3: ‘Fly’, ‘road’, ‘sun’, and ‘moon’ in Hmong-Mien and Lolo-Burmese

Branch	location	‘fly’	‘road’	‘sun’	‘moon’
Hmongic	Yanghao	—	*ki*^{3}	*n̥hɛ*^{1}	*lha*^{5}
Hmongic	Qibainong	—	*kje*^{3}	*n̥hɔŋ*^{1}	*ɬo*^{5}
Hmongic	Wenjie	—	*qo*^{3}	*n̥he*^{1}	*lha*^{5}
Hmongic	Huxingshan	—	*qo*^{3}	*n̥he*^{1}	*lha*^{5}
Hmongic	Chenhu	—	*ka*^{3}	*nɔ*^{1}	*ne*^{5}
Mienic	Dapingjiang	*dai*^{5}	*tɕau*^{3}	*n̥hɔi*^{1}	*ɬa*^{5}
Mienic	Daping	—	*tsu*^{3}	*nai*^{1}	*lɔu*^{5}
Loloish	Zhizhiluo	—	*kʰɹa*^{33}	*ɳi*^{35}	*ɬa*^{31}
Loloish	Liwudi	—	*d͡z̲a*^{33}	*mi*^{33}	*ha*^{33}
Loloish	Nasu	*ɖe*^{21}	*d͡z̲o*^{21}	*ɳi*^{21}	*ŋo*^{21}
Loloish	Bisu	—	—	*nɯŋ*^{31}	*la*^{33}
Burmish	WrittenBurmese	—	—	*ne*^{B}	*la*
Burmish	Zaiwa	—	*kʰjo*^{51}	—	*l̆ɔ̆*^{55}

'Fly'. Wang and Mao reconstruct Hmongic 'fly$_1$' as *ʔzʌŋ*^{5} and Mienic 'fly$_2$' as *ntai*^{5}, indicating that the Hmongic and Mienic forms cannot be traced to a single Proto-Hmong-Mien form. Chen gives *ʔjaŋc*, while Li reconstructs the relevant Lolo-Burmese form as *daŋ*^{B}.

Hmongic *ʔzʌŋ* and Lolo-Burmese *daŋ* both have a low vowel and a nasal coda *-ŋ*. Although their onsets are respectively *ʔz-* and *d-*, both contain a voiced obstruent component. The forms therefore show relatively clear comparability in their vowels and codas, while the relationship between their onsets requires support from additional lexical items.

Dapingjiang Mien *dai*^{5} is also close in onset and vowel to Nasu *ɖe*^{21} and to forms such as *de, di, ɖe*, and *da* in other Yi varieties.[6] Mienic *ntai* and Lolo-Burmese *daŋ*, however, have different codas, suggesting that this comparison is not of the same historical order as that between Hmongic *ʔzʌŋ* and Lolo-Burmese *daŋ*. The separate similarities between Hmongic, Mienic, and particular Lolo-Burmese forms may reflect lexical contact of different geographical extent or from different periods. They do not demonstrate that 'fly' was borrowed before the divergence of Hmong-Mien. The significance of this item lies instead in its suggestion that Hmong-Mien and Lolo-Burmese may preserve more than one chronological layer of lexical connection.

'Road'. Wang and Mao reconstruct the Hmong-Mien form as *clau*^{3}, and Chen gives *klau*. Li reconstructs the relevant forms in Loloish and some Burmish languages as *ɢʰraᴬ*. All these reconstructions contain a complex onset with either a velar or a liquid component. Their principal vowels are low, and Hmong-Mien *-au* is to some extent comparable with Lolo-Burmese *-a*.

Modern Hmongic forms include *ki*^{3}*, kje*^{3}*, qo*^{3} and *ka*^{3}, while Mienic has *tɕau*^{3} and *tsu*^{3}. Lolo-Burmese forms include *kʰɹa*^{33}, *ʤa*^{33}, *ʤo*^{21} and *kʰjo*^{51}. Although the onsets are realized as velar stops or affricates in different languages, they may reflect different outcomes of cluster simplification and palatalization. Hmong-Mien *cl-* and *kl-* and Lolo-Burmese *ɢʰr-* are structurally similar, with their differences lying mainly in voicing, aspiration, and the particular liquid component of the onset.

Written Burmese *lam* can be compared with Old Tibetan *lam* and appears to have a different lexical source from the Loloish and Zaiwa forms in Table3. This suggests lexical

[6] Additional Loloish forms are taken from Chen (2010: 505, item 699): Nuosu Shengzha *dzɪ*^{33}, Yinuo *dzɪ*^{22}, Tianba *dzɪ*^{33}, and Suodi *dzɪ*^{33}; Aluo *ɖe*^{21}, Nesu *ɖe*^{21}, Nipu *ɖi*^{21}, Nuosuo *dɪ*^{21}, and Naso *de*^{21}; Niesu *de*^{21}; Nieshu *dɪ*^{21}; Sani *tɬɪ*^{33}, Axi *ʈi*^{33}, Sangni *di*^{33}, and Azhe *dɪ*^{33}; Nisai *dlɪ*^{21}, Luopo *de*^{21}, Nasu *de*^{21}, Zuokuo *di*^{21}, and Gepuo *di*^{33}; Shansu *də*^{33}; and Yimeidu *da*^{21}.

replacement or multiple etymological sources for 'road' within Lolo-Burmese itself. Written Burmese *lam* should therefore not be used as direct evidence for a relationship among *cl-, kl-* and *ɢʰr-*. On the available evidence, 'road' nevertheless retains comparative value because of the structure of its complex onset and its principal vowel.

'Sun'. Wang and Mao reconstruct the Hmong-Mien form as *n̥hwɔ:i*^{1}, Chen as *n̥hɐi*^{A}, and Li reconstructs the relevant Lolo-Burmese form as *neŋ*^{A}. In both groups, the principal component of the reconstructed onset is nasal *n-*. The Hmong-Mien onset is voiceless and contains a fricative component, whereas the Lolo-Burmese form has an ordinary voiced nasal onset.

Modern Hmong-Mien forms include *n̥hɛ*^{1}, *n̥hɔŋ*^{1}, *n̥he*^{1}, *nɔ*^{1}, *n̥hɔi*^{1} and *nai*^{1}. Lolo-Burmese forms include *n̥i*^{35}, *mi*^{33}, *n̥i*^{21}, *nɯŋ*^{31} and Written Burmese *ne*^{B}. Although the precise place of articulation differs, most of these forms retain a nasal onset. The rhymes show considerably greater differences: the Hmong-Mien reconstructions have *-wɔ:i* or *-ɐi*, whereas Lolo-Burmese has *-eŋ*. The comparability of 'sun' therefore lies mainly in the nasal onset; the relationship between the rhymes remains to be explained.

'Moon'. Wang and Mao reconstruct the Hmong-Mien form as *lha*^{5}, Chen as *ɬac*, and Li reconstructs the relevant Lolo-Burmese form as *l̥hac*. Of the four items considered in this subsection, 'moon' exhibits the closest phonological resemblance between the two groups. Hmong-Mien *lh-* and *ɬ-* and Lolo-Burmese *l̥h-* can all be analyzed as voiceless laterals or voiceless lateral fricatives. All have *a* as their principal vowel, and their overall syllable structures are nearly identical.

Modern Hmongic and Mienic forms include *lha*^{5}, *ɬo*^{5}, *ɬa*^{5}, and *lɔu*^{5}. Lolo-Burmese forms include *ɬa*^{31}, *ha*^{33}, *n̥o*^{21}, *la*^{33}, Written Burmese *la*, and Zaiwa *lǒ*^{55}. Most of these languages retain a lateral onset. The *h-* and *n̥-* onsets found in individual languages may be interpreted with reference to branch-internal developments of lateral onsets. Hmong-Mien *lha* and *ɬa* and Lolo-Burmese *l̥ha* are highly similar in onset, vowel, and overall syllable structure, making 'moon' one of the most valuable items for comparison in the present study.

Although Chen and Li both assign their reconstructions to tone category C, the labels A, B, C, and D refer to categories defined within the respective language groups. Identical tone labels cannot therefore be taken as evidence of a common historical source. The comparison of 'moon' rests primarily on the voiceless lateral onset and the vowel *a*. Whether the form reflects direct contact between the two groups or diffusion across a broader

linguistic area must be investigated using evidence from other Tibeto-Burman languages, Sinitic, and Tai-Kadai.

In summary, ‘fly’, ‘road’, ‘sun’, and ‘moon’ do not reflect lexical relationships of the same type or historical depth. ‘Moon’ exhibits the closest overall resemblance; ‘road’ is comparable in complex-onset structure and principal vowel; the principal shared feature of ‘sun’ is its nasal onset; and ‘fly’ may reflect different chronological layers of lexical connection involving Hmongic, Mienic, and Loloish.

4. Sources of the lexical items and a contact-based interpretation

The preceding comparisons show that Hmong-Mien and Lolo-Burmese share a small number of lexical items with similarities in both meaning and phonological form. Among these, such items as ‘six’ and ‘moon’ are of particular comparative interest. In most high-frequency and relatively stable basic vocabulary, however, no systematic correspondences have yet been identified. Nor do the items examined here exhibit recurrent correspondences among their onsets, vowels, and codas. On the basis of these materials alone, therefore, a genetic relationship between Hmong-Mien and Lolo-Burmese cannot be established.

The fact that the available evidence does not demonstrate a genetic relationship does not necessarily mean that the similar forms must have arisen through language contact. Nevertheless, contact-induced borrowing and areal diffusion provide plausible alternatives to an explanation based on common inheritance. Some items may have passed from one language into another through interaction between Hmong-Mien-speaking populations and Lolo-Burmese-speaking populations and subsequently developed in accordance with the phonological system of the recipient language. Others may have been transmitted through Sinitic, Tai-Kadai, or other languages of southwestern China. Since the items differ in both geographical distribution and phonological form, their origins should not be explained uniformly. Each must instead be examined on its own merits.

In his discussions of the historical development of Sino-Tibetan, LaPolla (2000, 2001, 2010) emphasizes the importance of population movement and language contact in language formation and change. His work reminds us that the modern geographical distribution of languages does not necessarily provide a complete picture of interaction among populations in the past. Linguistic elements transmitted at an early date may have accompanied migrating

populations and survived in languages that are now geographically distant from one another. Mienic languages are today separated geographically from Burmish and some Loloish languages, but similarities among particular lexical forms should nevertheless be considered in the context of historical migration and areal contact. Modern geographical distance may suggest the possibility of earlier contact, but it cannot determine the date at which particular items were borrowed, still less demonstrate that borrowing preceded the divergence of Hmong-Mien.

From the perspective of historical distribution, Hmong-Mien-speaking populations gradually moved southward and westward over the course of their migrations, while different Lolo-Burmese-speaking populations were long established in southwestern China. During the Tang and Song periods, the emergence of regional polities such as Nanzhao and Dali may have increased interaction among the different populations of the region. These historical circumstances created the possibility of contact between Hmong-Mien-speaking populations and Lolo-Burmese-speaking populations in adjoining parts of Yunnan, Guizhou, and Guangxi. At present, however, there is insufficient historical evidence to demonstrate direct interaction between particular populations at a specific time and place. Nor are there adequate phonological criteria for assigning the lexical items to a particular chronological stratum. Nanzhao and Dali should therefore be treated only as part of the historical background against which possible contact may be investigated; their existence does not justify identifying the items examined here as loans dating specifically from the Tang or Song period.

The direction of borrowing cannot be determined solely on the basis of political, demographic, or cultural status. Lolo-Burmese-speaking populations may have exercised a degree of political and cultural influence in some parts of southwestern China, providing a possible context for the transmission of Lolo-Burmese vocabulary into Hmong-Mien. This circumstance is not sufficient, however, to demonstrate that ancestral Hmong-Mien was necessarily the recipient. Determining the direction of borrowing requires examination of the distribution of the relevant items in both groups, their language-internal sound correspondences, their derivational productivity, their semantic development, and the patterns of phonological adaptation they display after borrowing.

On balance, the available evidence suggests that speakers of ancestral forms of Hmong-Mien and Lolo-Burmese may have experienced some degree of contact. Some of the lexical

items discussed in this paper may be survivals of such contact. Certain items may have passed from Lolo-Burmese into Hmong-Mien, while others may have been transmitted through intermediary languages. The precise source and direction of transmission of each item, as well as the time and geographical setting of contact, cannot yet be determined uniformly.

5. Conclusion

Taking the Swadesh 207-item list as its principal basis of comparison and drawing on other basic-vocabulary lists, data from modern varieties, and reconstructions proposed in previous studies, this paper has compared a number of potentially related lexical items in Hmong-Mien and Lolo-Burmese. The results show that the two groups contain a small number of forms that are similar in meaning and phonological shape. The degree of resemblance, geographical and genealogical distribution, and phonological characteristics of these forms, however, vary considerably. They do not exhibit recurrent correspondences among onsets, vowels, or codas across multiple lexical sets. Furthermore, no systematic correspondences have been identified in the more frequent and stable portion of the basic vocabulary. The available evidence therefore does not provide adequate support for a genetic relationship between Hmong-Mien and Lolo-Burmese.

In view of their distribution and phonological characteristics, these scattered similarities are more appropriately investigated in the context of language contact and lexical transmission. LaPolla's work on population movement and language contact draws attention to the fact that linguistic elements may spread with migrating populations and continue to develop according to the phonological systems of the languages into which they are incorporated. Although the modern distributions of Hmong-Mien and Lolo-Burmese overlap only in limited areas, the present geographical pattern cannot fully represent their historical distributions or earlier contact relations. The occurrence of certain similar lexical items in branches that are now geographically distant may preserve traces of earlier contact or areal diffusion.

On the basis of the linguistic evidence and the historical background of population movement in southwestern China, this study proposes that Hmong-Mien-speaking populations and Lolo-Burmese-speaking populations may have experienced some degree of

contact in the past. Some of the lexical items examined here may be associated with such contact, and transmission from Lolo-Burmese into Hmong-Mien remains one possible explanation. The present evidence, however, cannot establish that all the items belong to the same chronological stratum, nor can it date the proposed contact to a period before the divergence of Hmong-Mien or specifically to the Tang and Song periods. Their sources, directions of transmission, and chronological strata require further investigation based on branch-internal sound change and comparative evidence from Sinitic, Tai-Kadai, and other Tibeto-Burman languages.

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Professor LaPolla's scholarship extends across an exceptional breadth of linguistic inquiry, including Sino-Tibetan linguistics, historical-comparative linguistics, linguistic typology, language contact, language documentation, and linguistic theory. His ability to integrate meticulous empirical research with broad theoretical insight has inspired generations of linguists around the world. In recent years, I have had the privilege of translating several of his publications into Chinese. This experience has deepened my appreciation of the breadth of his scholarship, the depth of his insights, and the openness and intellectual generosity that characterize his academic spirit. His work continues to shape the way I approach linguistic data, language contact, and historical explanation.

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Evolutionary Linguistics in China

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Abstract: This article reviews the emergence and development of evolutionary linguistics in China from five perspectives: theoretical origins, stages of development, scholarly communities, representative findings, and future agendas. Research in China has expanded from early work on lexical diffusion, language competition, and agent-based simulation to Bayesian phylogenetics, phylogeographic inference, language velocity field estimation, contact and admixture inference, phylogenetic comparative analysis, cognitive modeling, and the biology of vocal production. Since 2019, dated phylogenetic studies of Sino-Tibetan and Kra-Dai dispersals, joint analyses of Sinitic dialects with population-genetic data, research on language contact in the Gansu-Qinghai region, and studies of sound systems, language competition, and conceptual representation have demonstrated the value of integrating large-scale computational analysis with descriptive linguistic documentation and fieldwork. The field nevertheless faces concentrated theoretical preferences, uneven coverage of languages and research questions, fragmented databases, and inadequate governance standards for data access and speaker-community rights. Future work should compare alternative models within a multiscale framework, broaden linguistic and longitudinal coverage, and build reproducible infrastructure for durable interdisciplinary collaboration—positioning descriptive linguists and fieldworkers as co-equal theoretical partners, not merely data providers.

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1. Introduction

Evolutionary linguistics investigates the formation and change of language-related capacities, linguistic systems, and linguistic practices across different timescales. Its scope includes the biological evolution of the human capacity for language, the cultural evolution of linguistic structure, the historical diversification of languages and language families, and the emergence and diffusion of variants through individual interaction and intergenerational transmission. William S-Y. Wang's macro-, meso-, and micro-historical scales offered an early framework for connecting these levels (Wang 1978, 1982a).

Evolutionary linguistics in China merits particular attention because the country's linguistic ecology—with its complex interactions among languages, populations, and regions—resists simple correspondences. Sinitic varieties form continua shaped by repeated migration and standardization. Sino-Tibetan, Kra-Dai, Hmong-Mien, Austroasiatic, Austronesian, Mongolic, and Turkic languages interact within China and across national borders, while multilingual areas display structural convergence that cuts across genealogical classifications. At the same time, Chinese historical documents, dialect surveys, descriptive grammars, and fieldwork on minority languages provide evidence with both temporal depth and regional density. The multiple configurations of language, population, geography, and culture in these settings make it possible to compare vertical inheritance, horizontal diffusion, and structural reorganization.

LaPolla's (2022) non-structuralist linguistics treats language as emergent behavior jointly shaped by cognition, culture, interaction, history, and environment, rather than as a closed system composed of invariant categories. On this view, sound and morphosyntactic patterns are not static formal structures but emerge from migration, contact, cultural interaction, and communicative pressures, forces that constitute language itself, not external impositions upon it. This insight is crucial for evolutionary linguistics: the structures we document today result from layered historical processes and the cognitive strategies of native speakers; understanding them requires close collaboration with descriptive linguists and field researchers. By analyzing language phylogenies, linguistic traits, and contact relations, research on language evolution reveals how history shapes linguistic structure, a perspective that embodies this non-structuralist position. Over the past two decades, evolutionary linguistics in China has expanded from early work on lexical diffusion, language competition,

and agent-based simulation to Bayesian phylogenetics, phylogeographic inference, spatial dynamics, admixture inference, phylogenetic comparative analysis, cognitive modeling, and the biology of vocal production. This review focuses on the formation of the Chinese research community and its recent results. These studies not only address central questions in language evolution but also develop new methodological paths in conjunction with linguistic typology, descriptive linguistics, and fieldwork on lesser-documented languages—work that reveals the fine-grained patterns evolutionary models must explain.

2. Overview of Evolutionary Linguistics Research in China

2.1 Theoretical Origins

Christiansen and Kirby (2003) frame the field around two questions: why language has the form it does and how it came to have that form. Gong, Shuai, and Comrie (2014b) defined the field through its objects of inquiry, placing the origin, change, and loss of language in a common explanatory space with language acquisition, individual behavior, cross-linguistic commonalities, and sociocultural environments. Together, these definitions establish the multilevel object of evolutionary linguistics: biological foundations, cultural transmission, historical diversification, and real-time use are nested processes.

Evolutionary linguistics contains at least three parallel lines of inquiry. The first concerns the biological foundations and evolution of the language faculty. Pinker and Bloom (1990), for example, argued that linguistic complexity is compatible with adaptation by natural selection, whereas Hauser, Chomsky, and Fitch (2002) distinguished the faculty of language in the broad and narrow senses in order to ask which components are human-specific and which are specialized for language. The second line treats language as a historically changing system. Croft's (2000) theory of utterance selection links the production and propagation of linguistic variants to social selection, while Pagel (2009) extends replication and selection to language phylogenies and large-scale cultural evolution. The third line emphasizes transmission and use. In iterated-learning experiments (Kirby, Cornish and Smith 2008), participants repeatedly learned and reproduced artificial languages across transmission chains. Crucially, over generations these languages became easier to learn and more structured, demonstrating that language structure emerges from the constraints of transmission and learning—not from pre-existing rules.

The theoretical trajectory developed in China connects with these international

discussions while retaining its own problem orientation. Wang's theory of lexical diffusion reconceptualized sound change as the competitive diffusion of variants through the lexicon (Wang 1969). His macro-, meso-, and micro-historical scales stressed that language research must connect long-term emergence, change during historical periods, and acquisition and use within individual lives (Wang 1978, 1982a). He also placed variation and selection at the center of language change (Wang 1982b), explicitly described language as a complex adaptive system driven by speaker interaction, and characterized evolutionary linguistics as concerned with both biological functions and social behavior (Wang 2006, 2011). Drawing on Sino-Tibetan and cross-linguistic evidence, LaPolla (2003) argues that grammatical structure is not fixed by innate rules but emerges from patterns conventionalized through speaker-hearer interaction, a position that aligns with Wang's emphasis on language as a complex adaptive system.

Building on this foundation, Chinese researchers developed interdisciplinarity into an operational research program. Gong, Shuai, and Wu (2013) organized linguistics, cognitive science, neuroscience, genetics, animal behavior, computational simulation, and social-network analysis as mutually constraining sources of evidence. Operationalizing this integrative approach, Gong, Shuai, and Zhang (2014c) used computational models to make assumptions about agents, learning, transmission, and social structure explicit and to generate predictions testable against corpora, experiments, and historical evidence. This combination of evolutionary theory, computational modeling, and empirical rigor laid the groundwork for the transition from exploratory modeling to multilingual, large-sample, and multi-evidence empirical analysis.

2.2 Stages of Development

The development of evolutionary linguistics in China can be divided into three interrelated stages. The first, from the late 1960s to the beginning of the twenty-first century, centered on theoretical construction and mechanistic modeling. The second, covering roughly the first decade-and-a-half of the twenty-first century, was marked by methodological expansion and community formation. The third began in 2019 and is characterized by large datasets, Bayesian probabilistic inference, and the integration of multiple types of evidence.

The first stage established the field's basic problem framework in China. Wang's work

on lexical diffusion (Wang 1969), multiple historical scales (Wang 1978, 1982a), and selection in language change (Wang 1982b) exemplifies how theoretical concepts could be connected to phonological history and social interaction. Together, these studies provided conceptual foundations for understanding how linguistic variants emerge, spread, and change across different temporal scales.

The second stage established a cross-disciplinary methodological toolkit and began to operationalize these theoretical ideas through formal and computational approaches. Wang and Minett (2005) used mathematical models to discuss the emergence, change, and loss of languages, while Minett and Wang (2008) incorporated bilingualism and social structure into models of endangered languages. Network science was applied to Chinese characters, words, and syntactic dependency relations; artificial-language and processing experiments tested learning biases; agent-based models and social networks simulated linguistic conventions and competition; and computational historical linguistics began to convert cognacy judgments and structural observations into reproducible data matrices. International meetings on language evolution and the networks they fostered within China made the field more visible. The review of the preceding two decades by Gong et al. (2014a), together with the theoretical work of Gong, Shuai, and Wu (2013) and Gong, Shuai, and Comrie (2014b), helped establish language evolution as a research direction organized around shared questions.

The third stage had a conspicuous starting point in the 2019 Bayesian analysis of Sino-Tibetan. Using 949 lexical root-meanings from 109 languages, Zhang et al. (2019a) estimated the initial diversification of Sino-Tibetan at approximately 4,200 to 7,800 years before present, with a mean close to 5,900 years, and linked the phylogenetic topology and divergence-time estimates to the expansion of millet agriculture in northern China during the Late Neolithic. Sagart et al. (2019), using independent data and methods, supported a broadly compatible northern agricultural scenario. Together, these studies translated long-standing disputes about subgrouping, time depth, and geographical origin into explicit probabilistic frameworks. A similar approach has been applied to Kra-Dai. Using 646 cognate sets from 100 Kra-Dai languages, Tao et al. (2023) dated the initial divergence to approximately 4,000 years ago. Phylogeographic reconstruction favored the Guangxi-Guangdong region as an early dispersal center and traced movement toward Mainland Southeast Asia. Genetic, archaeological, paleoecological, and paleoclimatic evidence was

used to evaluate a scenario in which late-Holocene language diversification accompanied population expansion and the spread of agriculture.

Research on spatial dispersal and contact accumulated at the same time. S. Yang et al. (2024) introduced language velocity field estimation (LVF), combining dynamic reconstruction, feature space, and geographical projection to infer centers and directions of language dispersal. Applied to about 700 samples from Indo-European, Sino-Tibetan, Bantu, and Arawakan, the method makes directional fields available for comparison with migration corridors, geographical barriers, and contact zones. C. Yang et al. (2024) digitized 1,018 lexical traits from 926 Sinitic varieties and combined them with genetic data from 30,408 Han Chinese individuals sampled across 26 provinces. Their results reveal a north-south gradient, horizontal transmission, and a central transitional zone in the Sinitic lexical landscape, supporting a hybrid explanation in which demic diffusion and cultural diffusion have different weights in different regions. Jin et al. (2026) compiled 146 structural traits from 23 languages of the broad Gansu-Qinghai region. Network analysis, population-structure estimation, admixture inference, and a Trait Sharing Among Languages (TSAL) test revealed different histories for phonological and morphosyntactic traits. A central conclusion is that the linguistic area results from the superposition of multiple trait-specific contact histories.

A further research line concerns the evolution of linguistic structure itself. Zhang et al. (2019b) compared lexical, phonemic, and genetic distances among 34 Indo-European populations. After geography was controlled, paternal genetic distance correlated with lexical distance, whereas maternal genetic distance correlated with phonemic distance. The study suggests that basic vocabulary and sound systems may preserve partly distinct histories of social transmission, and it shifts the unit of analysis from whole-language labels to subsystems with different rates of change and sensitivities to contact. Zhang and Gong (2022) analyzed 532 vowel-system samples representing 357 languages in 39 families. They found a cross-regional and cross-family power-law relation between global structural dispersion and local focalization; phylogenetic analyses supported correlated adaptive evolution, operationalized with the effective dispersion estimate (Effective DE) and focalization estimate (FE). Wu et al. (2023) reconstructed ancestral states and correlated evolution in 106 Sino-Tibetan languages, linking tonogenesis to vowel voice quality and the loss of syllable-final fricatives, stops, and nasals, while also considering tense/lax vowel

contrasts. These studies transform historical phonological hypotheses into testable predictions across language families and complement lineage-specific research on typological evolution.

Contemporary social processes, cognition, and vocal communication have also entered the field. Yang et al. (2025) modeled competition among majority-language monolinguals, minority-language monolinguals, and bilinguals as a Markov process, and used Bayesian estimation for prestige and transition parameters. Across six cases, the contribution of bilingualism to language maintenance varied with directional transition rates and prestige structure. Xu et al. (2025) examined representations formed by large language models during contextual concept inference and found measurable correspondences between their relational structure, human similarity judgments, and patterns of neural activity. Zhou et al. (2026) combined relative vocal fold length (RVFL) data from 75 terrestrial mammal species with genomic analysis and laryngeal MRI of mice, identifying links between RVFL evolution and hearing-related genes. These studies extend evolutionary analysis into language competition, conceptual organization, and vocal systems, establishing new empirical boundaries for the field.

These stages show a shift in the center of gravity of evolutionary linguistics in China from theoretical mechanisms, through methodological tools, to empirical infrastructure. Units of data have expanded from small word lists and simulated agents to cognate sets, structural traits, social populations, conceptual representations, and cross-species phenotypes. Targets of inference now include dates, phylogenies, spatial pathways, and correlated-evolution parameters as well as general mechanisms of emergence. Validation has likewise expanded from single-language datasets to field records and genetic, archaeological, geographical, and experimental evidence.

2.3 Key Scholars and Institutional Development

William S-Y. Wang laid the foundations of the Chinese theoretical tradition in evolutionary linguistics. His work on lexical diffusion, variation, multiple timescales, and complex adaptive systems established a coherent research trajectory, and his models of language competition and language loss brought linguistic questions into quantitative analysis. Tao Gong and collaborators systematically advanced computational modeling, interdisciplinary theory, and community formation, helping language evolution develop into

a field in China with shared concepts and methods (Gong et al. 2014a; Gong, Shuai, and Zhang 2014c).

The research team led by Menghan Zhang exemplifies how large-scale data and methodological innovation are being integrated into evolutionary linguistics research in China. Its research converts questions from historical linguistics and typology into codable variables and applies phylogenetics, spatial dynamics, population structure, Bayesian estimation, and machine learning to linguistic data at different scales (Zhang et al. 2019a; Tao et al. 2023; C. Yang et al. 2024; S. Yang et al. 2024; Jin et al. 2026).

Another important scholarly community has formed around the International Conference in Evolutionary Linguistics (CIEL). Initiated by William S-Y. Wang, the first CIEL was held in Guangzhou in 2009, and subsequent meetings have taken place at universities in mainland China, Hong Kong, and the United States. Sixteen meetings had been held by 2025; CIEL-17 is scheduled for October 2026 at the University of Science and Technology of China in Hefei. This continuity matters because an interdisciplinary field is sustained not only by publications but also by recurring venues in which linguists, anthropologists, biologists, psychologists, and modeling researchers learn to understand one another's objects and expertise, exchange new results, and collectively advance the discipline.

3. Assessment

3.1 The Predominance of Particular Theoretical Models

Evolutionary linguistics in China remains in a formative stage, and its theoretical sources and methodological orientations are relatively concentrated. Evolutionary biology, population genetics, and computational modeling provide mature concepts, techniques, and forms of presentation; consequently, phylogeny, selection, population differentiation, and structural adaptation have become the most common organizing frameworks. Social interaction, cognitive development, and language use have entered the discussion, but sustained empirical work and theoretical dialogue in these areas remain limited.

The current theoretical landscape is also strongest at the meso level and weaker at the macro and micro levels. Language-family diversification and population dispersal have relatively mature research paradigms and can readily be incorporated into historical models. There remains considerable room for research on the macro-level origin of language and the evolution of languages in prehistoric East Asia, while micro-level speaker interaction,

intergenerational learning, and within-community variation lack continuous, concentrated programs of study. Chinese scholarship still needs stable theoretical engagement and research development around these core questions.

3.2 A Relatively Narrow Range of Research Topics

The body of work in evolutionary linguistics in China remains limited. Recent studies concentrate on genealogical relationships, basic vocabulary, sound change, spatial dispersal, and the histories of languages and populations. Sociolinguistic, cognitive, and vocal-communication research has begun, but has not yet formed research clusters of comparable scale or continuity. The field therefore remains far from achieving balanced coverage of the major problems of language evolution.

Currently, linguistic typology, descriptive linguistics, and geolinguistics too often function primarily as data suppliers rather than as fully integrated partners in evolutionary research. This division is problematic because it obscures an important insight: the morphosyntactic patterns descriptive linguists document are themselves the outcomes of historical processes—contact, migration, and language interaction—that evolutionary research seeks to explain. Recent work demonstrates this interdependence. For instance, Jin et al. (2026) discovered that phonological and morphosyntactic traits in the Gansu-Qinghai region preserve different contact histories, a finding that emerged only through collaboration between computational modelers and descriptivists working with detailed grammatical and structural data.

This suggests that descriptive linguistics and fieldwork are not merely peripheral contributors but integral to evolutionary research design. Descriptivists' detailed knowledge of how languages actually function—the motivations for grammatical structures, variation patterns, and discourse organization—provides the empirical foundation that evolutionary models must explain. Correspondingly, evolutionary frameworks help descriptivists understand why the patterns they document exist and how they relate to broader historical processes. By positioning descriptive linguists and fieldworkers as co-equal partners in research design rather than merely as data collectors, evolutionary linguistics in China can develop richer explanations of language change and establish stronger connections with the broader linguistic enterprise. This collaborative approach is especially critical for China, where linguistic diversity, complex contact histories, and rich historical documentation

provide extraordinary opportunities to link grammatical patterns to documented population movements and language interactions.

3.3 Difficulties in Data Collection and Access

Weak database infrastructure is a fundamental bottleneck for evolutionary linguistics in China. Large collections of dialect surveys, descriptive grammars, phonetic materials, historical documents, and field records of minority languages already exist, but they are dispersed across printed publications, personal archives, institutional projects, and incompatible digital formats. Some research materials are difficult to access. Existing databases are often built around individual projects, making integration and reuse costly.

The available data are also uneven across analytical levels. Lexical data are relatively abundant, whereas typological features, speakers' social backgrounds, and multimodal language data are markedly scarcer. Synchronic data outnumber historical corpora and longitudinal community records that can directly track change. Existing databases are often heavily concentrated in particular regions or language families and do not yet provide broad aggregation across the languages of China or East Asia. Because evolutionary research must connect multiple timescales and social levels, current data structures do not reliably support this integration.

Data access also raises questions of open use and rights governance. Recordings, locations, and cultural knowledge associated with cross-border languages, endangered languages, and small communities have different degrees of sensitivity, while field researchers and speaker communities retain continuing interests in the materials. Domestic standards for access, citation, licensing, and long-term preservation have not yet been widely adopted.

4. Outlook

4.1 Incorporating Alternative Models

Evolutionary linguistics in China needs a plural theoretical landscape in which different approaches remain in dialogue. Comparing theories under shared research questions can produce a more complete explanatory chain from individual learning and interaction, through population transmission, to historical diversification, while reducing the extent to which any single tradition predetermines the questions asked.

The central aim of theoretical pluralism is to strengthen empirical problem orientation.

Linguistic phenomena should motivate research questions, which then guide the selection of appropriate concepts and models. Inheritance, contact, diffusion, reorganization, competition, and emergence can be treated as interrelated processes, but research designs must specify the level, timescale, and observable evidence for each. Differences among models then become competing mechanistic explanations, and method choice should follow the research question and evidential constraints.

The linguistic resources of China can also drive theoretical innovation. Dialect continua, multilingual areas, cross-border languages, long-standing contact zones, and large-scale population movements can test existing theories of reticulate history, internal linguistic heterogeneity, and speaker agency. Research in China can develop new middle-range concepts from these materials, transforming local linguistic facts into comparable mechanistic questions and gradually building a continuous theoretical tradition capable of international dialogue.

4.2 Broadening the Scope of Research

The scope of research should expand across macro, meso, and micro scales. At the macro level, research should continue to examine how human vocal capacities, cognitive structures, and brain organization evolved, and how biological conditions and cumulative culture jointly enabled conventional language systems. At the meso level, work on phonology, lexicon, constructions, semantics, and typological change should combine historical linguistics and linguistic typology to investigate the diversification, contact, spread, reorganization, and loss of languages and language families. The micro level should focus on language evolution observable within individual lifetimes and in the present, including child and adult language acquisition, intergenerational transmission, variation within communities, and changes in language capacity associated with disease and natural aging. Connecting the three levels makes it possible to trace historical outcomes back to observable processes of learning and use.

Coverage of languages and regions must likewise reflect the full diversity of China's linguistic ecology. Sinitic varieties, minority languages, cross-border languages, endangered languages, contact languages, and sign languages can each provide evidence at all three scales. Poorly documented deep branches, transition zones, mobile populations, and multilingual communities are especially valuable for observing connections across scales.

Long-term fieldwork, regional comparison, and individual-level longitudinal research will allow the languages of China to become a genuine theoretical foundation for multiscale research on language evolution.

4.3 Integrating Cross-Disciplinary and Interdisciplinary Methods

Interdisciplinary integration must move from temporary collaborations to durable communities. Linguistics, archaeology, genetics, anthropology, geography, ecology, cognitive neuroscience, and computer science should jointly participate in research design, data collection, interpretation, and evaluation around shared questions. Each discipline should retain its own evidential standards and ways of representing uncertainty, while independently acquired data are used to test the same mechanism. Stable platforms, sustained funding, and joint training programs can extend collaboration from individual papers to continuing research projects.

Database development should be the highest-priority public task of the next stage. China needs interconnected resources for basic vocabulary, phonetics and phonology, grammar and constructions, historical texts, multimodal corpora, language typology, and sociolinguistics. National platforms, regional databases, and thematic resources can form a tiered system through shared standards.

Training should cultivate combined competencies. Linguists need skills in data management, statistical inference, and computation, while researchers from other disciplines need to understand linguistic structure, historical comparison, and the analytical properties of field materials. Graduate courses, cross-departmental workshops, joint laboratories, and long-term field projects can create a shared training environment. Only through simultaneous accumulation in theory, data, methods, and personnel can evolutionary linguistics in China develop from a set of representative results into a stable and comprehensive field.

5. Conclusion

Evolutionary linguistics in China is moving from theoretical advocacy and methodological exploration into the early stage of empirical consolidation. Wang's work on lexical diffusion, variation and selection, multiple timescales, and complex adaptive systems

established a theoretical foundation; computational modeling and interdisciplinary discussion created an initial research community; and a series of studies since 2019 has demonstrated multiple paths for research on phylogeny, space, contact, structure, society, cognition, and vocal production.

The present stage is marked by the appearance of representative achievements while a complete disciplinary system remains under construction. Theoretical paradigms are relatively concentrated; topical and linguistic coverage is limited; long-term projects and specialized researchers remain few; and database development, sharing standards, provenance tracking, and access governance are still at an early stage. Theoretical pluralism, broader research coverage, stronger infrastructure, and durable interdisciplinary mechanisms are therefore foundational tasks for the next phase. Shared questions and stable collaboration will determine whether findings can accumulate over time.

China's linguistic diversity and historical materials provide extensive opportunities for evolutionary linguistics. Typology can identify structural patterns, descriptive linguistics can analyze language-internal functions and variation, and sociolinguistics and cognitive neuroscience can connect individual practice with population-level change. As these fields establish stable collaboration supported by sustainable data systems and cooperative platforms, evolutionary linguistics in China can gradually build a multiscale research system that moves from isolated topics toward genuine multidisciplinary integration.

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"Mittie's Husband Died": A Note on Language Form

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1. Current Notion of Form

I have long taken it as something like a starting point that linguistics is, at its core, the study of language forms and meanings. That may sound uncontroversial, but it carries with it a rather ambitious aspiration: that, by studying forms and meanings, we might gradually come to a clearer understanding of what language itself is. For the linguist, this means attending to language in all its manifestations, and trying—always somewhat provisionally—to make sense of the relation between form and meaning.

Since Ferdinand de Saussure, we have undoubtedly learned a great deal about linguistic form. We now have elaborate descriptions of phonological systems, increasingly refined accounts of morphology, and highly sophisticated models of syntax. In this sense, linguistics has been remarkably successful.

Whether we can say the same about meaning is less obvious. There is perhaps a sense—though I will not pursue it here—that meaning has remained more elusive, less amenable to systematization. For present purposes, however, I will set that issue aside and focus on form.

Even so, it seems to me that our understanding of form is not as secure as it might appear. We have, as it were, accumulated a large inventory of forms—at different levels of abstraction, and within different theoretical frameworks. But it remains unclear what a form truly is, or how it comes into being.

A natural place to begin thinking about this is the familiar divide between formalism and functionalism. The terms themselves may now feel somewhat dated, but the issues they raise continue to shape much of our thinking. Frederick Newmeyer's (1998) attempt to reconcile the two positions is well known: formalists are right to insist that form can be characterized independently, while functionalists are right to emphasize that function plays

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a role in shaping form.[1]

I have always found this compromise difficult to accept, though for somewhat different reasons in each case.

On the one hand, the idea that forms can be identified independently of meaning and function strikes me as untenable. As Leonard Bloomfield famously put it, "A phonetic form which has a meaning is a linguistic form."[2]This is not merely a definitional stipulation; it points to something more fundamental. A stretch of sound that carries no meaning could not, in any straightforward sense, be recognized as a linguistic unit at all. It would not count as a form.

On the other hand, I am not entirely persuaded by the functionalist claim that form is shaped by function—at least not as it is typically argued. It is easy enough to assert that forms serve functions, or even that they are shaped by them. But when one looks more closely, it becomes less clear how such shaping is to be demonstrated in practice.

And here, it seems to me, is a more basic methodological difficulty. Once forms are treated as pre-existing units of analysis—as entities that can be identified, named, and classified independently of particular occasions of use—the question of how they are shaped by function becomes, in a sense, unanswerable. For what would count as evidence that a form has been shaped, if the form itself has already been fixed in advance?

Consider M.A.K. Halliday's Systemic Functional Grammar[3]. Halliday's conception of language as a social semiotic is, to my mind, both compelling and productive. His analysis of the clause in terms of ideational, interpersonal, and textual metafunctions offers a powerful way of seeing how multiple layers of meaning can be realized simultaneously. The framework succeeds at showing how forms can be interpreted in functional terms—that is, at the level of the language system.

Yet what this framework gives us is, in effect, a structured mapping between forms and functions. It shows us how a given form can be interpreted in functional terms. What it does not show—at least not in any explicit way—is how those forms come to take the shapes they do in the course of actual interaction. The relationship between form and function is specified at the level of system, but the process by which forms are constituted remains

[1] See Newmeyer (1998), for a programmatic attempt to reconcile formalist and functionalist approaches.

[2] See Bloomfield (1933: 138), for the definition of linguistic form as inherently meaningful.

[3] Halliday (1978) gives one of the most well-articulated accounts of language as a social semiotic.

largely implicit.

A similar point can be made about the work of Ford and Thompson on transition relevance places.[4] Their analysis is careful and insightful in identifying the formal features that make turn transition possible—syntactic completion, prosodic contour, pragmatic closure. But here too, what we are given is a correlation: certain forms are associated with certain interactional outcomes. What remains less clear is how those forms themselves are shaped in the very process of accomplishing those outcomes.

In both cases, then, forms appear as if they were already there—available to be related to function. And this, I think, is where the difficulty lies. Functionalist approaches, despite their emphasis on use and meaning, often retain traditional grammatical categories—clause, subject, object, verb, argument—which are themselves abstractions from recurrent instances of use.[5] Once established, these categories are treated as stable analytic units, capable of being deployed across contexts.

In this respect, functionalism and formalism are not as far apart as they might first appear. Both assume that forms can be identified independently of the particular occasions on which they are produced. And this leads, I think, to a kind of circularity. Forms are first abstracted from use, then related to function, and finally taken as evidence that function shapes form. What we end up with is not so much a demonstration of how form is shaped by function, as a retrospective alignment of already-identified forms with functional categories.

2. A Different Notion of Form

If we want to understand how forms are shaped by function, we may need to begin from a rather different place. In particular, we may need to give up the idea that forms are pre-existing entities, and instead think of them as something that comes into being in the course of interaction.

One way of putting this is to say that what we ordinarily call "form" might be better understood as formulation: something that takes shape over time, as part of the

[4] See Ford and Thompson (1996) for an attempt to define a "complex transition relevance place" based on syntactic, prosodic, and pragmatic completions.

[5] See LaPolla (1993) for a compelling critique of subject and object as universal grammatical categories.

implementation of an action in interaction. In this sense, formulation is the situated, moment-by-moment construction of utterances in response to specific interactional goals and contingencies.

To see what this might amount to in practice, consider a well-known fragment from Sacks, Schegloff and Jefferson's classic paper on conversational turn-taking.[6] Jeanette has just called her friend Estelle to break the news of a death:

Jeanette: Oh you know, Mittie- Gordon, eh-Gordon, Mittie's husband died.

At first glance, what stands out is the apparent complexity—or even awkwardness—of the reference. Instead of a simple expression such as "Gordon" or "Mittie's husband," we find a sequence of elements: first "Mittie," then "Gordon," then "Gordon" again, and finally "Gordon, Mittie's husband." It is tempting to hear this as disfluency, or as a series of self-repairs that could, in principle, have been avoided.[7]

But if we slow down and attend to the utterance as it unfolds, a different picture begins to emerge.

The turn begins with "Oh you know," a format that has been described in the literature as a news preface. What follows immediately after— "Mittie"—can be heard as proposing a topic: it establishes who or what the upcoming news will be about. At this point, one possible continuation would have been "Mittie's husband," yielding a relatively straightforward formulation.

But that is not what happens. Jeanette stops after "Mittie" and shifts to "Gordon." This shift is often treated as a self-repair, but it is not clear that it is simply a correction. Rather, it seems to accomplish something additional.[8] By producing "Mittie" and then "Gordon" in close succession, Jeanette brings both into play, as it were, making them jointly relevant to what is to come.

The choice of "Gordon" is itself consequential. As Sacks and Schegloff have shown, first names are often used as recognitional references—that is, they presuppose that the recipient can identify the person being referred to. In using "Gordon," Jeanette appears to

[6] Sacks, Schegloff and Jefferson (1974) is the classic paper on the turn-taking framework and the original data extract discussed here.

[7] See Maynard (2003) for an analysis of news delivery sequences and the interactional organization of bad news.

[8] See Schegloff, Jefferson and Sacks (1977) for the organization of self-repair in conversation, and Schegloff (1979) on the relevance of repair to syntactic organization in conversation.

be testing whether Estelle can recognize the referent on the basis of name alone.[9]

At this point, however, there is no immediate uptake from Estelle. Whether or not we treat the ensuing silence as significant, it at least leaves open the possibility that recognition has not been secured. And it is in this light that the subsequent development of the formulation becomes intelligible.

Jeanette repeats "Gordon," and then expands it to "Gordon, Mittie's husband." This expansion does more than simply clarify the reference. It recalibrates it. The referent is now not just any "Gordon," but specifically "Mittie's husband"—that is, someone whose identity is relevant to the current interaction, and whose death is consequential precisely because of that relationship.

If we look back over the unfolding of the utterance, we can see that it is responding, step by step, to a set of concurrent demands:

- The need to establish a topic ("Mittie")
- The possibility of recognitional reference ("Gordon")
- The contingency that recognition may not be achieved
- The need to specify the relevant relationship ("Mittie's husband")
- The delicacy of delivering bad news, which discourages an overly abrupt formulation

What is striking is that these demands are not addressed all at once, but on a moment-by-moment basis, as the utterance unfolds. Each increment is responsive to what has come before, and to what remains to be accomplished.

Seen in this way, the sequence "Mittie- Gordon, eh-Gordon, Mittie's husband" is not a flawed version of a simpler form, but a formulation that is being worked out in real time. Its apparent "complexity" is not a defect, but a reflection of the multiple constraints under which it is produced. What we are witnessing, then, is not the deployment of a pre-existing form, but the formation of a form. The utterance takes shape in the course of its production, and its final configuration bears the traces of the interactional work it has done. What we see is the work of co-creating meaning in real time—not transmitting encoded forms, but constraining interpretation through moment-by-moment interactional work. This reflects what LaPolla (2003) describes as ostensive-inferential communication: speakers tailor utterances to help hearers construct the relevant context with minimal inferential effort.

[9] Sacks and Schegloff (1979), for the analysis of recognitional reference to persons in conversation.

3. Conclusion

If we step back from the many different kinds of language forms that have been proposed over the years, what is striking is not only the diversity of the forms – ranging from traditional categories such as noun and verb to more abstract constructs such as binding relations and empty categories – but also the similarity in the way they are arrived at.

In most cases, the procedure is roughly the same. We begin with instances of language use, from which we extract patterns and regularities. These are then abstracted from their original contexts and reconstituted as analytic units – forms –which can be deployed in theoretical descriptions. In this process, something is gained: a certain clarity, a certain generality. But something is also lost.

Harold Garfinkel puts the point rather starkly with his observation that, in formal analysis, "you lose the phenomenon."[10] The remark may seem exaggerated at first, but it captures an important concern. In abstracting forms from their contexts, we risk losing sight of how those forms are actually produced, recognized, and made to work in real-life interaction.

What an interactional perspective offers—anticipated in different ways by Ludwig Wittgenstein, Harold Garfinkel, Harvey Sacks, Emanuel Schegloff and others—is a way of returning to those details.[11] If we treat utterances not as instantiations of pre-existing forms, but as formulations shaped in the course of action, we begin to see how form and meaning are not separable components, but aspects of a single unfolding process. This is, in spirit, consonant with LaPolla's argument (1993, 2003) that grammatical categories are not universal primitives but emergent generalizations grounded in actual use—patterns that become conventionalized precisely because they do interactional work.[12]

From this perspective, what is said and how it is said are not two independent dimensions of language, but mutually constitutive aspects of the same phenomenon. Or, to

[10] See Garfinkel (1967) for the observation that formal analysis risks "losing the phenomenon."
[11] See Wittgenstein (1953), Garfinkel and Sacks (1970), Sacks (1992), and Schegloff (1996) for converging perspectives on meaning as arising from use and a radically different conception of grammar. Luke (2026) provides a discussion of Sacks's notion of radical grammar.
[12] LaPolla (2003: 116-117): the speaker "must choose and tailor the utterance...such that the hearer will not have to expend unnecessary effort to create a context that will allow him/her to achieve relevance (arrive at the intended interpretation)."

borrow Harold Garfinkel's formulation, "…the recognized sense of what a person said consists only and entirely in recognizing the method of his speaking, of seeing how he spoke."[13]

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[13] See Garfinkel (1967: 28-9).

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Constructionism as a Guiding Principle of Contrastive Language Studies and Song Lyrics Translation

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Abstract: This article explores the application of the constructionist approach to language studies. The first part of the article provides a historical account of how the author developed a college course on English-Chinese contrastive language studies from a typological and constructionist perspective under Professor LaPolla's mentorship. It details the curriculum design, which introduces students to the concept of language as a system of form-function pairings and contrasts the system of English and that of Chinese. The second part shifts from theory to practice, demonstrating how the constructionist approach serves as a guiding principle in translation, specifically in the context of translating Cantonese song lyrics into English. The translation of a song is used as an example to analyze the intricate decisions involved in rendering culturally and contextually rich source texts into a target text, focusing on function, meaning, and singability. The article concludes by reflecting on the profound and lasting impact of Professor LaPolla's mentorship and his scholarly contributions to the field of linguistics.

1. Introduction

Anyone who is able to view language from a typological perspective, whether because of being born (and socialized) as a bilingual or multilingual, or because of studying languages, particularly those of different language families, would understand that apart from certain fundamental functions (i.e. naming, attributing, and predicating), language is a

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historical and cultural manifestation of a distinct group of speakers and thus varies across cultures and must be studied and documented accordingly, instead of assigning (or even worse, searching for) formal or functional labels used in one language to another language. This summarizes what I have learnt from Professor Randy J. LaPolla, since 2000 when I first met him at an elective course[1] for my postgraduate study at the City University of Hong Kong, who later on accepted my invitation to be my dissertation advisor[2], followed by 26 years of his mentorship along my career development into one as a lecturer at the college I have served for more than 20 years. This article is divided into two parts. The first gives a historical account on how Professor LaPolla has guided me on developing a subject on contrastive language studies between English and Chinese from a typological perspective. The second moves on from theoretical frameworks to such a practical operation as translation with the constructionist approach.

2. Introduction of the constructionist approach to language to a translation and interpretation curriculum

At the turn of the millennium, Hong Kong saw a rapid development in the sub-degree tertiary education sector thanks to then Chief Executive.[3] To secure high articulation rates to the senior-year places at the three-year bachelor's degree programmes (now four-year) at local universities[4], various discipline-specific associate degree programmes were launched (Lee and Young 2003). Even higher diploma programmes were converted to associate degree programmes. One example is the programme on translation and interpretation at the college I have been serving. Assigned to teach a subject on contrast between English and Chinese,

[1] The subject title was Discourse Studies, which through our personal communication, Professor LaPolla explained is but one version of subject titles he had been using for contents on functionalism/constructionism. Had I not chosen Discourse Studies as my elective, I would have never met him. Nor would I have had the pleasure to study languages and do translation with the inspiration from functionalism/ constructionism, not to mention the honour to be invited to contribute this paper to this Festschrift.

[2] Back then I began to develop interest in the linguistic differences between English and Chinese, which gave me the idea to investigate the pivotal construction in the Chinese language and how it influences the English L2 production by native speakers of Chinese.

[3] See *The 2000 Policy Address,* URI: https://www.policyaddress.gov.hk/pa00/hlight_e.htm

[4] The main route has been a sub-degree programme graduate articulating into bachelor's programmes based on the concept of credit transfer, with a small proportion opting for further study abroad.

titled Contrastive Language Studies of English and Chinese (CLSEC), I began with references on various sources which turned out to be inconsistent and non-systematic, until I decided to approach the subject from a typological perspective with a core focus on linguistic construction of the pair-up between form and function in the two languages. The introductory sessions (lectures and tutorials) became an introduction to language from a constructionist perspective, followed by lessons on description of the English language through, naturally, the Hallidayan systemic functional framework (Halliday 1994)[5], and by those on word order of the Chinese language (LaPolla 2017), with concluding sessions on the systemic contrast between the two languages. Throughout the years of administering the subject, I have generated more questions than answers for myself. Some questions were answered in books and journal articles, but most inspirations were from Professor LaPolla, who is always able to provide insightful comments based on his experience with languages. Below I wish to elaborate the curriculum design of CLSEC and provide examples used in the teaching materials.[6]

The course begins with an overview of the speech sounds of English based on the framework provided by the International Phonetic Association, followed by that of Cantonese using the IPA charts advanced by Zee (1991).[7] Also introduced along the lesson plans were the fundamental concepts, minimal pairs and allophones.[8] The purpose is two-fold. First, it is crucial that language students should learn language in a holistic approach, that is, the spoken and written modes.[9] More importantly, with the typological orientation

[5] In that period, I was invited to compile the syllabus of, and then teach, another subject, titled *Analysis of English Grammar*, completely based on systemic functional linguistics founded by Prof Halliday. The second edition of his textbook has been regarded by Professor LaPolla and me as the best among others.

[6] In 2016, a conference paper on a similar topic, titled *Teaching Contrastive Language Studies of English and Chinese to Students of Translation*, was presented at International Conference on Social Sciences, which included a post-course student evaluative survey, showing a general positive response from the respondents, although the sample size (13 persons) was too small to be statistically significant.

[7] The popular Cantonese phonetic system, Jyutping, which is powerful and convenient to type, has not been adopted in CLSEC, to avoid confusion between such English voiced consonants as /b/ and such Chinese unaspirated consonants as /p/ (as opposed to its aspirated counterpart /p^h/), because in Jyutping, an unaspirated /p/ is denoted as b, as in 爸 (father) as baa.

[8] An interesting sidenote is that certain allophones in English happen to form minimal pairs in Cantonese. A case in point is the unaspirated bilabial stops. On the other hand, the diphthong pairs, /aI/ and /6I/, and /au/ and /6u/, form minimal pairs in Cantonese but happen to be allophones in at least some English varieties.

[9] For students studying translation, a direct benefit is more accurate pronunciation and natural

and constructivist focus of the subject, students have to be prepared to study natural language in its spoken mode, which, same as if not more so than the written mode, manifests the basic concept of form-function pair-up, that is, construction.[10]

The second module moves on to communication as an ostensive activity which aims at abductive inference (LaPolla 2003), when students, very likely for the first time, learn about communication as a collaborative meaning making and interpreting process, and the resources, verbal and/or non-verbal, available for the communicators (Figure 1). This leads to the introduction to the concept of (social) convention, of which language is but one important part (Figure 2). Next, the fundamental constructionist form-function pair-up is introduced to explain how insufficient the wording of "symbol" and "meaning" is in describing language, which is particularly efficient in abductive inference.[11] This is followed, naturally, by the concept of metaphorical wording, when a form-function pair-up is broken, with either another form, existing or invented, being employed to perform the same function, or the form being used to perform another function (Figure 3).



Figure 1. Graphical presentation of construction. The gradient pattern in the box illustrates the idea that there is no clear distinction between lexical and grammatical constructions.

prosody when doing oral interpretation, especially from Chinese to English.

[10] A side-note: Professor LaPolla once told me that he has a naturalistic take on human language, that is, the human species happens to have a well-developed vocal tract that we find very good use of (apart from breathing and eating, I suppose).

[11] To illustrate, an example adapted from LaPolla (2012: 2) has been used, where a choice with unnecessary information provided by an intimate partner for the request to have the light switched on ("Please switch on the light because I want to read a book."), among such other choices as pointing at the switch without any verbal communication, may be interpreted as a violation of the Grice's (1975) maxim of quantity.

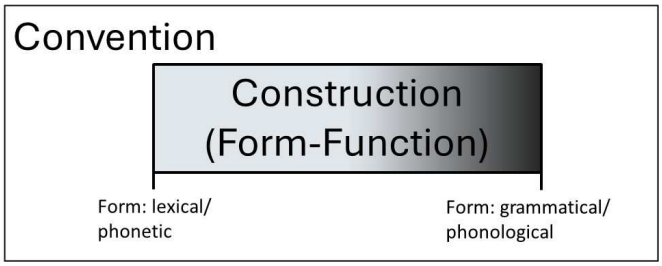


Figure 2. Construction as a part of social convention.

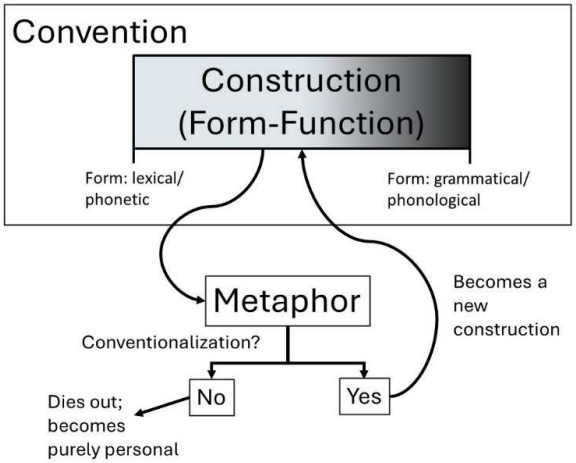


Figure 3. Metaphor from a constructionist perspective. A newly created metaphor has to go through conventionalization before "stabilizing" as a construction in the language, or disappears through time.

For demonstration, the highly localized Chinese example below is used:

(1) 腳 (foot) → 山腳 (mountain foot) → 櫈腳 (stool foot) → 麻雀腳 (mahjong foot) → 飯腳 (rice foot)

Obviously, the feature of the foot being the lowest part of the standing human body, and its function to support the standing human body, have been employed to represent the lowest part of the mountain, as in 山腳 (mountain foot), and the supporting structure of a stool or

chair, as in 櫈腳 (stool foot), respectively.[12] While there are English counterparts, mountain foot and chair legs, the two further cycles of metaphorical wording of the Chinese 腳 are unique. The phrase 麻雀腳 (mahjong foot) has taken the supportive feature from the instrumental level to the accompaniment level, to represent participants, usually friends and/ or relatives, in the game of mahjong.[13] The "company" meaning is then applied to those accompanying one for a meal, and because rice is the basic main food source, the form 飯腳 (rice foot) comes into being.[14,15] Beyond the lexical level, a phrasal metaphor, 說好了的 (said well PFV ASSOC), which was rather short-lived, is cited as an example. The phrase congruently means "promised", as in 說好了的薪酬 (said well PFV ASSOC salary) meaning "the promised salary". It was used in the form of rhetorical question to express frustration against an event that does not turn out as expected, as in 說好了的 A+呢? (said well PFV ASSOC A+ UFP), meaning "what about the promised A+?", although there has not been such a promise.[16] To further the construction "agenda", prosodic examples are provided, where word choice and word order are used to achieve assonance and alliteration (the form), with the ultimate function of entertainment and easy memorization. The module concludes with the idea of grammatical marking as an abductive device in constraining the interpretation of a member of a grammatical group as opposed to other members.

While the module mentioned above aims at laying a solid foundation on how language works, the one that follows, which focuses on the lexicogrammar of English, is entirely based on functional grammar, presently known as systemic functional linguistics, founded by Professor M.A.K. Halliday. The major reference book, however, is Introducing Functional Grammar by Professor Geoff Thompson (2013), for its introductory nature. The first

[12] The similar metaphorical concept is also found in other tools that come with foot or leg like supporting structures, as in 檯腳 (table foot).

[13] The Chinese language relies on the form 手 (hand) more often to metaphorically represent participants, as in 人手 (human hand) meaning manpower, although it is true that in Hong Kong, 人手 is interchangeable with 人腳 (human foot).

[14] There has been another foot metaphor with a longer history, which is 撐檯腳 (support table foot), originally referring to two persons going on a romantic meal, usually dinner, but later on also simply to any two or more persons having meal together.

[15] Half-jokingly, I invite my students to do the same for their group members by calling them 組腳 (group foot), to show them how metaphor facilitates the recycling of the limited linguistic resources available to the language users for their needs.

[16] This metaphor may originate from Taiwan, but this needs to be validated with a serious historical study.

metafunction to be discussed is that of experiential/ideational. The choice serves two functions. First, at local primary and secondary schools, if "Subject" is taught, its definition is bound to be different from that of the Hallidayan school.[17] Therefore, the interpersonal metafunction would have been a confusing, if not deterring, starting point. Second, the doer-process-done-to concept advanced in the experiential/ ideational metafunction, as its name suggests, is more easily understood in terms of happenings, that is, daily experiences.[18] This is followed by interpersonal metafunction (main concepts presented include subject, finite, mood type, modality, and appraisal) and textual metafunction (main concepts include theme, marked theme, multiple theme, and special thematic structures). With the part on textual metafunction, along the development of the course, a news article[19] was used for practicing Theme identification. As it turns out, the Theme choice of a sentence does not appear to be good for coherence and could have been replaced by another nominal group in the sentence by paraphrasing the sentence into its passive voice version.[20] This always reminds me of a remark which Professor LaPolla has been making about functional grammar, that the framework is so powerful that it goes beyond analysis to evaluation of a text. He also mentioned more than once that he would examine the themes of the sentences in his own writing. These findings and practices, particularly those on Theme in English, serve as major guiding principles (see below).

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[17] As Professor LaPolla argues, even among linguists, the definition of Subject remains problematic. In CLSEC, before introducing the Hallidayan definition of Subject, LaPolla characterizes it as representing the entity to be predicated in English—typically realized as a nominal group that functions as an argument of the verbal group (i.e., a direct or indirect participant in the process, in SFL terms).

[18] Through personal communication, Professor LaPolla endorsed teaching experiential/ ideational metafunction first. He did also say he would consider using the same approach when teaching functional grammar later on.

[19] The title is *Anthropologist visited remote North Sentinel tribe decades ago and survived* (Reported by Ashley May on USA Today, on November 27, 2018). URI: https://www.usatoday.com/story/news/world/2018/11/27/john-allen-chau-body-india-island-researcher-made-trip-decades-ago/2123942002/

[20] The original clause complex is "The advocacy group Survival International has since warned police that it's in the best interest of the Sentinelese tribespeople and the authorities to "abandon efforts" to recover Chau's body" (para 9). While only "police" has been playing a major role in the previous paragraphs, it was the first time for "Survival International" to be mentioned. The paraphrase in passive voice, "police has since been warned by the advocacy group Survival International…", would have facilitated the thematic development.

(2) 有 冇 人 同 我 一樣,

jau5 mou5 jan4 tung4 ngo5 jat1jeong6

have NEG person with 1SG same

'Is anyone like me…

身 邊 好 多 人 唔 洗 點 做

san1 bin1 hou2 do1 jan4 ng4 sai2 dim2 zou6

body side very many person NEG need how work

around whom there are many people who don't have to do much work…

但 又 搵到 好 多 錢

daan6 jau6 wan2-dou2 hou2 do1 cin2

but again find-RES very many money

but then earn a lot of money?'

見 身 邊 d 朋友 開 ig shop

gin3 san1 bin1 d pang4jau5 hoi1 ig shop

see body side GEN friend open Instagram shop

'I see my friends set up Instagram shops.'

啲 單 多 到 接 唔 哂, 有 代購 團購,

di1 daan1 do1 dou3 zip3 ng4 saai3 jau5 doi6-kau3 tyun4-kau3

CLF bill many arrive receive NEG all have proxy-buy group-buy

'The bills are too many to process, there are proxy purchases and group purchases...

又	賣下	啲	無謂	野
jau6	maai6-haa5	di1	mou4-wai6	je5
again	sell-DEL	CLF	no-reason	stuff

…while selling some pointless products.'

但	每	個	月	都	搵到	幾	千	蚊,
daan6	mui5	go3	jyut6	dou1	wan2-dou2	gei2	cin1	man1
but	very	CLF	month	also	find-RES	several	thousand	dollar

'but every month they earn several thousand dollars.'

好	景	有	一萬
hou2	ging2	jau5	jat1-maan6
good	environment	have	one-ten thousand

'when the business is good, the earning goes up to ten thousand…

不過	淨	係	坐	係	屋企	就	得
bat1gwo3	zing6	hai6	co3	hai2	uk1kei2	zau6	dak1
but	only	COP	sit	be.at	home	then	okay

all they have to do is sit at home.'

唉...	好	葡萄	佢地...
aai2	hou2	pou4tou4	keoi5dei6
sigh	very	grape	3PL

'sigh… I'm so jealous of them.'

Having examined English's form-function pairings through systemic functional linguistics, the course shifts focus to the Chinese language to demonstrate a fundamentally different organizational principle. Rather than the subject-finite structure that characterizes English, Chinese relies on topic-comment constructions—a pattern that embodies LaPolla's

core argument that grammatical relations are not universal categories but language-specific and motivated by information structure. A key pedagogical goal is to alert students to the fact that Chinese relies heavily on contextual inference, with minimal grammaticalization of the distinctions that English obligatorily marks. To illustrate this principle, an authentic example drawn from a Facebook community post is presented with the permission of the page administrator. The sample represents colloquial Cantonese; consequently, Jyutping romanization is employed in the annotation rather than standard Mandarin romanization.

As can be seen from the example, the referents in line 2 ("whom" and "who" in the English translation) are not stated in the Cantonese original. In line 4, the topic switches back to the writer without explicit language, as it is (and has to be) in the case of the English translation ("I"). Lines 4 and 5 are a topic chain with the topic being "ig shop" ("Instagram shops" of the writer's friends), where the referents for all the processes ("are", "are", and "sell") are not spelt out. Then the topic switches back to the writer's friends in line 7, again without explicit language ("they" in the English translation), with a topic chain that spans through line 9, before the writer concludes with the writer's emotional response, with the topic not spelt out in line 11 ("I" in the English translation). While the English translation is not provided on the same presentation slide as the lesson goes, students are supposed to, and many did, find out how they as native Cantonese speakers are able to comprehend the script effortlessly even though a number of instances of inference have to be made throughout the reading process. The subsequent presentation of the English translation brings students' attention to topic-comment as a construction in the Chinese language as opposed to subject and finite in the English language (LaPolla 2009). This lays a foundation for other relevant linguistic phenomena in Chinese. First, what is described as serial-verb construction is just a manifestation of topic chain. It just so happens that all the comments in the chain begin with an action word. For example, in (3), 佢 is the topic followed by the comment 揸車 and another comment 返工, with 揸 and 返 being action words.

(3) 佢 揸 車 返 工。
keoi5 zaa1 ce1 faan1 gung1
3SG hold car return work
'He drives to work.'

Another related phenomenon is pivotal construction, where a comment, or part of a comment, is the topic of the next comment. For example, in (4), 你 is part of the comment 請你, as well as the topic of 飲茶. In the process of generating more examples of pivotal construction, a set of constructions which appears to be pivotal but turned out to be different in nature was identified. In our personal communication, while Professor LaPolla regarded those resembling (4) as "classic" pivotal constructions, this other type functions more like a relative clause, in a non-restrictive sense, as exemplified in (5), where the first topic-comment (我識人) introduces a referent (人), and another comment (做裝修) is made about this referent as topic.

(4) 我 請 你 飲 茶。
ngo5 ceng2 nei5 jam2 caa4
1SG treat 2SG drink tea
'I treat you to drink tea.'

(5) 我 識 人 做 裝修。
ngo5 sik1 jan4 zou6 zong1sau1
1SG know person do decoration
'I know someone who does decoration.'

The pivotal construction is followed by event-central presentative construction, which serves as a direct evidence for the fact that word order in Chinese is not determined by doer^action^done-to. A real-life example took place back in 2015, when I asked my wife the question in (6), where 冷氣 is supposed to 開 in terms of ergativity, but because the topic is 廳, the topicality of 冷氣 needs to be removed, that is, for this nominal group to not appear at the pre-verbal position, resulting in an event-presentative construction. Note that the English translation is not '*is the air-conditioner in the living room switched on'*, to reflect the fact that the topical Theme is not *the air-conditioner in the living room, but the living room*.

(6) 廳 有 冇 開 冷氣？

teng1 jau5 mou5 hoi1 lang5hei3

hall have NEG open cold_air

‘Does the living room have the air-conditioner switched on?’

The module on Chinese concludes with the ba-construction and bei-construction, with an emphasis on how the bei-construction functions differently from the English passive voice construction. The adversity expressed by the bei-construction was once exemplified perfectly by the expression, 被卸任 (be stepped down), used by Allan Zeman, upon being informed he was no longer the chairperson of Ocean Park.[21] The Chinese phrase 卸任 means stepping down and, like its English counterpart, does not allow a passive reading, but a new bei-construction is created to include the sense of adversity.

With basic understanding of the metafunctions of the English language and topic-comment in the Chinese language, students are invited to visit and revisit the contrasts between the two languages. A point worth noting is that when it comes to usage of the members of the pronominal system, the much higher frequency of occurrences of pronouns in English than in Chinese reflects the linguistic requirement for referent tracking in the English language. The theory also explains why subject in English is mandatory, whereas topic in Chinese may be inferred even without being stated (LaPolla 2006).

In summary, the constructionist approach to language from a typological perspective advocated by scholars represented by Professor LaPolla, in addition to serving as a guiding principle for the documentation of languages, provides a solid foundation for language studies, especially when it comes to contrastive language studies. This is exemplified by the curriculum design and specific teaching materials for CLSEC presented above, and the experience with administering the course has paved a way for my personal pursuit in translating.

[21] See the interview with Allan Zeman in the Economic Digest in 2000. URI: https://tinyurl.com/yevmrpuf

3. Translating with a constructionist approach

Translation as a second option to understanding a different culture, next to learning the language of that culture, has long been an intercultural practice. Moreover, in regions where two or more languages are given the status of official languages, bilingual or multilingual versions of official texts have to be made available as a sociopolitical practice. Both cases apply to Hong Kong. Through personal networks, I have been given the opportunities to translate texts of various genres, including song lyrics. While the theories on translation have remained focused on faithfulness, expressiveness, and elegance, the constructionist approach has provided me a unified guiding principle when translating. As illustrated in Figure 4, whether the form in the source text involves simply a single word/ character or a string of words/characters and even word order, as long as its function is found in the target language and is paired up with a form, again however complicated it is, a translation is possible. Function in the context of translation, from the constructionist perspective, is inclusive of meanings in the lexicogrammar, situation, and culture.

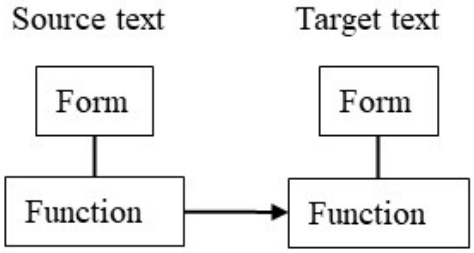


Figure 4. A constructionist approach to translating.

To elaborate on the operational level, song lyrics translation is chosen here for several reasons. First, the content is often highly contextualized in terms of situation, on top of culture. Second, the use of language is precise because of the constraints of the music, to the extent that a line may sometimes become highly ambiguous despite the first reason. Such ambiguity may be attributed to the dropping of certain clause constituents (typically the first-person personal pronoun), and/or metaphorical wording. In the case of metaphor, the lyricist may just be using an existing, that is, idiomatic, one for the exact same congruent meaning, or more likely for a similar meaning. There are also cases where an idiomatic metaphor is

modified, while in other cases a new metaphor is created. These factor into the measurement of faithfulness and expressiveness, and to a certain extent, elegance. Elegance would be further attributed to rhythm and rhyming, if the translation requires singability, that is, if the target text also has to be singable with the original music.

The example used here is the translation[22] of a Cantonese song with a history of 50 years, titled 狂潮 (kwong4 ciu4, crazy tide), which was the theme song of a television drama series with the same Chinese title (English title: Hotel).[23] The first verse is shown in (7), where the English translations prioritize function over literal meaning. In the first line of the source text, 是 functions to introduce the target listener/ reader ("he", "she", "you" and "me") and relate the reader to the song, so even though the first line appears to be an event-central presentative construction, the English translation is not rendered into a structure that resembles a Chinese event-central presentative structure, but to make explicit that the song is about everyone. Note that 他 is translated into third-person plural "them" to include everyone other than the reader (你) and the singer (我). The second line of the source text is another comment for everyone in the first line, and is translated using a so-called rank shift technique, that is, the action words 親, 愛, and 爭 are rendered into nouns in English (relations, love, and conflicts). While the meaning of "mutual" for 相 would have become redundant and thus not translated, the use of English definite article ("the") points back to the first line of the English translation. The overall effect makes the second line of the English translation follows from "it's all about" in the first line to achieve unity. In the third line of the source text, 大家 becomes the Topic, picking up from 他, 你 and 我 in the first line, while 在人海 meaning among so many people in the Comment repeats the meaning of 偶, that is, chance, and is thus not translated. Note that the English translation does not start with "everyone" or "we" as the actor, but "chance", to remove the agency of people, to match with the overarching theme, that is, the context of situation, of the surging tide of fate that drives the encounters between people. The fifth and sixth lines of the source text may be interpreted as rhetorical questions referring to the emotions that take place in all kinds of relationship. While the congruent meaning of 幾許 in the fifth line is translated into English as "all those", the literal meaning of 多少 in the sixth line is

[22] The author was commissioned by Zou Label to translate the whole song, which was included in its publication (RN 2025). https://www.patreon.com/cw/wonglokyee

[23] See the introduction to it on Wikipedia. URI: https://en.wikipedia.org/wiki/Hotel_(Hong_Kong_TV_series) (Accessed 14 February 2025).

rendered into English for variety in structures (an element of elegance). The seventh line of the source text begins with 那狂潮 as Topic without any explicit signpost to show that it is being compared to the emotions mentioned in the previous two lines probably because of musical constraints. Even though the degree of inference to be made for the comparison relation is not high, the English translation opts for spelling it out, with "just like". Also, the meaning of "crazy" is not translated because "surging" is sufficient, and because the eighth line is going to add further appraisal. Note that 繽紛 in the eighth line of the source text is not translated literally into "colourful" because its connotation (a function in context of culture) in English is too positive. Instead, "vibrant" is used to capture the very active movements of the waves in a tide. Also, the last syllable of "vibrant" rhymes with that of "brilliant" in the same line (for elegance). As a final note, the English translation is singable without rhyming. Every English line has the same number of syllables as its corresponding Chinese line. To achieve singability, the non-standard form of "about", that is, " 'bout", is used in the first line. The decision to not create rhymes in the English translation is based on two factors. First, the Chinese original does not use rhymes. Second, it is difficult and there was a time constraint.

(7)

是	他	也	是	你	和	我	
si6	taa1	jaa5	si6	nei5	wo4	ngo5	
COP	3SG	and	COP	2SG	and	1SG	

'It's all 'bout them, you, and me…

同	相	親	相	愛	也	相	爭
tung4	seong1	can1	seong1	oi3	jaa5	seong1	zang1
with	mutual	relate	mutual	love	and	mutual	compete

…the relations, love and conflicts'

大家	偶	遇	在	人海
daai6gaa1	ngau5	jyu6	zoi6	jan4hoi2
everyone	by chance	encounter	in	a_huge _crowd

'Chance has made our encounters…

你	我	各	留	痕
nei5	ngo5	gok3	lau4	han4
2SG	1SG	each	leave	mark

…leaving our own marks'

幾許	歡	與	笑
gei2heoi2	fun1	jyu5	siu3
how_much	fun	and	laugh

'All the joy and smiles…

多少	愛	和	恨
do1siu2	oi3	wo4	han6
how_much	love	and	hate

…how much love and hate'

那	狂	潮	捲起
naa5	kwong4	ciu4	gyun2hei2
DEM.DIST	crazy	tide	roll_up

'Just like surging tides…'

燦爛	又	繽紛
caan3laan6	jau6	ban1fan1
brilliant	and	colourful

'…brilliant and vibrant.'

There is no doubt that the translation presented above has room to improve, as does any other translation. However, the point here is how the concept of form and function readily and in a unified fashion guides decisions in translation. The discussion here in this section brings up more questions than answers, and thus requires further investigation into, for example, English-to-Chinese translation, and pairing up of prosody in song lyrics translation to different aspects of the music of the song.

4. Conclusion

This article demonstrates the constructionist approach as a unified guiding principle for

contrastive language pedagogy and translation practice. The CLSEC curriculum teaches language as form-function pairings, revealing that English's subject-finite structure and Chinese's topic-comment construction are language-specific solutions to organizing information, not universal categories. The analysis of Cantonese song lyrics translation further illustrates this principle: by recognizing that form-function pairings are culturally embedded, translators can make principled decisions about meaning, prosody, and singability. Ultimately, the constructionist framework transforms how linguists, teachers, and translators understand linguistic diversity, not as variation to explain through universal categories, but as evidence of different conventionalized patterns reflecting how language communities organize and express meaning.

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I would also like to thank the Facebook community page administrator for permission to use the authentic Cantonese text, my colleagues at CPCE for feedback on curriculum design, and the editors of this volume for this opportunity.

Abbreviations

1SG	first-person singular
2SG	second-person singular
3PL	third-person plural
3SG	third-person singular

ASSOC	associative
CLF	classifier
COP	copula
DEL	delimitative aspect
DEM.DIST	distal demonstrative
GEN	genitive case
NEG	negation marker
PFV	perfective aspect
RES	resultative
UFP	utterance-final particle

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Language Evolution and Human Civilization: A Case Study of Rice Terminology in East Asian Languages

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Abstract: The linguistic study of civilizational origins hinges on reconstructing the evolution of culturally significant vocabulary through systematic sound changes—what may be termed the "shift chain of evolutionary morphemes." This paper explores the origins and early dispersal of rice cultivation in the Yangtze River basin by analyzing documented phonological changes in the term for rice (稻) across the Kam-Tai and Hmong-Mien language families. Our analysis demonstrates that linguistic evidence can not only corroborate but also refine archaeological hypotheses, highlighting the complementary strengths of philological and material inquiries. Beyond reconstructing chronological sequences, the proposed method also sheds light on the cognitive and communicative motivations underlying regular sound change.

Keywords: civilization origins, rice cultivation, evolutionary morphemes, sound shift chains, Kam-Tai languages, Hmong-Mien languages, linguistic archaeology

1. Using Evolutionary Morphemes to Verify Archaeological Evidence

Human knowledge of the past is transmitted through three primary channels: genetic inheritance, linguistic heritage, and material remains recovered by archaeology. Among these, archaeology offers the most direct and tangible evidence—ruins and artifacts are concrete objects open to empirical examination. Yet archaeological records are inherently fragmentary, capturing only partial glimpses of past lifeways. Language, though less

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immediately material, provides another indispensable source of historical insight. The vocabularies of related languages, especially terms for culturally salient objects and concepts, encode traces of historical events and population movements within their phonological structures.

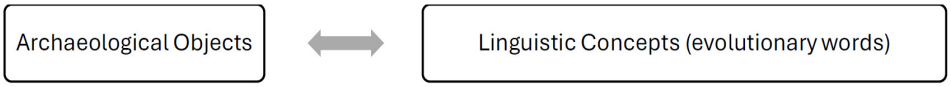


Fig. 1: The Complementary Relationship Between Archaeology and Linguistics

The study of evolutionary morphemes—cognate forms shared across language families—offers a robust tool for reconstructing not only *what* happened in the past, but also *when* and *in what order*. Sound change, far from being erratic or idiosyncratic, follows recurrent patterns governed by what linguists term "universals of sound change." These universals arise from the biomechanical and perceptual constraints of human speech production and perception.

To illustrate, consider the relationship between a voiced velar fricative /ɢ/ and a voiced velar stop /g/ across related languages. According to established principles, /ɢ/ tends to shift toward /g/ (a process of stop-formation), whereas the reverse shift is exceedingly rare in natural language evolution. This asymmetry is not arbitrary: it reflects how speakers gradually adjust articulatory gestures across generations. By identifying such directional patterns across cognate sets, we can infer the relative chronology of linguistic changes and, by extension, the sequence of population movements and cultural contacts that prompted linguistic divergence.

The logic is straightforward: if we can establish the direction and order of sound changes, we can also infer the relative antiquity of different linguistic forms, thereby furnishing an independent timeline for evaluating archaeological chronologies. This method gains particular power when multiple independent sound changes converge on the same historical conclusion.

This integrated perspective aligns with the methodological position advanced by LaPolla (2021), who calls for a synthesis of historical linguistics, typology, and contact studies in any investigation of language change and dispersal.

2. Reconstructing Rice Cultivation History through Linguistic Evidence

Rice cultivation ranks among the defining achievements of early agrarian civilizations, especially in East and Southeast Asia. Archaeological findings have yielded abundant rice remains from numerous sites across the Yangtze River valley and beyond. Nevertheless, scholarly debate persists regarding the precise geographic origin of rice domestication and the temporal sequence of its dispersal.

The Liangzhu culture (c. 5300–4300 BP), often regarded as an icon of China's 5,000-year-old civilization, exemplifies a complex society built upon rice-based agriculture (Wang Wei, 2022). Early rice remains have been uncovered at sites such as Hemudu (China), Koldihwa (India), and Non Nok Tha (Thailand). However, genetic and archaeological analyses have sometimes yielded competing interpretations. Molina et al. (2011) employed molecular evidence to argue convincingly that the Yangtze River basin served as the primary center of rice domestication. Silva et al. (2015) conducted a comprehensive regression analysis across some 400 documented rice sites, concluding that early cultivation and subsequent dispersal were concentrated in the middle and lower Yangtze valley, with the lower reaches showing clear chronological priority. Complementing these archaeological findings, phylogenetic studies in historical linguistics have also contributed critical evidence. For instance, Zhang, Yan, Pan, and Jin (2019) employed Bayesian phylogenetic methods on lexical data to propose that the Sino-Tibetan language family originated in northern China around 5900 years before present, a conclusion that aligns with the ‘northern origin’ hypothesis and the dispersal of millet agriculture. More recently, Tao et al. (2023) further applied similar phylogeographic approaches to the Kam-Tai (Kra-Dai) languages, inferring their initial divergence and dispersal from the Guangxi–Guangdong region approximately 4000 years ago.

Beyond the regional focus on the Yangtze basin, broader comparative perspectives on the origins of agriculture have been synthesized by Bellwood (2005), who situates rice domestication within the global framework of early farming dispersals and population migrations across Southeast Asia and the Pacific.

The present evolutionary morpheme analysis not only corroborates the Yangtze origin but further refines the picture by providing linguistic evidence for a directional spread from the lower Yangtze toward the middle Yangtze region. This linguistic inference of directional

dispersal finds independent support from archaeological studies that emphasize the critical role of water management practices—particularly in the lower Yangtze wetland environments—in shaping the early trajectory of rice cultivation (Fuller & Qin, 2009). This inference rests on the historical distribution of populations: the Kam-Tai peoples traditionally inhabited the lower Yangtze area, while Hmong-Mien groups occupied the middle Yangtze. By tracking the phonological evolution of the word for "rice" within each family, we can infer which population first adopted rice cultivation and how knowledge—and terminology—subsequently spread through language contact and borrowing.

3. Reconstructing the Proto-form and Tracing Sound Shift Chains

To apply evolutionary morpheme analysis, we must first reconstruct the original pronunciation of "rice" in the ancestral languages. Taking Old Chinese (reconstructed as *glu̱ʔ by Pan Wuyun, 2023) as our anchor, we examine the full inventory of rice terms across Kam-Tai dialects. Applying Labov's (1994) principles of predictable vowel shift chains, we identify the following systematic pattern (see Figure 2)**.**

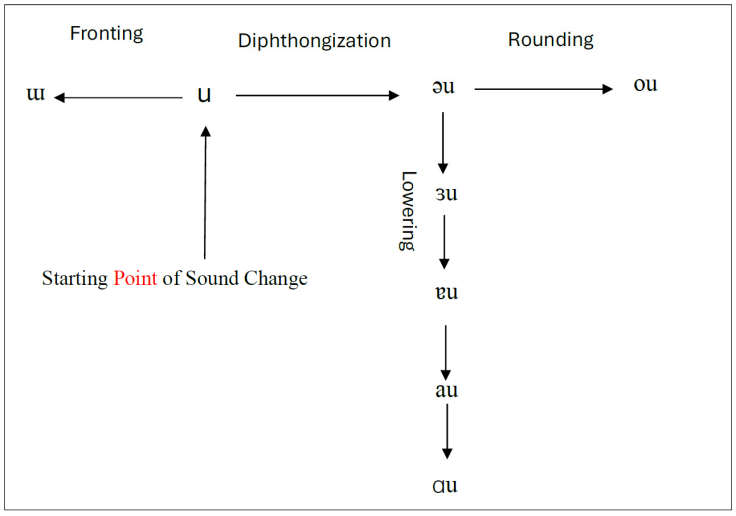


Fig. 2: Vowel Shift Chain for Rice (*glu̱ʔ): Systematic Sound Changes in Kam-Tai

The vowel shift chain begins with the back, high, rounded vowel /u/ as the starting point. It then proceeds through three major phonetic processes: (a) fronting, whereby /u/ shifts to /ɯ/ and then to /ə/; (b) diphthongization, with /əu/ splitting into /ɑu/; and (c) further lowering

and retraction, yielding /ɐu/ → /ou/ → /ɜu/ → /au/. From this chain, we reconstruct the original consonantal frame as *ɢluʔ for the Kam-Tai word for rice. Remarkably, this reconstructed form matches the Old Chinese reconstruction *glu̲ʔ almost identically. This convergence is unlikely to be coincidental; it points to sustained linguistic continuity across populations.

The historical interpretation is revealing: rice was not a primary staple in early Chinese agriculture. Among traditional Han grains, millet held greater importance; rice only gradually became a staple after the Han dynasty. Moreover, archaeological rice remains from the middle and lower Yangtze predate those from the Yellow River region, the traditional heartland of Chinese civilization. This evidence strongly suggests that the Old Chinese term *glu̲ʔ did not originate within Sino-Tibetan innovation but was borrowed from Kam-Tai speakers, who already possessed sophisticated rice cultivation practices and terminology.

4. Extending the Analysis to Hmong-Mien Languages

The Hmong-Mien language family preserves even richer evidence of rice terminology than Kam-Tai. Multiple distinct roots for rice appear across Hmong-Mien dialects, the most prominent being forms derived from the root *blu. Notably, Kam-Tai languages do not preserve pronunciations matching *blu; instead, they retain forms approximating *glu. Interestingly, Hmong-Mien languages also preserve forms matching *ɡlu alongside the *blu forms. According to established universals of sound change, the consonantal shift from *ɡ to *b reflects an assimilative process, wherein the rounded back vowel /u/ exerts a labializing influence on the preceding velar consonant, moving it from /ɡ/ to /b/. Such assimilation is typologically common; the reverse shift (/b/ ➞ /ɡ/) is far less frequent and requires specific phonological conditions. The asymmetry thus indicates a clear direction: *ɡlu ➞ *blu. The coexistence of both *ɡlu and *blu forms within Hmong-Mien provides direct evidence for this directional shift: the *ɡlu forms represent an earlier borrowing from Kam-Tai, while the *blu forms reflect a subsequent internal innovation in Hmong-Mien under the labializing influence of the following /u/.

Evidence from Min Chinese dialects confirms this pattern, where we find numerous instances of *ɡu shifting to *bu in cognate sets. Such cross-linguistic convergence strengthens our confidence that *ɡlu in Kam-Tai shifted to *blu in Hmong-Mien, pointing

to language contact and borrowing from Kam-Tai into Hmong-Mien.

This directional asymmetry is not an isolated observation but reflects a broader principle in historical linguistics. Applying this logic to the g- ➞ b- shift, the velar stop (g-) is typologically less marked than the labial stop (b-) in this phonological environment, reinforcing our inference that *glu is the earlier form from which *blu derived.

The directionality of this lexical borrowing—from Kam-Tai to Hmong-Mien—finds independent macro-level support from recent phylogeographic studies. Tao et al. (2023) analyzed the largest lexical dataset of 100 Kra-Dai (Kam-Tai) languages and estimated that the initial divergence of Proto-Kra-Dai occurred approximately 4,000 years before present, with the likely dispersal center located in the Guangxi–Guangdong coastal area of southern China. Although their study focuses on the deeper evolutionary history of the Kam-Tai family rather than its contact with Hmong-Mien, their inferred temporal depth and spatial origin are consistent with the historical population distributions assumed in our analysis: the lower Yangtze region, traditionally inhabited by Kam-Tai speakers, is geographically contiguous with the southern dispersal routes identified in their model. This congruence reinforces the plausibility that Kam-Tai speakers possessed established rice cultivation terminology before their southward and westward expansions, and that the subsequent contact-driven spread of the term *glu to neighboring Hmong-Mien populations—as evidenced by the systematic *g ➞ *b shift—occurred along pathways that align with the broader demographic movements inferred by independent phylogenetic evidence.

5. Reconstructing the Broader Geographical Dispersal of Rice Terminology

A broader comparative survey across Asian language families reveals a recurrent pattern in the lexical forms for ‘rice.’ Austroasiatic languages, for example, preserve forms with initial *gu-, often with a prenasalized variant *ŋgu-. These forms bear systematic phonological resemblance to the Kam-Tai proto-form *glu, suggesting either shared retention or early contact.

On the basis of the etymological correspondences and shift chains documented above, we propose the following directional pathway for the spread of rice cultivation: Kam-Tai → Sinitic, Hmong-Mien, Austronesian, Tibeto-Burman, and Tamil.

Geographically, this inferred pathway aligns with independent evidence from

prehistoric archaeology and population genetics concerning migration routes and trade networks in East and Southeast Asia. Moreover, the Kam-Tai languages exhibit the highest concentration of rice-related cognate morphemes among the families surveyed, lending additional support to the hypothesis that the Kam-Tai region—the lower Yangtze and southern coastal area—served as the primary center of early rice cultivation.

6. Methodology for Identifying and Confirming Evolutionary Morphemes

Establishing whether putative cognates genuinely share an evolutionary relationship requires a rigorous methodology that combines two complementary approaches.

First, morphemic identification involves careful examination of the morphological structure of each candidate word within its own language system, determining whether it functions as an atomic unit or decomposes into meaningful parts. This ensures that we are comparing like units across languages.

Second, sound shift chain analysis documents systematic phonological patterns linking related forms across languages. When different words in different languages exhibit the same shift chain (e.g., the consistent *g ➞ b shift observed across multiple word pairs), this parallelism provides strong evidence for common origin rather than chance resemblance.

These two methods are deeply interconnected. Consider the Hmong-Mien evidence in Table 1, which shows the initial consonants of words for 'granary,' 'plow,' 'vegetable,' and 'stone' across nine dialects.

Table 1. The initials across different Hmong-Mien dialects

	Luoxiang	Lanjin	Changping	Dapingjiang	Nangang	Shaping	Daping	Baituo	Jiwei	English gloss
廩	gam	ɠjam	ɣam	lam	jum	—	dzum	vfioŋ	ʐe	'granary'
犁	gai	ɠjai	ɣai	lai	—	zau	—	vu	—	'plow'
菜	gau	ɠjau	ɣau	lai	ju	—	dzu	——	ʐu	'vegetable'
石	gaŋ	ɠjaŋ	ɣaŋ	laŋ	jɔŋ	zo	dzɔŋ	vfiɔŋ	ʐɑŋ	'stone'

When these forms are analyzed computationally, we observe the following consistent chain of initial changes. This parallel pattern of initial consonant shifts can be observed across multiple lexical items in Hmong-Mien, as shown below:

$$g \rightarrow gj \rightarrow ɣ \rightarrow l \rightarrow j \rightarrow z \rightarrow dz \rightarrow v \rightarrow z̩$$

The fact that this identical chain appears across multiple lexemes — ‘granary,’ ‘plow,’ ‘vegetable,’ ‘stone’— provides powerful evidence that these are authentic evolutionary cognates descending from a common ancestor. Individual sound changes may occur sporadically; when the same complex chain recurs across multiple independent word pairs, the case for genuine etymological relationship becomes overwhelming.

Nonetheless, inherent irregularities in phonological systems mean that statistical analysis may occasionally yield false positives. This remains a significant challenge for future research, as we refine computational methods and our criteria for distinguishing genuine from spurious matches.

7. Significance and Future Directions

Understanding civilizational origins demands a comprehensive, integrated approach drawing on three complementary domains: genetic data, linguistic documentation, and archaeological materials. Each has distinct strengths and limitations. Genetics reveals biological relationships and population movements; archaeology provides material culture and absolute dating; linguistics preserves historical information encoded in the structure and relationships of words.

The linguistic approach centers on evolutionary morphemes—words inherited and modified according to predictable principles. The method presented here demonstrates that careful analysis of sound change patterns can not only verify archaeological conclusions but also refine our understanding of historical processes. The case of rice cultivation illustrates how linguistic evidence can contribute an independent perspective on when and where major civilizational developments occurred.

A closely related methodological imperative has been articulated by LaPolla (2021), who argues that historical linguistics, linguistic typology, and language contact studies are inherently intertwined rather than separate subdisciplines. He emphasizes that any serious investigation of language forms must take into account not only the internal structural logic of the language in question, but also the history of speaker migrations and the effects of language (and cultural) contact. The present study exemplifies this integrative approach: our

reconstruction of the rice term *glu? and its subsequent shifts across Kam-Tai, Hmong-Mien, and Chinese cannot be adequately explained by purely internal sound laws alone; it requires reference to the documented population distributions of these groups and the directionality of their cultural interactions. Future research on other culturally significant vocabulary domains would benefit from adopting this same tripartite perspective.

Future research should pursue several directions: (1) expanding comparative analysis to include additional language families across East and Southeast Asia; (2) refining computational methods for identifying sound shift chains while minimizing statistical errors; (3) integrating linguistic evidence more explicitly with genetic and archaeological data to triangulate historical conclusions; and (4) examining other culturally significant vocabulary domains—tools, animals, kinship terms—where similar evolutionary analysis might illuminate early civilizational development. Such multidisciplinary approaches promise to deepen our understanding of how human societies evolved and how knowledge and practices spread across ancient populations and landscapes.

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A Typological Study of Case Alignment in Ditransitive Constructions in Beijing Vernacular

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Abstract: This paper examines ditransitive constructions in Beijing vernacular from the perspective of coding properties, focusing on whether a dative marker exists and its implications for the classification of alignment types. Through an analysis of five major grammatical forms involving *gěi* in the Beijing vernacular Corpus, this study finds that there is no specialized dative marker in Beijing vernacular ditransitive constructions. *gěi* maintains its verbal properties across various syntactic positions and cannot be regarded as a preposition or case marker. Therefore, the alignment type cannot be simply classified. This finding has significant implications for the typological study of Chinese ditransitive constructions.

1. Introduction

In recent years, in-depth cross-linguistic research has revealed that the world's languages can be classified into various alignment types, such as nominative-accusative (Siewierska 1996), ergative-absolutive (Du Bois 1987; LaPolla 1995; Van Valin and LaPolla 1997; Huang Chenglong 2010, 2025), neutral (Van Valin and LaPolla 1997; LaPolla 2006), fluid (LaPolla 1993, 2006; Bickel et al. 2010; Haspelmath 2022), Philippine-type (LaPolla 2006; LaPolla and Poa 2005), and hierarchical alignment (Siewierska 1996). These alignment types can be reflected through the arguments carried by verbs or through morphological marking on verbs. Many scholars investigate alignment types across languages based on the encoding properties of the three semantic-syntactic roles S, A, and P (e.g., Comrie 1978; Dixon 1979). Here, S refers to the sole argument of an intransitive clause, A refers to the agent-like argument of a transitive clause, and P refers to the patient-like argument of a transitive clause. Case marking and agreement are overt encoding features in languages. Case, as a grammatical category, primarily functions to mark the grammatical relationship between

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nouns or pronouns and predicates. Core cases include only nominative/ergative, accusative/absolutive, and dative, which correspond to agent, patient, and recipient, respectively. Oblique cases include instrumental, locative, ablative, allative, comitative, causal, and other peripheral cases (Guo and Shimura 2025). Case is primarily expressed through morphological changes or the addition of markers.

Building on the foundational work, Haspelmath (2005) and Malchukov et al. (2010) have traced the development of typological research on ditransitive constructions from Dryer (1986) onward. These scholars have demonstrated that by systematically comparing the grammatical properties of the three core participants in ditransitive events—the recipient R, the theme T, and the patient P—across both ditransitive and monotransitive structures, it is possible to classify ditransitive constructions into a limited set of alignment types. The two main types of grammatical properties examined are coding properties and behavioral properties.

Coding properties refer to the overt morphosyntactic forms in which arguments are encoded. These include whether arguments carry case markers, whether they are introduced by prepositions or postpositions, how person and number are indexed on verbs, and the relative word order of arguments in the clause. For example, in a language with case marking, we might observe that the recipient receives a special dative case suffix while the theme appears in the same accusative case as the patient of a monotransitive clause. This would constitute a particular pattern of coding properties. Behavioral properties refer to how arguments behave in various syntactic processes, such as passivization, relativization, reflexivization, and control constructions.

Based on systematic comparison of these properties across languages, typologists have identified five major alignment types for ditransitive constructions. The indirect object type is characterized by the recipient being marked differently from the patient, while the theme is coded like the patient. The double object type shows both recipient and theme coded like the patient. The secondary object type has the theme coded differently from the patient, while the recipient is coded like the patient. The triple-neutral type shows all three arguments—recipient, theme, and patient—coded in the same way with no special marking for any of them. Finally, the mixed type exhibits properties of more than one alignment type, either across different constructions within the language or across different contexts of use.

Previous research on Chinese ditransitive constructions has predominantly focused on coding properties rather than behavioral properties. This focus is understandable given the relative lack of overt morphological marking in Chinese, which makes coding properties particularly salient for typological comparison. Shi (2007: 30) offers a significant observation, noting that "in modern Chinese and its dialects, ditransitive structures generally exhibit a continuum with the direct-indirect object type and the primary-secondary object type as its

two poles." This characterization captures the considerable variation found across Chinese dialects and situates Chinese within a broader typological landscape.

Zhang (2011: 183-185) provides a more focused analysis of ditransitive structures specifically in Beijing Mandarin. Zhang argues that Beijing Mandarin has only one type of double object construction, exemplified by sentences like *gěi tā yī běn shū* 'give him a book'. In this construction, the theme *yī běn shū* 'a book' and the recipient *tā* 'him' are encoded in exactly the same way as the patient in monotransitive clauses. Crucially, Zhang emphasizes that both arguments appear "without any special form (such as a preposition) to introduce or mark them." On the basis of this observation, Zhang classifies Beijing Mandarin as belonging to the triple-neutral type, where recipient, theme, and patient all receive identical coding.

Haspelmath (2013), working within the same typological framework but drawing on a broader range of Mandarin data, arrives at a different classification. He argues that Mandarin exhibits both the triple-neutral type, illustrated by sentences like *wǒ sòng tā yī běn shū* 'I give him a book', and the indirect object type, illustrated by sentences like *wǒ sòng yī běn shū gěi tā* 'I give a book to him'. In the indirect object type, the recipient *tā* 'him' is introduced by what Haspelmath analyzes as the dative preposition *gěi*, while the theme *yī běn shū* 'a book' is encoded in the same unmarked way as the patient in monotransitive clauses. Since Mandarin putatively has two different construction types coexisting in the language, Haspelmath classifies it as a mixed type.

This classification by Haspelmath aligns well with the international typological framework and has the advantage of capturing the apparent alternation between the two construction types that many speakers of Mandarin recognize. However, it rests on a crucial assumption that deserves careful scrutiny: the assumption that *gěi* in the so-called indirect object construction has truly grammaticalized into a preposition functioning as a dative marker. Is this assumption valid for Mandarin generally, and more specifically for Beijing vernacular? The question is not merely terminological but has substantive implications for how we understand the grammatical structure of Chinese and its place in the typology of ditransitive constructions.

This paper undertakes to examine this question systematically by investigating whether the recipient in Beijing vernacular carries a prepositional marker, drawing on corpus data. Unlike previous studies that have often relied on elicited data or intuitions about idealized varieties, this research is based on large-scale natural oral corpus data from the Beijing vernacular Corpus. This empirical foundation allows for a comprehensive investigation of the syntactic properties and functions of *gěi* across a range of construction types and usage contexts. The goal is to arrive at a more empirically grounded judgment about the typological classification of ditransitive structures in Beijing vernacular, and by extension, to contribute to our understanding of Chinese grammar and its place in linguistic typology.

2. Research Questions and Methodology

The point of departure for this investigation is the claim by scholars such as Haspelmath (2005), Heine and König (2010), and others that Mandarin possesses an "indirect object construction" in which the recipient is specially marked by the preposition *gěi*. The canonical example of this construction is given in (1):

(1)	Wǒ	sòng	guo	yī	běn	shū	gěi	tā. (Haspelmath 2005)
	I	send	ASP	one	CL	book	to	him
	'I sent a book to him.'							

In this example, the recipient *tā* 'him' is introduced by *gěi*, appearing after the theme *yī běn shū* 'a book' and the verb *sòng* 'send'. The theme itself appears without any special marking, in the same unmarked form that the patient would take in a monotransitive clause such as *wǒ sòng* guo *yī běn shū* 'I sent a book'. The implicit premise underlying the analysis of this construction as an indirect object type is that *gěi* in this position has grammaticalized from its original verbal meaning 'give' into a preposition whose primary function is to mark the recipient argument. This grammaticalization path — from a verb meaning 'give' to a dative or benefactive preposition — is well attested cross-linguistically and would be entirely plausible if the facts support it.

However, the picture becomes more complicated when we consider the full range of grammatical forms involving *gěi* in Chinese. In addition to its appearance in the postverbal position illustrated in (1), *gěi* can appear in several other distinct construction types. Her (2006: 1275) provides a useful systematization, summarizing the grammatical forms involving *gěi* in Mandarin into five major types, which are presented in (2):

(2) a. verbal: *gěi* NP2 NP1

Lǐsì	gěi	le	tā	yī	fēng	xìn.
Lisi	give	ASP	him	one	CL	letter
'Lisi gave him a letter.'						

b. postobject: V NP1 *gěi* NP2

Lǐsì	xiě	le	yī	fēng	xìn	gěi	tā.
Lisi	write	ASP	one	CL	letter	to	him
'Lisi wrote a letter to him.'							

c. postverbal: V-*gěi* NP2 NP1

Lǐsì	xiě-gěi	le	tā	yī	fēng	xìn.
Lisi	write-to	ASP	him	one	CL	letter

'Lisi wrote him a letter.'

d. preverbal: *gěi* NP2 V NP1

Lǐsì	gěi	tā	xiě	le	yī	fēng	xìn.
Lisi	to	him	write	ASP	one	CL	letter

'Lisi wrote a letter to him/for him.'

e. purposive: V NP1 *gěi* NP2 VP

Lǐsì	ná-chū	le	yī	fēng	xìn	gěi	tā
Lisi	take-out	ASP	one	CL	letter	to	him
kàn.							
read							

'Lisi took out a letter for him to read.'

Each of these five grammatical forms is attested in the Beijing vernacular Corpus, and each presents a different structural configuration of *gěi* in relation to the verb and its nominal arguments. In the verbal type (2a), *gěi* itself functions as the main verb of the clause, taking both a recipient and a theme as its arguments. This is the original verbal use from which all other uses are historically derived. In the postobject type (2b), *gěi* appears after the verb and its theme object, introducing the recipient. This is the construction exemplified in (1) and the one most relevant to the claim about an indirect object type. In the postverbal type (2c), *gěi* is attached directly to the verb as a suffix or compound element, with the recipient and theme following the complex V-*gěi* form. In the preverbal type (2d), *gěi* appears before the verb, introducing an NP that can have various interpretations including benefactive, malefactive, or recipient. In the purposive type (2e), *gěi* appears between two verbs, introducing a participant that is the beneficiary or goal of the second verb's action.

All of these grammatical forms are represented in the Beijing vernacular Corpus, which serves as the primary data source for this study. In analyzing these forms, this paper adopts the labeling convention used by Her (2006), referring to the two noun phrases that typically appear in these constructions as NP1 and NP2. Generally, NP1 refers to inanimate entities (typically the theme or transferred object), while NP2 refers to animate entities (typically the recipient, benefactive, or other human participant). This labeling convention is intentionally theory-neutral at the initial stage of analysis, avoiding premature assignment of specific semantic roles and allowing the data to reveal the range of interpretations possible for each

construction type.

In addition to the five construction types identified by Her, Beijing vernacular also exhibits a large number of clauses where *gěi* appears directly before a verb with no intervening noun phrase, as illustrated in (3):

(3) a. ..méiyǒu gěi zhǎng gōngzī...
No give raise salary
'...didn't give raises...'

b. ..shíbā cùn cǎidiàn gěi diū le.
eighteen CL color-TV PASS lose ASP
'...an eighteen-inch color TV was lost.'

In these examples, *gěi* is not followed by any noun phrase and cannot be analyzed as introducing a nominal argument. Instead, it seems to function more like an adverb or auxiliary particle, contributing aspectual or passive-like meaning to the clause. These uses of *gěi*, while interesting in their own right, are not directly relevant to the question of whether *gěi* serves as a dative marker introducing recipient arguments. They are therefore set aside in this paper, though they certainly merit further investigation in future research.

A more comprehensive examination of the Beijing vernacular Corpus reveals that the grammatical possibilities for *gěi* are even more varied than the five-way classification in (2) might suggest. When we focus specifically on *gěi* in its original verbal function, we find that it appears in no fewer than nine distinct grammatical forms, depending on how its arguments are arranged in the clause. Table 1 presents a systematic tabulation of these nine forms, based on a sample of 422 examples from the corpus where *gěi* functions as a three-participant verb.

Table 1: Grammatical forms of ditransitive constructions formed by the verb *gěi* in Beijing vernacular (R = recipient, T = theme.)

RT Distribution	Specific Syntactic Form	Count（%）
RT appears on both sides of the verb	R+V+T	143 （33.9%）
	T+V+R	58 （13.7%）
Subtotal	2	201 （47.6%）
RT appears on one side of the verb	R+T+V	8 （1.9%）
	T+R+V	2 （0.5%）
	V+R+T	202 （47.9%）
	V+T+R	2 （0.5%）
Subtotal	4	214 （50.8%）

R or T appears on both sides of the verb simultaneously	R+T+V+T	1	(0.2%)
	T+V+R+T	2	(0.5%)
	R+V+R+T	4	(0.9%)
Subtotal	3	7	(1.6%)
Total	9	422	(100%)

The data in Table 1 reveal several important facts about the verb *gěi* in Beijing vernacular. First and the most strikingly, the argument configuration of *gěi* is extraordinarily flexible. The recipient and theme can appear on both sides of the verb, on one side of the verb, and even in complex arrangements with multiple occurrences of arguments. This flexibility is characteristic of a lexical verb with robust argument structure properties, not of a grammaticalized function word that has lost its verbal status.

Second, the most frequent configurations are R+V+T (33.9%) and V+R+T (47.9%), together accounting for over 80% of all examples. In R+V+T, the recipient appears before the verb and the theme after, while in V+R+T, the verb is followed first by the recipient and then by the theme. The latter configuration is particularly significant because it shows that when *gěi* is the main verb, it canonically appears with both arguments following it, exactly the pattern we would expect for a verb.

Third, the wide range of possible configurations, including relatively rare patterns like R+T+V (1.9%) and V+T+R (0.5%), demonstrates that *gěi* as a verb participates in the same kind of argument flexibility that characterizes many Chinese verbs. This flexibility is possible precisely because *gěi* retains its verbal status and can therefore appear in various positions depending on discourse factors such as topicalization and information structure.

This detailed picture of *gěi* as a verb provides an essential baseline for evaluating claims about *gěi* in other positions. If *gěi* in postverbal, preverbal, or compound positions shows the same kind of argument structure flexibility and the same range of configurational possibilities as the verbal *gěi*, that would be strong evidence that it retains its verbal nature even in those positions. Conversely, if it shows the kind of fixed, grammaticalized behavior characteristic of prepositions or case markers, that will support the analysis of *gěi* as a dative marker.

To facilitate systematic comparison with previous research, this paper focuses its investigation on the five construction types identified by Her (2006) and presented in (2). For each construction type, we examine a substantial sample of examples from the Beijing vernacular Corpus, analyzing the syntactic behavior and semantic range of *gěi* in that position. The corpus, sourced from the Beijing vernacular Query System, provides over 400 relevant examples spanning all five construction types and covering a wide range of speakers, contexts, and usage types. This empirical foundation allows us to move beyond intuition-based

claims and arrive at conclusions grounded in actual language use.

3. Analysis and Discussion

3.1 *gěi* + NP2 + NP1

The first construction type to consider is one that might initially seem most likely to contain a grammaticalized *gěi*: the V-*gěi* compound followed by two NPs. However, Table 1 already provides crucial evidence bearing on this construction. In the table, we see numerous examples where *gěi* serves as the main verb of a clause and is followed by both recipient and theme arguments. In these cases, there is no possibility of analyzing *gěi* as a marker introducing only the recipient, since it clearly functions as the verbal head of the clause, assigning roles to both following arguments. The prevalence of such examples—the V+R+T pattern alone accounts for 202 examples, or 47.9% of all verbal *gěi* examples—demonstrates that *gěi* in postverbal position with two following NPs can simply be the main verb. This means that when we encounter a V-*gěi* sequence followed by two NPs, we cannot automatically assume that *gěi* is a marker; it may simply be part of a compound verb with *gěi* as its second element.

3.2 *gěi* + NP2 + V + (NP1)

The preverbal construction with *gěi* followed by NP2 and then a verb is perhaps the most extensively discussed in the literature. Scholars have focused particularly on the interpretation of " *gěi* + NP" appearing before the verb as indicating benefactive or malefactive meanings (Li and Thompson 1981; Her 1999, 2006). Xu (1994) broadens the discussion by examining *gěi* as a marker that can introduce either patient or agent arguments. Lin and Huang (2015: 1311) provide an even more comprehensive catalog, listing eight distinct functions of *gěi*, including introducing affected theme, goal, source, benefactive, and patient arguments, as well as serving as a permissive marker, causative marker, and passive marker. This remarkable multifunctionality has made *gěi* one of the most studied and debated elements in Chinese syntax, and also one of the most controversial.

To bring empirical evidence to bear on these questions, we randomly extracted 500 examples of the " *gěi* + NP2 + V + NP1" format from the Beijing vernacular Corpus and classified them according to the semantic role of the NP introduced by *gěi*. The results show a clear predominance of one role, but also reveal a range of other possibilities.

Examples where *gěi* introduces a benefactive are by far the most numerous, with 402 examples accounting for 80.2% of the sample. Two representative examples are given in (4):

(4) a. gěi rénjia dāng bǎomǔ...
for others serve nanny
'...worked as a nanny for others...'

b. gěi wǒ sòng le lǎo wōguā... yě gěi wǒ
to me send ASP old pumpkin also to me
mǎi le báimǐ...
buy ASP white-rice
'...sent me an old pumpkin... also bought me white rice...'

In (4a), the verb *dāng* 'work as' is a monotransitive verb taking *bǎomǔ* 'nanny' as its object. The NP introduced by *gěi*, *rénjia* 'others', is not a participant in the working event itself but rather the person who benefits from that event—the employer for whom the nanny works. Similarly in (4b), the verbs include both the monotransitive *mǎi* 'buy' and the ditransitive *sòng* 'send', and the NPs introduced by *gěi* (*wǒ* 'me' in both cases) are the beneficiaries of the sending and buying actions. In these benefactive uses, *gěi* clearly adds a participant to the event who is not part of the verb's inherent argument structure.

Examples where *gěi* introduces a malefactive are much less common, with only 16 examples (3.2%) in the sample. Two examples appear in (5):

(5) a. ...gěi guójiā zàochéng le bùshǎo kuīsǔn...
to country cause ASP not-few losses
'...caused the country quite a lot of losses...'

b. ...gěi wǒ nòng huài...
for me make break
'...if they break them for me...'

In (5a), the verb *zàochéng* 'cause' is monotransitive, and the NP introduced by *gěi*, *guójiā* 'country', is the entity that suffers the losses—the malefactive of the causing event. In (5b), the verb *nòng huài* 'break' is a resultative verb compound, and the NP introduced by *gěi*, *wǒ* 'me', is the person who would be adversely affected by the breaking. The syntactic form of malefactive constructions is identical to that of benefactive constructions; the only difference lies in the semantic interpretation, which depends on the lexical semantics of the verb and the pragmatic context.

Examples where *gěi* introduces a goal are even rarer, with only 6 examples (1.2%) in the sample. Two examples are given in (6):

(6) a. ...zài gěi nǐ lái fēng pīpíng xìn.
then to you come CL criticize letter
'...then send you a critical letter.'
b. ...gěi wǒmen qù xìn...
to us go letter
'...send us a letter...'

In these examples, the verbs *lái* 'come' and *qù* 'go' are used in extended senses involving communication (literally 'come a letter' and 'go a letter'), and the NPs introduced by *gěi* represent the goals or recipients of these communicative acts.

Examples where *gěi* introduces a disposal object—that is, the entity that is directly affected or manipulated by the action—are considerably more numerous, with 60 examples (12%) in the sample. Several illustrative examples appear in (7):

(7) a. ...gěi zhè chē fènr jiāo le.
for this cab rent pay ASP
'...pay the car rental fee.'
b. ...gěi tā jiē zán jiā...
for him pick our home
'...pick him up and bring him to our place...'
c. ...gěi tā zuò le shǒushù...
for him do ASP surgery
'...had surgery done for him...'
d. ...gěi tā bǔ shàng.
for him make-up up
'...compensate him.'

e. .. dōu gěi tā huā le.
all on him spend ASP
'...it's all spent on him.'

In (7a), the NP introduced by *gěi, zhè chē fènr* 'the car rental fee', is inanimate and represents the entity that is directly paid—the disposal object of the paying event. In (7b), *tā* 'him' is animate and represents the person who is picked up and brought—the disposal object of the picking up event. In (7c), *tā* 'him' is again animate, but here represents the recipient of the surgery—a more complex semantic role that combines elements of benefactive and patient. In (7d), *tā* 'him' is the recipient of compensation, and in (7e), *tā* 'him' is the

beneficiary of spending. These examples show that when *gěi* introduces a disposal object, there is no strict restriction on the animacy of the NP or on the transitivity of the verb it combines with. The interpretation depends on the specific verb and the nature of the event.

Examples where *gěi* introduces an agent are extremely rare in the corpus. We found only one such example, given in (8):

(8)... gěi zhèngfǔ jiēguǎn yǐhòu...
by government take-over after
'...after being taken over by the government...'

In this example, the NP introduced by *gěi*, *zhèngfǔ* 'government', is the agent of the verb phrase *jiēguǎn* 'take over'. This usage appears to be related to the passive function of *gěi*, where it introduces the agent of a passive-like construction. The extreme rarity of this usage in the corpus (only one example out of 500) suggests that it is marginal in Beijing vernacular, at least in the preverbal construction under examination.

Xu (1994) conducted a cross-dialectal study of 23 Chinese dialects and found that in most dialects, giving verbs and agent markers are homophonous, while giving verbs and patient markers being homophonous is much less common typologically. Xu argues that the marker *gěi* originates historically from the verb *gěi* 'give', and that the recipient of the verb *gěi* is typically animate, while the preposition *bǎ* (which marks disposal objects) originates from a verb meaning 'take' whose patient is typically inanimate. On this basis, Xu suggests that semantic factors explain why patient-marking *gěi* is relatively rare and seldom interchangeable with *bǎ*.

However, the Beijing vernacular data present a somewhat different picture. Compared to agent-introducing uses (which are vanishingly rare), *gěi* is much more commonly used to introduce what we might broadly call "disposed objects"—entities that are directly affected by the action. Moreover, the referents of these disposed-object NPs show no special restriction on animacy; they can be either animate or inanimate depending on the context. This divergence from Xu's findings may reflect dialect differences (Beijing vernacular versus other varieties) or may indicate that the situation is more complex than previously recognized. The reasons for this pattern deserve further investigation; one possibility is that the dominance of the *bǎ* construction in Beijing Mandarin somehow licenses or interacts with the use of *gěi* in these contexts.

Examples where *gěi* introduces a comitative object — that is, an accompaniment relation — are also extremely rare. We found only one such example, given in (9):

(9)...zài nàr gěi tāmen, yě dāi guo.
at there with them also stay EXP
'...there with them, also stayed.'

In this example, *gěi* appears to be functioning similarly to the comitative preposition *gēn* 'with', introducing the person in whose company the staying event occurred. This usage is marginal and may represent a context-specific extension of *gěi* 's functions.

The diversity of semantic roles that *gěi* can introduce in this preverbal position raises important questions about its grammatical status. Some scholars have taken the position that *gěi* in the " gěi + NP2 + V + NP1" format cannot introduce a recipient (the argument that would be marked by a dative). Zhu (1979), in a classic study, argues that when " gěi + NP2" appears before the main verb, *gěi* introduces a benefactive argument rather than a recipient argument. He notes that acquisition verbs (like *mǎi* 'buy') and creation verbs (like *zuò* 'make') can readily enter this structure, but giving verbs (like *sòng* 'give') cannot, or at least cannot with a recipient interpretation. For example, in a sentence like *gěi tā huán le yī běn shū* ‘return a book to him’ with the giving verb *huán* 'return' as the main verb, Zhu argues that *tā* 'him' cannot be understood as the recipient of the returned book but only as a benefactive ('return a book for him' rather than 'return a book to him'). Shen (1999) expresses a similar view, suggesting that the overall meaning of the construction is "performing an action towards a beneficiary goal," with no specification about whether the participant involved is the endpoint of a transfer.

However, our corpus data reveal examples that challenge this strict separation. Consider the examples in (10):

(10) a. …děi gěi chēzhǔr jiāo duōshǎo qián...
have-to to car-owner pay how-much money
'...have to pay the owner a certain amount of money...'

b. ...wǒ gěi tā jiāo de zhīshi yuè duō...
I to him teach NOM knowledge the-more more
'...the more knowledge I teach him...'

c. ... gěi jiā jì qián...
to home remit money
'...send money home...'

d. ...gěi wǒ dì le gè huàr...
to me pass ASP CL message
'...sent me a message...'

In (10a), *chē zhǔr* 'car owner' is naturally interpreted as the recipient of the money being paid; the payment event transfers money from the payer to the owner, and the owner is the endpoint of that transfer. In (10b), *tā* 'him' is the recipient of the knowledge being taught; teaching transfers knowledge from teacher to student, and the student is the endpoint. In (10c), *jiā* 'home' is the recipient of the money being sent; the sending event transfers money from the sender to the home. In (10d), *wǒ* 'me' is the recipient of the message being delivered. In all these examples, the NP introduced by *gěi* is most naturally understood as a recipient — the endpoint of a transfer — rather than a mere benefactive. This shows that the preverbal position is not categorically restricted to benefactives; recipients can and do appear there in natural Beijing vernacular.

Conversely, we also find examples where benefactives appear in positions that some scholars have claimed are reserved for recipients. Consider the examples in (11):

(11) a. .. jǐ gè lǎoshī yìwù bǔkè gěi wǒmen...
several CL teacher free tutor for us
'...several teachers tutored us for free...'

b. ...gěi tā chū zhǔyì...
for him give idea
'...give him advice...'

c. ...gěi tāmen bāngmáng.
for them help
'...help them.'

In (11a), the verb *bǔkè* 'tutor' is not a transfer verb, and *kè* 'lesson' is not a transferable object in the usual sense. Yet "*gěi* + NP" appears after the verb, and the NP *wǒmen* 'us' is most naturally interpreted as the benefactive of the tutoring event—the ones who benefit from the free tutoring. In (11b) and (11c), the verb phrases *chū zhǔyì* 'give advice' and *bāng máng* 'help' are also non-transfer events, and the NPs introduced by *gěi* (*tā* 'him' and *tāmen* 'them') are benefactives. These examples show that benefactives can appear both before and after the verb, with no strict positional restriction.

This distributional evidence bears directly on claims made by Zhang (2011). Zhang argues that when a recipient argument moves from a postverbal to a preverbal position, its semantic role is necessarily reinterpreted as something compatible with the preverbal position—most commonly as a benefactive or as indicating direction. Since receiving inherently implies benefiting (or possibly suffering), the distinction between recipient and benefactive can be subtle, and Zhang suggests that the two positions provide unique interpretations: recipients are restricted to postverbal position, benefactives to preverbal position.

The data in (10) and (11) challenge this proposed division. (10) shows recipients appearing preverbally, and (11) shows benefactives appearing postverbally. This suggests that in Beijing vernacular, the interpretation of the NP introduced by *gěi* depends primarily on the lexical semantics of the verb and the pragmatic context, rather than on a rigid mapping between syntactic position and semantic role.

Her (2006) offers a more nuanced analysis, focusing on the types of verbs that can appear in the "*gěi* + NP2 + V + NP1" format with NP2 understood as a recipient. He proposes a correlation: verbs that can enter the double object construction (V + NP2 + NP1) cannot appear in this preverbal-*gěi* format with a recipient interpretation. If such verbs do appear, NP2 can only be understood as a benefactive. Conversely, verbs that allow NP2 to be understood as a recipient in the preverbal-*gěi* format are precisely those that cannot enter the double object construction. This is illustrated in the contrast between (12) and (13):

(12) a. Zhāngsān gěi Lǐsì jiè le yī bǎi kuài.
Zhangsan to Lisi borrow ASP one hundred yuan
'Zhangsan borrowed one hundred yuan for Lisi.'
b. Zhāngsān jiè le Lǐsì yī bǎi kuài.
Zhangsan borrow ASP Lisi one hundred yuan
'Zhangsan borrowed one hundred yuan from Lisi.'

(13) a. Lǐsì gěi lǎoshī jì le yī fèn wénjiàn.
Lisi to teacher send ASP one CL document
'Lisi sent a document to the teacher.'
b. Lǐsì jì le lǎoshī yī fèn wénjiàn.
Lisi send ASP teacher one CL document
Intended: 'Lisi sent the teacher a document.'

In Her's analysis, (12a) shows *gěi* introducing NP2 (*Lǐsì*) that can only be understood as benefactive, because the verb *jiè* 'borrow/lend' can appear in the double object construction (12b) where it has a different interpretation ('borrow from'). In (13a), by contrast, *gěi* introduces NP2 (*lǎoshī* 'teacher') that can be understood as recipient, because the verb *jì* 'send' cannot appear in the double object construction (13b is ungrammatical).

Our Beijing vernacular data, however, present counterexamples to this proposed generalization. Consider the verb *jiāo* 'pay', which appears in (10a) and also in (14):

(14) ...yī yué déi jiāo tā shíjǐ kuài qián.
one month have-to pay him over-ten yuan money
'...you have to pay him over ten yuan a month.'

In (10a), *jiāo* appears in the preverbal-*gěi* format with NP2 (*chē zhǔr* 'car owner') interpreted as recipient. In (14), the same verb jiāo appears in the double object construction, with the recipient *tā* 'him' as the first object and the theme *shíjǐ kuài qián* 'over ten yuan' as the second. This shows that *jiāo* can both enter the double object construction and allow NP2 to be understood as a recipient in the preverbal-*gěi* format, directly contradicting Her's predicted correlation.

Further examples in (15) reinforce the point that interpretation depends on verb semantics and context:

(15) a. ...gěi rénjia kān zìxíngchē...
for people watch bicycle
'...watch bicycles for people...'
b. ...gěi zhígōng móu fúlì...
for employees seek benefits
'...seeking benefits for employees...'
c. ... gěi tāmen dài kè...
for them teach class
'...taught classes for them...'

In (15a), the activity *kān zìxíngchē* 'watch bicycles' is not a transfer event, but *rénjia* 'others' can be understood as the recipients of the service—the ones for whom the bicycle-watching is done. In (15b), the beneficiary of *móu fúlì* 'seek benefits' is clearly *zhígōng* 'employees'. In (15c), the beneficiary of *dài kè* 'teach classes' is *tāmen* 'them'. These examples further demonstrate that the interpretation of NP2 in this construction is not fixed by the construction itself but emerges from the interaction of verbal semantics, constructional meaning, and pragmatic context.

Following LaPolla (1990: 140), we suggest that the function of *gěi* in this position is not to mark a specific grammatical relation like dative, but rather to clarify the semantic relationship between participants or to introduce an additional argument into the clause. This is particularly clear in examples like (16):

(16) a. ...gěi guìshàng hái děi zuòhuó.
for shop still have-to do-work
'...still have to do work for the shop.'

b. ...tā gěi tāmen xuéxiào fǎnzhèng gǎo de bùcuò.
he for their school anyway do COMP not-bad
'...he did quite well for his school.'

c. ...tāmen gěi lǎobǎixìng kàn bìng.
they for common-people see illness
'...they treat common people.'

In these examples, "*gěi* + NP" appears before adverbial elements like *hái děi* 'still have to' (16a) and *fǎnzhèng* 'anyway' (16b), and before a pause in the sentence (16c). This positional freedom suggests that *gěi* is introducing arguments (*guì shàng* 'shop', *tāmen xuéxiào* 'their school', *lǎobǎixìng* 'common people') that are not part of the verb's core argument structure but are added to the clause through the mediating function of *gěi*. This is precisely the kind of behavior we would expect from a verb with argument-introducing capabilities, not from a grammaticalized preposition.

On the basis of this evidence, we conclude that *gěi* in the preverbal position cannot be regarded as a dative marker. Instead, it functions as a verbal element that can introduce additional participants into the clause and clarify their semantic relationships to the main verb.

3.3 V-*gěi* + NP2 + NP1

The construction where *gěi* is attached directly to a preceding verb, forming a V-*gěi* compound that is then followed by two noun phrases, has been analyzed in various ways by different scholars. Chao (1968), Li (1990), Her (1999, 2006), Huang and Ahrens (1999), Liu (2001), and Liu (2006) all treat V-*gěi* as a compound verb. The primary evidence for this analysis is syntactic: the aspect marker le cannot be inserted between V and *gěi*, but must appear after the entire V-*gěi* complex (Her 2006: 1282). This is exactly the behavior we would expect if V and *gěi* form a single morphological unit rather than two independent words.

However, the status of *gěi* within this compound is a matter of debate. Huang (1993) and Huang and Ahrens (1999) argue that *gěi* is a suffix that adds a goal (i.e., recipient) semantic role to the verb's argument structure. On this view, *gěi* is a derivational morpheme that changes the verb's valence, allowing it to take an additional argument. Her (1999, 2006), by contrast, argues that the syntactic behavior of V-*gěi* compounds is like that of *gěi* itself, not like that of the preceding V. He suggests that *gěi* is actually the head of the compound, with the preceding verb serving as a modifier. This is a more radical claim, implying that V-

gěi compounds are essentially *gěi* verbs with an incorporated modifier.

Our examination of Beijing vernacular data leads us to a different conclusion: *gěi* in V-*gěi* compounds retains its verbal nature and cannot be regarded as either a suffix or a dative marker. Two lines of evidence support this conclusion.

First, the presence or absence of *gěi* in these compounds systematically affects the interpretation of transfer direction for certain bidirectional verbs. The verb *zū* 'rent' is a classic example of a bidirectional verb (Tang 1979; Shi 2004; Zhang 2005; Li 2006; He 2009). Depending on context, *zū* can mean either 'rent from' (with the theme moving from recipient to agent) or 'rent to' (with the theme moving from agent to recipient). In the Beijing vernacular Corpus, when the meaning is 'rent from' (theme from recipient to agent), *gěi* does not appear after *zū*, as shown in (17). When the meaning is 'rent to' (theme from agent to recipient), *gěi* must appear after *zū*, as shown in (18):

(17) a. ...zū le nóngmín yī jiān fáng.
rent ASP farmer one CL room
'...rented a room from a farmer.'

b. ...zū le rénjia yī jiān fáng.
rent ASP them one CL room
'...rented a room from them.'

c. ...zū le jiēfang yī gè péngzi.
rent ASP neighbor one CL shed
'...rented a shed from a neighbor.'

(18) a. ...dōu zū gěi lǎo jiēfang...
all rent to old neighbor
'...all rented to old neighbors...'

b. ...zū gěi biérén...
rent to others
'...rented to others...'

c. ...zū gěi yī duì niánqīng fūfù...
rent to one CL young couple
'...rented to a young couple...'

This contrast is striking and systematic. The presence of *gěi* after *zū* is not optional but obligatory for the 'rent to' meaning. This is precisely what Chao (1968: 318) observed decades ago when he noted that "whether to add *gěi* affects the direction of the action." If *gěi* in these compounds were merely a grammaticalized suffix or a dative marker, it would be odd

for it to have such a direct and systematic effect on the core lexical meaning of the verb. Instead, this behavior is exactly what we would expect if *gěi* retains its verbal semantics of transfer, contributing its own meaning of 'give' or 'transfer to' to the compound.

Second, and perhaps even more tellingly, V-*gěi* compounds show exactly the same argument omission patterns as the verb *gěi* itself. Just as the verb *gěi* can appear with various combinations of its arguments overtly expressed or omitted, V-*gěi* compounds show the same flexibility.

Consider first the verb gěi alone. It can be followed directly by a theme, without an overt recipient, as in (19):

(19) a. ...zhège shǎoshù mínzú shì gěi diǎnr yóu...
this minority nationality is give some oil
'...this ethnic minority is given some oil...'
b. ...gěi jiālǐ tóu...
give family head
'...give (money) to the family...'

In (19a), the recipient (*shǎoshù mínzú* 'ethnic minority') appears before the verb, and only the theme appears after. In (19b), the recipient is implicit in context, and only the theme appears after *gěi*. This shows that the verb *gěi* can omit its recipient argument when it is recoverable from context.

V-*gěi* compounds display precisely the same range of possibilities. They can appear with both recipient and theme overtly expressed after the compound, as in (20):

(20) a. ...fēn gěi wǒmen jǐ gè rén yīdiǎnr qián.
distribute to we several CL person some money
'...distributed some money to us few.'
b. ...jiāo gěi wǒ jiějie...
hand to I elder-sister
'...handed over to my sister...'
c. ...sòng gěi tā xiōngdi...
send/give to he brother
'...gave to his brother...'
d. ...jiāo gěi běnrén...
hand to person-oneself
'...hand to the person...'

In these examples, V-*gěi* is followed first by the recipient NP and then by the theme NP, the same order we see with the verb *gěi* in its V+R+T configuration.

V- *gěi* compounds can also appear with only the theme expressed after the compound, as in (21):

(21) a. ...guójiā nián nián bō gěi fáng.
state year year allocate give housing
'...the state allocates housing every year.'

b. ...lǐngdǎo jiāo gěi shénme...
leader hand give what
'...whatever the leader assigns...'

c. ...guójiā měi nián dōu bō gěi liángshi.
state every year all allocate give grain
'...the state allocated grain every year.'

In these examples, the recipients (*wǒ àirén tāmen dānwèi* 'my spouse's unit', *wǒ* 'me', and the people of the place) are not expressed after the compound but are understood from context or have been mentioned previously in the discourse.

V-*gěi* compounds can even appear with no overt arguments at all, as in (22) and (23):

(22) a. ...yǒu lǎoshī ne, jiāo gěi.
exist teacher PRT teach give
'...there's a teacher, teaching.'

b. ...tā dōu chuán gěi le, chuán gěi tā érzi le.
he already pass give ASP pass give his son ASP
'...he passed it on, passed it on to his son.'

(23) a. ...jiāodài gěi de jiù gàn...
assign give REL then do
'...whatever was assigned, we did...'

b. ...gāi fēn gěi de jiù fēn gěi...
should distribute give REL then distribute give
'...those that should be distributed should be distributed...'

In (22a), the compound *jiāo gěi* 'teach' appears alone, with both recipient and theme implicit in the context. In (22b), *chuán gěi* le 'passed on' appears first without arguments, then again with the recipient expressed. In (23), *jiāodài gěi* 'assign to' and *fēn gěi* 'distribute

to' appear in relative clause-like structures with no overt arguments, their arguments being understood generically.

This complete parallelism between the argument structure behavior of the verb *gěi* and that of V-*gěi* compounds provides powerful evidence that *gěi* in these compounds retains its verbal nature. If *gěi* had grammaticalized into a suffix or a dative marker, we would expect it to lose the ability to participate in such flexible argument omission patterns. Instead, V-*gěi* compounds behave exactly like verbs — specifically, like the verb *gěi* itself — in allowing their arguments to be expressed or omitted based on discourse factors.

For these two reasons — the role of *gěi* in determining transfer direction and the parallelism in argument omission patterns — we conclude that *gěi* in V-*gěi* + NP2 + NP1 constructions is still a verb, not a dative marker.

3.4 V + NP1 + *gěi* + NP2

The construction where *gěi* appears after a verb and its theme object, introducing the recipient, is the one most directly relevant to claims about an indirect object type in Mandarin. This is the construction exemplified in (1) and the one that Haspelmath (2013) and others analyze as containing a dative preposition *gěi*.

The analysis of *gěi* in this position has been highly controversial. On one side, Chao (1968), Huang and Ahrens (1999), and Lin and Huang (2015) argue that *gěi* here is a verb, and that the whole construction is a type of serial verb construction. Shen (1999: 99) also supports this view, suggesting that *gěi* in this position independently expresses the process of "arrival" of the theme to the recipient. On the other side, a substantial group of scholars including Teng (1975), Li and Thompson (1981), Li (1990), Her (1990, 1997, 1999, 2006), and Liu (2001) argue that *gěi* in this position can function as a preposition marking the recipient, and that the "V + NP1 + *gěi* + NP2" form is the Mandarin equivalent of a dative construction found in many languages.

Huang and Ahrens (1999: 12-13) present a specific argument for the verbal analysis. They note that in sentences like (24a), the NP following *gěi* (*Zhāngsān*) can serve as the subject of a following verb like *kàn* 'read'. This is shown by the fact that (24a) is grammatical with *kàn* added, while (24b), which lacks *gěi*, is ungrammatical with the same following verb:

(24) a.	Lǐsì	sòng	le	yī	běn	shū	gěi	Zhāngsān (kàn).
	Lisi	send	ASP	one	CL	book	to	Zhangsan read
	'Lisi sent a book to Zhangsan (to read).'							
b.	Lǐsì	song	le	Zhāngsān		yī	běn	shū kàn.
	Lisi	send	ASP	Zhangsan		one	CL	book read

Intended: 'Lisi sent Zhangsan a book to read.'

Huang and Ahrens argue that the grammaticality of (24a) shows that gěi introduces Zhāngsān as the subject of the following verb kàn, which is possible because gěi is a verb forming a serial verb construction. The ungrammaticality of (24b) shows that without gěi, Zhāngsān cannot function as the subject of kàn.

However, our Beijing vernacular data reveal examples that challenge this argument. Consider (25):

(25) a. ...nín gěi wǒ yān chōu wǒ dōu bù chōu...
you give me cigarette smoke I all not smoke
'...even if you give me a cigarette, I wouldn't smoke it...'

b. ...nín gěi wǒmen diǎnr shuǐ hē...
you give us CL water drink
'...give us some water to drink...'

c. ... tā gěi wǒ běn shū kàn...
he give me CL book read
'...he gave me a book to read...'

In each of these examples, the NP introduced by *gěi* (*wǒ* 'me', *wǒmen* 'us', *wǒ* 'me') serves as the agent of the following verb (*chōu* 'smoke', *hē* 'drink', *kàn* 'read'). Yet these are not instances of the "V + NP1 + *gěi* + NP2" construction; they are instances of the double object construction where *gěi* is the main verb, followed directly by the recipient and theme. In all these cases, the recipient of *gěi* serves as the agent of the following verb without any special marking, and the sentences are perfectly grammatical. This shows that the ability of a recipient NP to serve as the subject of a following verb is not dependent on the presence of *gěi* in a particular position; it occurs freely in the double object construction as well. Therefore, Huang and Ahrens's argument does not succeed in establishing that *gěi* in the "V + NP1 + *gěi* + NP2" construction must be a verb.

Her (2006: 1281) proposes that *gěi* in this construction can be either a verb or a preposition depending on the valency of the preceding verb. When the preceding verb is bivalent, with an argument structure of <agent patient>, *gěi* serves as a verb and the whole structure is a serial verb construction. This is illustrated in (26b). When the preceding verb is trivalent, with an argument structure of <agent theme recipient>, the predicate needs to mark the recipient argument, and *gěi* in this case is a preposition, as in (26a):

(26) a. Lǐsì jiè gěi tā le yī qiān kuài.
Lisi lend to her ASP one thousand yuan
'Lisi lent her one thousand yuan.' (*gěi*-NP = argument)
b. Lǐsì (cóng biéchù) jiè le yī qiān kuài gěi tā.
Lisi from elsewhere borrow ASP one thousand yuan to her
'Lisi borrowed one thousand yuan (from elsewhere) to give to her.' (*gěi* -NP = oblique)

In Her's analysis, (26a) contains a compound verb *jiègěi* where *gěi* is a preposition marking the recipient as a core argument. In (26b), by contrast, *jiè* and *gěi* are separate verbs, with *gěi* as the main verb of a second clause expressing the transfer event.

The crucial question for this analysis is what kinds of verbs can appear in the "V + NP1 + gěi + NP2" construction. Liu (2006: 6) provides a useful categorization, listing four types of verbs that can enter this structure in Mandarin:

(27) Verbs that can enter "V + NP1 + gěi + NP2"
a. Transfer actions: e.g., *sòng* 'send', *tígōng* 'provide', *jiāo* 'pay', *huán* 'return'
b. Transfer manners: e.g., *diū* 'throw', *tī* 'kick', *rēng* 'toss', *pāo* 'throw'
c. Transfer instruments: e.g., *jì* 'mail', *dǎ* (*diànhuà*) 'make (a phone call)', *chuán* 'pass on', *huì* 'remit'
d. Preconditions for transfer: e.g., *mǎi* 'buy', *zhàn* (*wèizhi*) 'occupy (a position)', *liú* 'keep', *cún* 'save'

If this categorization accurately reflects the range of verbs that can appear in this construction, it would suggest that the construction is quite productive in Mandarin generally.

However, our investigation of the Beijing vernacular Corpus reveals a strikingly different picture. In the entire corpus, we found only 17 examples of the "V + NP1 + *gěi* + NP2" construction. Of these, 16 examples involve verbs of type (27d)—preconditions for transfer—specifically the verb *mǎi* 'buy'. Only one example involves a verb of type (27a)—a true transfer action verb. These findings are presented in (28) and (29):

(28) a. ...zài mǎi yī gè jiù gěi tā.
more buy one CL then give him
'...buy one more and give it to him.'
b. ...mǎi le diǎnr shuǐguǒ gěi tā.
buy ASP CL fruit give him
'...bought some fruit for him.'

c. ...mǎi diǎnr shénme dōngxi gěi tā...
buy CL what thing give him
'...buy something for him...'

d. ...zǎn le diǎnr qián gěi wǒ mā...
save ASP CL money give my mother
'...saved some money for my mother...'

In all these examples, the verb *mǎi* 'buy' does not itself express a transfer event; rather, it describes an action that creates the conditions for a subsequent transfer. The buying happens first, and then the bought item is given to the recipient. The *gěi* in these examples is naturally interpreted as the main verb of a second clause describing that giving event.

(29) ...jiāo fáng qián gěi tā.
pay house money give him
'...pay the rent to him.'

(29) is the only instance we found in the corpus of true transfer action verbs appearing in this construction. Even this is arguably analyzable as serial verb constructions where *gěi* is the main verb of the second clause, given that *jiāo* itself describes transfer events that result in the recipient receiving something, and *gěi* can be seen as further specifying that transfer.

The extreme rarity of this construction in Beijing vernacular is not surprising in light of observations made by Zhang (2011: 208). Zhang points out that the "V + NP1 + *gěi* + NP2" form has been disappearing from old Beijing Mandarin since the late Qing Dynasty. He attributes this to what he calls the "postverbal prepositional phrase constraint"—a strong tendency in Beijing Mandarin to avoid prepositional phrases appearing after the verb. If *gěi* in this construction were truly a preposition, its appearance after the verb with its object NP would violate this constraint. The fact that the construction is so rare in actual spoken data supports Zhang's observation.

Consider the contrast between (30) and (31):

(30) a. Wǒ xiě le yī fēng xìn gěi tā.
I write ASP one CL letter to him
'I wrote a letter to him.'

b. Wǒ jì le yī gè bāoguǒ gěi tā.
I send ASP one CL package to him
'I sent a package to him.'

c. Wǒ	fā	le	yī	gè	duǎnxìn	gěi	tā.
I	send	ASP	one	CL	text message	to	him
'I sent a text message to him.'							
d. Wǒ	dǎ	le	yī	gè	diànhuà	gěi	tā.
I	make	ASP	one	CL	phone call	to	him
'I made a phone call to him.'							

The examples in (30) are perfectly natural in standard Mandarin and are often cited as canonical instances of the indirect object construction. Yet in the Beijing vernacular Corpus, such examples are extremely rare. Instead, Beijing speakers strongly prefer the preposed alternatives in (31).

(31) a. Wǒ	gěi	tā	xiě	le	yī	fēng	xìn.	
I	to	him	write	ASP	one	CL	letter	
'I wrote him a letter.'								
b. Wǒ	gěi	tā	jì	le	yī	gè	bāoguǒ.	
I	to	him	send	ASP	one	CL	package	
'I sent him a package.'								
c. Wǒ	gěi	tā	fā	le	yī	gè	duǎnxìn.	
I	to	him	send	ASP	one	CL	text message	
'I sent him a text message.'								
d. Wǒ	gěi	tā	dǎ	le	yī	gè	diànhuà.	
I	to	him	make	ASP	one	CL	phone call	
'I made him a phone call.'								

In these preferred alternatives, *gěi* appears before the verb with its NP object, avoiding the postverbal position entirely. This pattern is consistent with the "postverbal prepositional phrase constraint" and suggests that whatever *gěi* is doing in these sentences, it is not behaving like a typical preposition.

Given the extreme rarity of the "V + NP1 + *gěi* + NP2" construction in Beijing vernacular — only 17 examples in a corpus of over 2,000 relevant sentences — and given that even these few examples are plausibly analyzed as serial verb constructions with *gěi* as the main verb of a second clause, we conclude that Beijing vernacular does not have a dative construction of the indirect object type. The construction that Haspelmath (2013) and others cite as evidence for an indirect object type in Mandarin is essentially absent from natural spoken Beijing data, and where it does appear, *gěi* can be analyzed as a verb.

3.5 V + NP1 + *gěi* + NP2 + VP

The final construction type to consider involves *gěi* appearing between two verb phrases, introducing a participant that is the beneficiary or goal of the second verb's action. This form is extremely rare in our corpus, with only two examples. Both are given in (32):

(32) a.	...chǎo	nàme	yī	dà	pánzi	gěi	tā	chī...
	stir-fry	such	one	big	plate	for	him	eat
	'...stir-fried such a big plate for him to eat...'							
b.	...chōu	chū	yī	bùfèn	qián	lái	gěi	wǒmen
	lǎoshī							
	take	out	one	portion	money	to	for	our
	teachers							
	móu	fúlì.						
	seek	benefits						
	'...take out a portion of money for our teachers to seek benefits.'							

In (32a), the preceding action *chǎo* 'stir-fry' produces a large plate of food, and the following action *chī* 'eat' is the intended use of that food. The NP introduced by *gěi*, *tā* 'him', is the beneficiary of the eating event. In (32b), the preceding action *chōu chū* 'take out' produces a sum of money, and the following action *móu fúlì* 'seek benefits' is what the money will be used for. The NP introduced by *gěi*, wǒmen *lǎoshī* 'our teachers', is the beneficiary of the benefit-seeking event.

In both examples, *gěi* connects two events, with the first event providing the means or material for the second, and the NP introduced by *gěi* being the beneficiary of the second event. This is exactly the function we would expect from a verb in a purposive serial verb construction.

Further examples like (33) show the same pattern:

(33) a.	Wǒ	gěi	tā	xiě	le	fēng	xìn	kàn.
	I	to	him	write	ASP	CL	letter	read
	'I wrote him a letter to read.'/'I wrote a letter for him to read.'							
b.	Wǒ	gěi	tā	zhǎo	le	běn	shū	dú.
	I	to	him	find	ASP	CL	book	read
	'I found him a book to read.'/'I found a book for him to read.'							
c.	Wǒ	gěi	tā	zuò	le	dùn	fàn	chī.
	I	to	him	make	ASP	CL	meal	eat
	'I made him a meal to eat.'/'I made a meal for him to eat.'							

These examples are ambiguous between a recipient interpretation (the letter is sent to him for him to read) and a benefactive interpretation (I write the letter on his behalf for him to read). This ambiguity is characteristic of purposive constructions and supports the analysis of *gěi* as introducing a benefactive or goal relation rather than a purely grammatical dative relation.

Therefore, we conclude that *gěi* in this construction is a verb in a serial verb construction expressing purpose or benefactive relations, not a dative marker.

The detailed examination of the five construction types in the preceding sections yields a coherent picture of *gěi* in Beijing vernacular. Across all positions — preverbal, postverbal, compound-internal, and purposive — *gěi* consistently displays properties characteristic of a verb rather than a grammaticalized preposition or case marker.

4. Conclusion

The status of *gěi* in Chinese has long been debated, and this corpus-based study provides empirical evidence to clarify its grammatical nature. Examining ditransitive constructions in Beijing vernacular through coding properties, we focused on *gěi* across the five construction types identified by Her (2006). Based on over 2,000 examples from the Beijing vernacular Corpus, the findings point to four main conclusions.

First, there is no dedicated dative marker for recipients in Beijing vernacular. Across all positions examined—preverbal, compound-internal, postobject, and purposive—*gěi* consistently behaves as a verb, not a preposition or case marker. In preverbal position, it introduces benefactive, malefactive, goal, and disposal-object roles without showing any sign of grammaticalization into a fixed relational marker. In V-*gěi* compounds, its presence obligatorily determines transfer direction for bidirectional verbs like *zū*'rent', and it displays argument omission patterns identical to those of the verb *gěi* itself—both strong indicators of verbal status. The postobject construction is extremely rare and appears primarily with precondition verbs like *mǎi* 'buy', which fits a serial-verb analysis rather than a prepositional one. In purposive constructions, *gěi* connects two events and introduces a beneficiary, again consistent with verbal behavior.

Second, the alignment type of Beijing vernacular ditransitives cannot be simply categorized. The recipient, theme and patient all receive identical coding with no special marking for any argument. This directly contradicts Haspelmath's (2013) classification of Mandarin as a mixed type combining triple-neutral and indirect object types. The indirect-object construction he cites—the "V + NP1 + *gěi* + NP2" pattern—is essentially absent from natural spoken Beijing data, and where it occasionally appears, it can be analyzed without positing a dative preposition. This finding carries implications for the typology of Chinese dialects

more broadly.

Third, the multifunctionality of *gěi* stems from its semantic flexibility as a verb, not from multiple distinct grammaticalized uses. Its core meaning—expressing transfer—extends pragmatically through regular inferential processes to introduce a range of participant roles, including benefactive, malefactive, goal, and disposal object. This kind of semantic extension is typical of verbs with rich lexical semantics and does not require treating different uses as separate grammatical categories.

Fourth, significant differences exist between Beijing vernacular and written standard Mandarin. The postverbal *gěi* construction, relatively common in written Chinese and prominent in typological discussions, is extremely rare in spoken Beijing data. This divergence underscores a crucial methodological point: claims about a language's typological profile based on written materials may not accurately reflect the grammar of any naturally spoken variety.

Future research could explore *gěi* cognates across Chinese dialects, investigate passive-like "*gěi* + V" constructions (e.g., *gěi diū le* 'was lost'), trace historical changes through diachronic corpora, or examine child acquisition patterns to shed light on how this complex system is learned. The case of *gěi* in Beijing vernacular serves as a reminder that what appears at first glance to be a dative preposition may turn out, on closer inspection, to be a verb with robust argument structure—a methodological lesson that grammatical analysis must always be grounded in careful examination of actual usage, not surface intuitions or written generalizations.

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Beyond his published work, studying with Randy in Singapore crystallized an approach that has guided every stage of this research. His repeated insistence that "the best teacher is always natural language" was more than a methodological principle—it was a call to intellectual humility. It sent me to the Beijing vernacular corpus rather than relying on invented examples, shaped my commitment to analyzing constructions as coherent wholes rather than

decomposed pieces, and gave me confidence to remain agnostic about typological labels rather than forcing the data into predetermined categories. In essence, the findings presented here emerged directly from taking his advice seriously.

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Abbreviations

ASP	aspect marker
CL	classifier
COMP	complementizer
EXP	experiential aspect
NOM	nominalizer
NP	noun phrase
P	patient
PASS	passive
PRT	particle
R	recipient
REL	relative clause marker
T	theme

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Sound Pattern Diffusion without Massive Loanwords: Evidence from Peripheral Min Varieties

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Abstract: Languages commonly acquire new sounds through contact with other languages. According to the widely cited 'borrowing scale' hypothesis (Thomason 2001: 70), new phonemes are typically introduced via loanwords. In contrast, Blevins's (2017) 'areal sound pattern' hypothesis proposes that loanwords are not a prerequisite for sound pattern transfer when certain conditions are met. This study investigates this theoretical distinction through case studies of three peripheral Min varieties, where new sounds have emerged through contact with neighboring languages: (1) implosives in Hainan Southern Min; (2) the apical vowel in Far-western Min; and (3) voiced stops in Cangnan Eastern Min. By analyzing the diachronic processes behind these sound changes, this paper argues that the findings provide stronger support for Blevins's (2017) 'areal sound pattern' hypothesis than for the 'borrowing scale' model. The conclusion discusses the broader theoretical implications of the ‘areal sound pattern’ hypothesis.

1. Introduction

1.1 Theoretical background

Language contact is a universal phenomenon; as Thomason (2001:8) notes, there is no evidence that any language has developed in total isolation. When languages are in contact, speakers often borrow a range of linguistic features, from phonetic traits and phonological structures to grammatical categories. This process can lead to structural convergence among languages within a shared geographical area.

Within language contact studies, the 'borrowing scale' hypothesis (Thomason 2001:70)

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represents a central framework. It posits a correlation between the intensity of contact—indexed by the degree of bilingualism—and the structural depth of borrowable features. As summarized in Table 1, this model predicts that phonological influence, such as the adoption of new phonemes, only becomes possible under intense contact (Type 3), which is characterized by widespread bilingualism and substantial lexical borrowing. This reflects the core principle that "vocabulary is borrowed before structure" (Thomason 2001:69).

Table 1: Thomason's (2001:70) 'borrowing scale' hypothesis regarding phonological structure

	Contact type	Phonological structure
1.	Casual contact: borrowers need not be fluent in the source language, and/or few bilinguals among borrowing-language speakers	Structure None.
2.	Slightly more intense contact: borrowers must be reasonably fluent bilinguals, but they are probably a minority among borrowing-language speakers	Phonological features such as new phonemes realized by new phones, but in loanwords only.
3.	More intense contact: more bilinguals, attitudes and other social factors favoring borrowing	In phonology, the phonetic realizations of native phonemes, loss of some native phonemes not present in the source language; addition of new phonemes even in native vocabulary, prosodic features such as stress placement, loss or addition of syllable structure constraints, and morphophonemic rules.
4.	Intense contact: very extensive bilingualism among borrowing-language speakers, social factors strongly favoring borrowing	In phonology, loss or addition of entire phonetic and/or phonological categories in native words and of all kinds of morphophonemic rules.

Contrary to the well-received 'borrowing scale' hypothesis, Blevins (2017) proposed

the ‘areal sound pattern’ hypothesis which does not require lexical borrowing for sound pattern diffusion. The ‘areal sound pattern’ is defined as follows:

An areal sound pattern results from language contact when speakers of a language that lacks a particular sound pattern come to acquire a sound pattern in their speech from extensive contact with a distinct language that has that pattern. (Blevins 2017:88)

Blevins (2017) presents a contrasting perspective, proposing that the phonetics of one language can be immediately accessible to speakers of another through "phonetic prototypes." These prototypes act as perceptual magnets, facilitating sound pattern diffusion without the necessity of massive loanwords—a process termed the ‘perceptual magnet effect’. For this effect to trigger contact-induced sound change, three conditions must be met (Blevins 2017: 99):

i. Establishment of a phonetic prototype requires phonetic saliency;

ii. Establishment of a phonetic prototype requires significant exposure;

iii. The perceptual magnet effect requires phonetic proximity between the prototype and language-internal tokens, and draws phonetically similar tokens closer to the phonetic prototype.

This establishes a critical theoretical distinction: the necessity of loanwords for acquiring new sounds. The 'borrowing scale' hypothesis treats them as essential, while the 'areal sound pattern' hypothesis does not.

This study investigates this divergence through case studies of three peripheral Min varieties. Before moving on to these case studies in Section 2, I will first introduce the study of linguistic area and some background of the Min subgroups.

1.2 Linguistic area and Min subgroups

Language contact does not happen in a vacuum. The concept of linguistic area is central to the notion of diffusion, including sound pattern diffusion. The definition adopted here is as follows:

A linguistic area (or sprachbund) is generally taken to be a geographically delimited region including languages from at least two language families, or different subgroups of the same family, sharing traits, or combinations thereof, most of which are not found in languages from these families or subgroups spoken outside the area. (Aikhenvald 2006:11)

Scholars have long proposed the existence of macro- and micro- linguistic areas

encompassing both Chinese and non-Chinese languages (Hashimoto 1984, Matisoff 1991, Solnit 1992, Matthews 2006, Phan 2010, De Sousa 2015, Huang and Wu 2018, see LaPolla 2018 for a review). While the different subgroups of Chinese are often termed "dialects," they are more accurately understood as a family of distinct languages (Norman 1988: 1). Consequently, contact between these subgroups can be productively analyzed through the framework of a 'linguistic area,' even when it involves subgroups of the same language family. Applying this concept, Chappell (2015) identifies five linguistic areas within China by examining features like differential object marking, while Szeto et al. (2018) demonstrate internal typological diversity within the Mandarin dialect group itself, dividing it into several areas based on contact with other languages and dialects.

In this study, I focus on three micro linguistic areas, where peripheral Min varieties are spoken next to other non-Min varieties. These three Min varieties belong to three different subgroups within the Min family. Since Karlgren (1954), Min has been regarded as the most archaic branch of the Chinese family, which split from mainstream Chinese in the Qin-Han period (221 B.C.–220 A.D.; Norman 1979, Ting 1983 and Baxter 1995, see Shen 2021 for a review). Within the Min group, at least six branches have been identified so far (Norman 1991). The hierarchical relationships between these six branches are shown in Table 2.

Table 2: Subgroups of Min (modified from Shen 2021. All the varieties listed in the last column are mutually unintelligible. Highlighted are three subgroups discussed in this paper.)

1st division	2nd division	MU varieties
A. Inland Min	A1 Northern Min (N.Min)	Jianou (JO) Jianyang (JY) Huangkeng (HK2)
	A2 Far-western Min (FW.Min)	Heping (HP) Gaotang (GT)
	A3 Central Min (C.Min)	Yong'an (YA)
B. Coastal Min	B1 Southern Min (S.Min)	Xiamen (XM) Chaozhou (CZ) Haikou (HK)
	B2 Puxian Min (PX.Min)	Putian (PT)

	B3 Eastern Min (E.Min)	Fuzhou (FZ) Ningde (ND) Cangnan (CN)

As shown in Table 2, the primary division in Min is between Inland and Coastal branches. This determination is based on lexical differences (Norman 1991:350, Chen and Li 1991:89-93), as well as comparative phonology (Coblin 2018). In the second division, Inland Min splits into Northwestern and Central branches, while Coastal Min splits into Southeastern and Eastern branches. In the final divisions, both Northwestern Min and Southeastern Min undergo a further split, yielding six branches in total. Each branch may involve several mutually-unintelligible varieties (Inoue 2018). Some of these varieties are shown in the last column of Table 2. The subgroups and varieties discussed in this paper have been highlighted.

In Section 2, the details of the diachronic process in the emergence of new sounds in three peripheral Min varieties will be examined and analyzed. Then, Section 3 concludes with a discussion on the theoretical implications of the 'areal sound pattern' hypothesis.

2. Areal sound pattern: Case studies of three peripheral Min varieties

In the following section, I will examine three micro linguistic areas, where Min varieties are spoken next to other non-Min varieties. I argue that some new sound patterns emerge in these Min varieties due to contact with their linguistic neighbors. They are: (1) Implosives in Hainan Southern Min; (2) The apical vowel in Far-western Min; (3) Voiced stops in Cangnan Eastern Min.

2.1 Implosives in Hainan Southern Min

The first case study focuses on implosive initials in Southern Min varieties spoken on Hainan Island and the Leizhou peninsula, as shown in the left panel of Fig. 1.

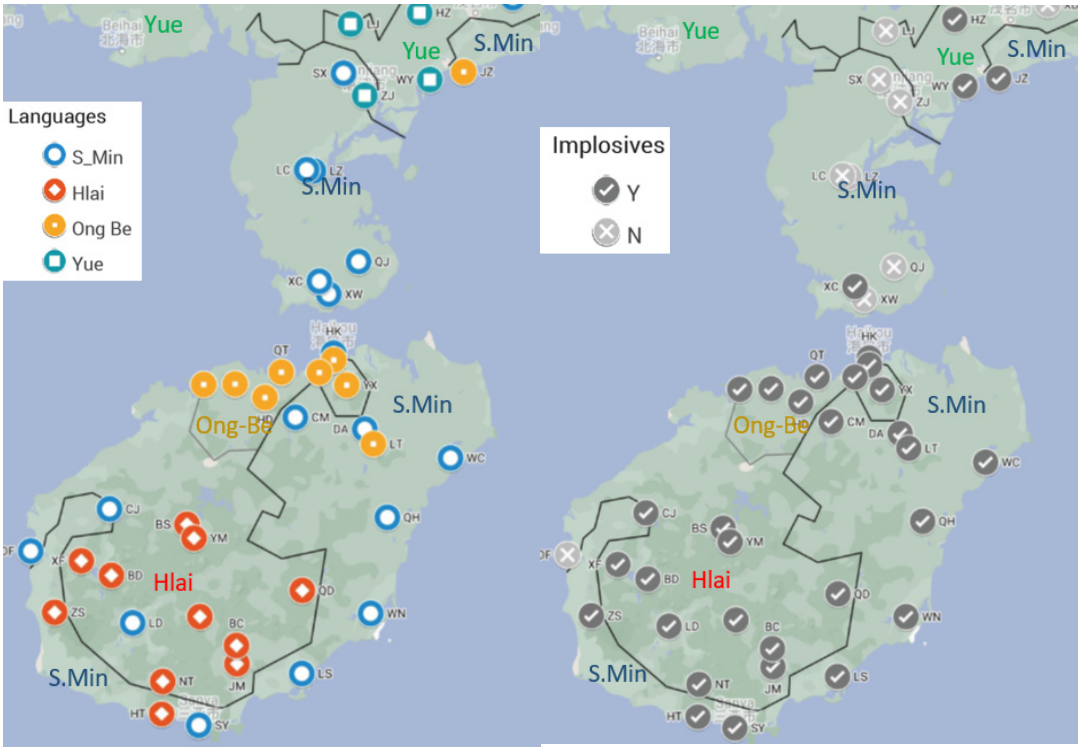


Figure 1: Distribution of implosives [ɓ, ɗ] in Hainan Island and Leizhou Peninsula. The left panel shows the languages/dialects spoken in the region; the right panel indicates the presence (Y) or absence (N) of implosive sounds in each variety

It is well known that S.Min has changed dramatically after its speakers migrated to Hainan through contact with the Ong-Be (Lingao in Chinese) language, a subgroup of the Kra-Dai language family.[1] The contact-induced sound pattern is most apparent in syllable-initial consonant inventory, as illustrated in Table 3 with Chaozhou (CZ), Haikou (HK) S.Min and Changliu (CL) Ong-Be.

[1] Some scholars argue that the contact between S.Min and Ong-Be language probably began first at the Leizhou peninsula. The fact that one Ong-Be language, Jizhou Haihua (Ostapirat 1998, Li and Wu 2017), is found in the Leizhou peninsula (Fig 1. left) indicates that the Leizhou peninsula was once populated by Ong-Be-speaking people before the arrival of Chinese-speaking people. Therefore, it is still true that Hainan S.Min has been formed through contact with Ong-Be language regardless of whether the event happened on Hainan Island or the Leizhou peninsula.

Table 3: Syllable-initial consonant inventory of CZ, HK S.Min, and CL Ong-Be (/ɓ,ɗ/ is transcribed as /ʔb,ʔd/ in original source)

	S.Min								Ong-Be			
	CZ				HK				CL			
Implosive					ɓ	ɗ			ɓ	ɗ		
Plosive	p^h p b	t^h t	k^h k g			t	k		p^h	t	k^h k	
Affricate		ts^h ts				ts				$ts^{(h)}$		
Fricative		s z		h	f v	s z	x	h		s z		h
Nasal	m	n	ŋ		m	n	ŋ		m	n	ŋ	
Approximant		l				l				l		

In Table 3, the CZ variety represents the typical S.Min varieties spoken outside this area, while the HK variety represents S.Min varieties spoken in Hainan. One of the most salient features of HK is the emergence of implosives. Comparative study demonstrates that the implosives in HK correspond to voiceless plosives in CZ, as shown in Table 4.

Table 4: Comparison between two S.Min varieties

	CZ	HK
'eight'	poiʔ	ɓɔi
'step'	pou	ɓɔu
'knife'	to	ɗɔ
'rice plant'	tiu	ɗiu

There are at least two interpretations of the correspondences in Table 4. One interpretation, argued by Pan (2009), is to explain the correspondences as a result of imperfect learning when Ong-Be speakers learn to speak Southern Min variety. However, as shown in Table 3, voiceless unaspirated plosive [t] does exist in Ong-Be[2]. It is hard to explain why Ong-Be speakers would use [ɗ] rather than [t] to match the voiceless plosives [t] in Southern Min. Another interpretation is to explain the correspondence as a result of sound change from CZ voiceless plosives to HK implosives. This is in fact a part of a consonant

[2] Voiceless plosive [t] can also be reconstructed back to Proto-Ong-Be (Chen 2018: Chapter 5).

chain shift, as summarized below based on previous studies (Solnit 1982, Shintani 1991, Xin 2005a,b, Yue 2010 among others).

Table 5: Three-stage chain shift from Proto-Southern-Min to Hainan S.Min

(1)	p>ɓ	t>ɗ		
(2)		s>θ>tθ>t	tʃ>tθ>t	
(3)	p^h>pf>f	t^h>h	$tʃ^h$>ʃ>s	k^h>x

As shown above, the first stage of the chain shift, i.e. the implosion of voiceless plosives, is likely to have occurred under the influence of Ong-Be language. Implosives as an areal feature are quite common (see Blevins 2017: Map 5.1 for the pattern of implosives in Austronesian language in Taiwan), and it is also the case in Hainan as shown in the right panel in Fig. 2.

Now let us examine whether the emergence of implosives in Hainan S.Min meets the three conditions for 'perceptual magnet effects' introduced in Section 1. In terms of phonetic saliency, implosive is a salient sound, and it occurs in approximately 2 per cent of languages (Blevins 2017:89). In terms of significant exposure, Min-speaking people must have migrated to Hainan Island before the 11th century, as documented by the famous poet Su Shi (1037-1101) who was exiled to Hainan Island in 1097, and have been in contact with Ong-Be language speaking people since then. In terms of phonetic proximity between the prototype (implosives) and language-internal tokens (voiceless unaspirated plosives), implosives are found as phonetic variation of voiceless plosives in CZ S.Min (Zhu et al. 2009). Furthermore, Cun (2010) provides a phonetic explanation of how implosives derived from voiceless stop. Based on acoustic and aerodynamic studies, Cun (2010) argues that the fortis voiceless stops in CZ are produced by adduction of vocal folds with great tension before oral release. Although speakers may differ in terms of their strategies to produce fortis stops, the most common one is to actively lower the larynx, which may initiate voicing and result in implosives.

Although the three conditions for 'perceptual magnet effects' are all well supported, the question whether loanwords play a role in the emergence of implosives remains to be answered. In a thorough lexical study of Hainan S.Min, Fu (2008: 220-224) identifies 68 morphemes (from more than 2500 morphemes) to be related to Ong-Be languages. Among

the 68 morphemes, all the morphemes with implosive or voiceless plosive initials in Ong-Be are listed in Table 6.

Table 6: Some Ong-Be related morphemes in Hainan S.Min (according to Fu 2008: 220-224)

Meaning in Ong-Be	Ong-Be forms	Meaning in Hainan S.Min ('=' indicates same as Ong-Be)	Hainan S.Min forms (Fucheng)
'wood'	ɗɔ	'dull'	ɗo
'sore'	ɗuŋ	'swell'	ɗoŋ
'pimple'	ɗut	=	ɗut
'rash'	ɗap.ɗu	=	ɗap.ɗu
'paste'	ɗaŋ	=	ɗaŋ
'stiff neck'	ɗa.ŋa	=	ɗa.ŋa
'plant seedling'	ɗa	'seedling'	ɗa (Wencheng)
'fiddle'	ɗam.ɗoŋ	'play'	tam.toŋ (Jiaji)
'elder sister'	ɓɔi	=	ɓoi (Wencheng)
'sag'	tɔm	'upset'	tɔ/om
'dumpy'	tɔp	=	tɔp
'jump over'	tut	'jump'	tut
'tolerate'	tu	'endure'	tu
'cymbals'	tɔm.tsɛ	=	tsɔm.tsɛ
'jump'	ta	=	ta (Wencheng)
'wordy'	tap	'chip in'	tap
'marsh'	tam	'steps'	tan
'pout'	tu	=	tu (Wencheng)

As shown in Table 6, the pattern is very clear: words with implosives and voiceless plosives in Ong-Be language are also realized as implosives and voiceless plosives in Hainan S.Min. Given that implosives and voiceless plosives in Hainan S.Min have undergone chain shift sound change (see Table 5), while the implosives and voiceless plosives of Ong-Be language have remained the same from Proto-Ong-Be to present forms (Chen 2018: Chapter 5), the corresponding pattern indicates that these loanwords are borrowed from Ong-Be

language to Hainan S.Min after the latter has gone through the chain shift. In other words, the borrowing of words must be dated later than the contact-induced sound change, contrary to the prediction of the 'borrowing scale' hypothesis.

2.2 The apical vowel in Far-western Min

The second case study concerns the emergence of apical vowel in some FW.Min varieties. Although there are some debates regarding the affiliation of FW.Min (see Shen 2021 for a review), recent studies support Norman's (1982) claim that these varieties belong to a subgroup of the Min family (Long 2010, Akitani 2013, Coblin 2018, Shen 2018). These varieties are located in the Northwestern part of Fujian province, surrounded by Gan in the west, Northern Min in the east, and Central Min in the south, as shown in the left panel of Fig. 2.

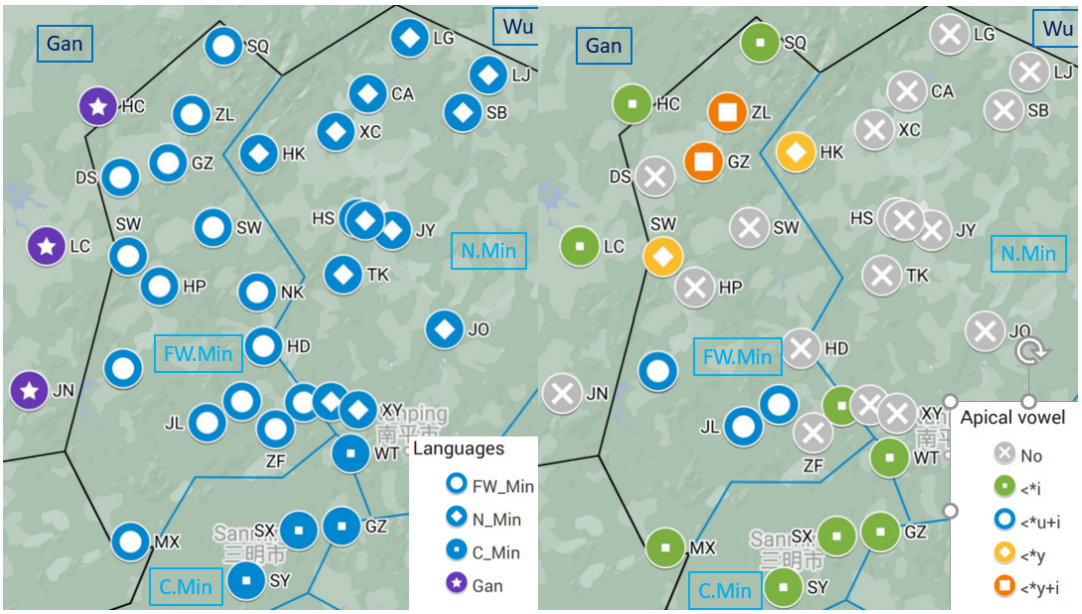


Figure 2: The geographic distribution of Far-western Min (FW Min) varieties and their apical vowels. The left panel shows the locations of the FW Min varieties studied; the right panel illustrates the distribution of apical vowels, categorized by their different origins.

The right panel of Fig. 2 shows the distribution of apical vowels with different origins in this area. Although the phonetic nature of the so-called apical vowels is still controversial

(see Lee-Kim 2014, Lee and Zee 2014: 388-392, Faytak and Lin 2015, and references therein), the description of apical vowels is generally reliable as they are perceptually quite distinctive from other non-apical vowels. Apical vowels are widely found in China, not only in many Chinese dialects, but also in other languages, e.g. Tibeto-Burman (Namkung 1996). Textual evidence indicates that apical vowels first derived from vowel *i following alveolar affricates and fricatives ([ts, tsʰ, s]) in Early Mandarin around the Yuan dynasty (13th to 14th century AD). Note scholars have different views on the exact time (Shen 2008, Wang 2012 and references therein).

Generally speaking, apical vowels are absent in the Min family except Central Min and Far-western Min. Nor are apical vowels reconstructed at any stage of proto forms, e.g. Proto-Min (Norman 1981), Proto-Southern-Min (Zhang 2013, Kwok 2018), Proto-Northern-Min (Sun 2016), Proto-Eastern-Min (Akitani 2020). Meanwhile, apical vowels occur in most Chinese subgroups surrounding Min, such as Wu, Gan, and Hakka. Like Mandarin, apical vowels in these dialects derived from vowel *i. However, some of the Far-western Min varieties stand out from other Min varieties in possessing apical vowels, and unlike surrounding Gan and Central Min, the origin of the apical vowel in FW.Min is not exclusively from *i. At least three types found only in this area could be identified, as shown in Table 7.

Table 7: Corresponding sets of apical vowels in FW.Min and N.Min varieties (Words with apical vowel are highlighted)

		Gan	FW.Min				N.Min		C.Min
		LC	HP	GT	JK	ZL	HK2	SB	YA
*i	‘purple’	tsɿ	tse	tsɿ	tsə	tsɐ	tsu	tsu	tsɿ
*i	‘teacher’	sɿ	se	sɿ	sə	sɐ	su	su	sɿ
*i	‘silk’	sɿ	se	si	sə	sɿ	si	ɕi	si
*y	‘mouth’	tɕy	tsui	tsy	tsɿ	tsɿ	tsɿ	(tɕʰy)	-
*y	‘drank’	tɕy	tsui	tsʰy	tsɿ	tsɿ	tsɿ	dʑy	tsuei
*u	‘run’	-	tsu	tsɿ	tsu	tsu	tsɛu	tsəu	tsu
*u	‘oven’	tsou	tsu	tsɿ	tsu	tsu	tsɛu	tsəu	tsu
	Type	*i	No	1	2	3	2	No	*i

Table 7 shows the corresponding sets of the apical vowel in some FW.Min and N.Min varieties. Besides the type without any apical vowel (represented by HP and SB) and the most common type with an apical vowel exclusively from *i (represented by LC), there are three unique types found only in this area: The first type, represented by GT, possesses an apical vowel which originated from both *u and *i; The second type, represented by JK and HK2, possesses an apical vowel which originated exclusively from *y; The third type, represented by ZL, possesses an apical vowel which originated from both *y and *i. The last two types differ only in whether there are words originated from *i or not, and can be grouped together as one single type which possesses an apical vowel of *y origin. Close examination of the right panel in Fig. 2 shows that the geographic distribution of the first type (*u+*i) and the second (*y) or third type (*y+*i) are different: the former occurs in the Southern area of Far-western Min and the latter occurs in the Northern area within Far-western Min and also extends to one Northern Min variety (HK2).

According to the 'areal sound pattern' hypothesis, apical vowels are perceptually salient. Due to the influence of Gan (in the west) and Central Min (in the south), some FW.Min varieties have significant exposure to apical vowels. Acoustically, the formant patterns of apical vowels, especially the first two formants, are very close to central high vowels, as shown in the following figure.

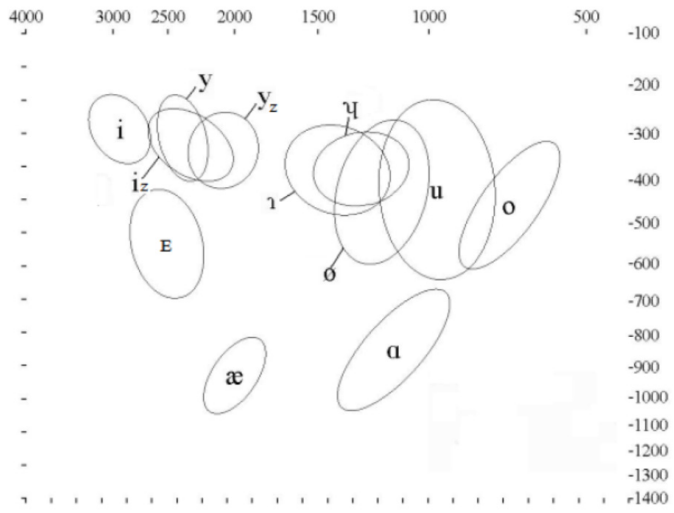


Figure 3: Vowel plot of Suzhou Chinese monophthongs, illustrating the phonetic position of the two apical vowels [ɿ, ʮ] (provided by Ling Feng, p.c.)

In Fig. 3, two apical vowels [ɿ, ʯ] in Suzhou have low F1 and mediate F2 values, located closest to vowels such as [ø,u,y]. Therefore, it is natural that the most perceptually proximate sounds to apical vowel in FW.Min are [u] and [y] rather than [i]. In other words, the 'perceptual magnet' [ɿ] triggers contact-induced sound change *u>ɿ or *y>ɿ rather than *i>ɿ.

Furthermore, the origins of the apical vowel in FW.Min are unique, and differ from those in Gan and Central Min. As a result, there are very few cognates shared by them.[3] Apparently, lexical borrowing plays no role in the contact-induced sound change, and 'borrowing scale' hypothesis cannot explain the sound pattern in FW.Min.

2.3 Voiced stops in Cangnan Eastern Min

The third case study deals with E.Min varieties spoken in Zhejiang Province. While the majority of E.Min varieties are spoken in Fujian Province, two E.Min varieties, namely Thaishun (TS) and Cangnan (CN), are spoken in Southern Zhejiang, as shown in Fig. 4.

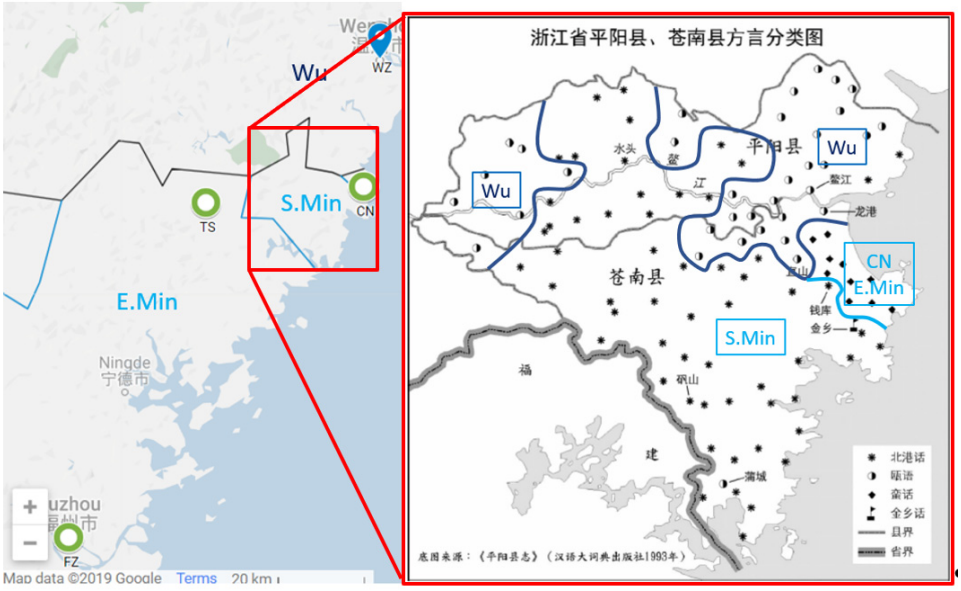


Figure 4: Location of TS and CN Eastern Min varieties and their linguistic neighbors. The left panel (adapted from Wurm et al. 1987) shows the broader regional context with simplified boundaries. The right panel (based on You 2016:90) details the specific dialect boundaries in the study area.

[3] Most words of *i origin in FW.Min, if any, are of literary reading rather than colloquial words.

Although located in Zhejiang, TS E.Min is connected to E.Min varieties spoken to its south, and its E.Min affiliation is without doubt (Walton 1986). On the contrary, there are some debates on the linguistic affiliation of CN variety, spoken in an area surrounded by mutually-unintelligible Wu and S.Min varieties. Some scholars (e.g. Fu 1984) argue that CN should be classified as a Wu variety because CN has voiced initial stops, which was regarded as a useful criterion to identify Wu varieties (Chao 1928). However, close examination of words with voiced initials in CN reveals that there are many words corresponding to E.Min rather than Wu, as illustrated in Table 8.

Table 8: Comparison between E.Min (FZ, TS, CN) and Wu (WZ)

		E.Min		Wu
	FZ	TS	CN	WZ
'float'	p^hu^2	p^hu^2	bu^2	$vøy^2$
'straight'	$tiʔ^8$	$tɪʔ^8$	$diəʔ^8$	$dzei^8$
'insect'	$t^høyŋ^2$	$t^həŋ^2$	$doŋ^2$	$dʑyoŋ^2$
'sweat'	$kaŋ^6$	$kaŋ^6$	$gẽ^6$	jy^6
'glue'	ku^2	ku^2	gu^2	vu^2
'far'	$xuoŋ^6$	$fuɔi^6$	$hø̃^6$	jy^4
'cloud'	$xuŋ^2$	$fʏŋ^2$	$faŋ^2$	$jyoŋ^2$

In Table 8, the first five words illustrate the pattern that voiced stops in CN correspond to voiceless stops in FZ and TS, while the last two words illustrate voiceless fricatives in CN correspond to voiceless fricatives in FZ and TS. For all these examples, CN forms do not correspond to WZ forms. Based on these and other lexical evidence, the field has gradually reached a consensus on the E.Min affiliation of CN (Zhengzhang 1984, Akitani 2005, Li 2009, Tao 2016 among others).

Nevertheless, the voicing difference between stops in CN and other E.Min varieties (such as FZ and TS) still needs to be explained. Some scholars (Zhengzhang 1984, You 2016) regard CN forms as original, and other E.Min forms as the result of devoicing sound change. However, this explanation is problematic since it requires a split of voiced initials into two categories, i.e. unaspirated and aspirated voiceless initials, without any phonological condition. Therefore, some scholars (Li 2009, Tao 2016, Dai 2017) propose another

explanation that CN voiced initials are derived from both unaspirated and aspirated voiceless initials in low register tones due to contact with neighboring Wu varieties. Note that all CN and WZ forms in Table 8 occur in low register tones (labelled with even number).

Generally speaking, I agree with the latter explanation that CN voiced stops were derived from voiceless stops due to contact with neighboring Wu varieties similar to WZ. However, note that the voiceless fricative [h] (the [f] forms in CN and TS are derived from earlier *hu) remains voiceless in CN, which needs to be explained. My hypothesis is that the initiation of this contact-induced sound change requires phonological mapping between E.Min varieties (such as FZ) without voiced initials and Wu varieties with voiced initials (such as WZ), as shown in Table 9.

Table 9: A hypothetic scenario of sound change through phonological mapping

	FZ	Mapping	WZ	Change	CN
High register tones	p, p^h, h	Equal	p, p^h, h		p, p^h, h/f
Low register tones	p, p^h	Similar	b	p, p^h>b	b
	h	No	-		h/f

Table 9 proposes a scenario to explain the current CN forms as a result of a sound change initiated by the phonological mapping between FZ and WZ. There are three possible patterns of phonological mapping: no mapping, equal mapping and similar mapping. Only the type of similar mapping triggers sound change. The scenario not only explains why voicing only occurs in voiceless stops (such as /p, p^h/) in lower register tones, but also explains why voicing does not occur in /h/ in lower register tones, as there are no phonetically similar sounds to map with /h/. Note that some descriptions of Wu varieties list /ɦ/ as one of the syllable-initial phonemes, which could map with /h/. In fact, [ɦ] used in Wu varieties is only an indication of breathiness of the following vowels, and should not be described as such (Zhu 1995: Chapter 2, Chen and Gussenhoven 2015). Therefore, the no-occurrence of voicing in /h/ is expected in the phonological mapping scenario presented in Table 9.

While this scenario is not compatible with ‘borrowing scale’ hypothesis, it can be regarded as a special case of ‘areal sound pattern’ if I extend the concept ‘perceptual magnets’ from sounds to phonotactic patterns. In this case, the E.Min speakers are under significant

exposure of the phonotactic pattern of neighboring Wu varieties in which only voiced stops co-occur with low register tones. Then, it triggers the sound change from voiceless stops to voiced stops in CN and results in similar ‘sound pattern’ between CN and neighboring Wu varieties.

3. Conclusion

Previous sections have presented three case studies of ‘areal sound patterns’ within Min Chinese subgroups: Southern Min (HK), Far-western Min, and Eastern Min (CN). In each instance, the Min variety acquired new phonological features through contact with neighboring languages—Ong-Be, Gan, and Wu, respectively. The first two cases demonstrate how phonetically salient sounds (implosives and apical vowels) in the source languages acted as ‘perceptual magnets,’ triggering change in phonetically proximate sounds. The third case, that of CN Eastern Min, shows that phonotactic patterns, rather than specific segments, can serve the same function. All three cases align with the mechanism of contact-induced sound change as outlined in the ‘areal sound pattern’ hypothesis.

Conversely, these cases are not readily explained by the ‘borrowing scale’ hypothesis, which posits that "vocabulary is borrowed before structure" (Thomason 2001:69). In the Hainan case, Ong-Be loanwords appear to have been incorporated after the sound change had occurred. In the Far-western Min case, the apical vowel is not a direct borrowing but has a distinct origin from its counterpart in neighboring languages. Finally, the CN Eastern Min case involved the acquisition of voiced initials through phonological mapping with Wu, not through the borrowing of lexical items.

These findings challenge the view that contact-induced phonological change is limited to two pathways—lexical borrowing and first-language interference—as suggested by Bybee (2015:251). This study confirms that the mechanism of contact-induced sound change proposed by Blevins (2017) is well-supported and may be a common driver of areal convergence. At the same time, this mechanism does not operate in isolation; as illustrated in Fig. 5, it interacts with other processes, including natural sound change, loanword-induced change, and first-language interference.

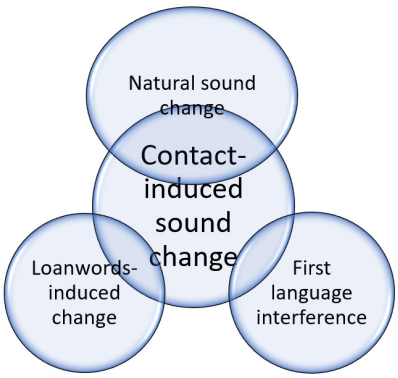


Figure 5: Interactions between contact-induced sound change and other mechanisms

Distinguishing contact-induced sound change from other mechanisms can be challenging, particularly when historical and social data on language contact are limited. Despite this, the concept provides a powerful framework for generating new research questions. For instance, are certain sounds or phonotactic patterns more susceptible to diffusion through contact than others? While preliminary typological studies have begun to explore the borrowability of segments (Eisen 2019; Grossman et al. 2020; Moran et al. 2021), their compatibility with the 'areal sound pattern' hypothesis remains an open area of inquiry. A deeper understanding of the conditions that enable areal sound patterns is also crucial for historical phonology, particularly as sound systems and phonotactics are increasingly used in phylogenetic research (Dockum 2018; Macklin-Cordes et al. 2021).

Looking ahead, the 'areal sound pattern' hypothesis must be tested against a broader range of case studies from both macro- and micro-level linguistic areas. Furthermore, its principles invite empirical testing within laboratory phonology. The study of phonetic convergence in bilingual and language contact settings (see Coles-Harris 2017 for a review) offers a promising, yet underutilized, avenue for experimentally validating the mechanisms of contact-induced sound change.

Acknowledgements

I first met Luo Laoshi (Randy LaPolla) at La Trobe University in Melbourne around 2007. On that occasion, he spread out the Language Atlas of China and spent over an hour explaining the history of migration and its impact on languages. At noon, we had Cantonese dim sum with his wife, Pan Laoshi (Dory Poa). During the meal, she asked about my plans, and I said I really didn't want to stay in Australia. Only now do I realize how foolish I was back then — I ended up missing the opportunity to pursue a PhD under Luo Laoshi's guidance.

Fortunately, I later had the chance to reconnect with Randy in Singapore. Our conversations since then have been a constant source of inspiration — both intellectually and personally. His theoretical insights have subtly but profoundly shaped the way I think about language and linguistics. It is a great honor to contribute to this volume celebrating his scholarship and its enduring impact on the field, and I very much look forward to our next meeting.

I would also like to thank Professors Huang Xiaodong, Akitani Hiroyuki, and Endō Mitsuaki for their thoughtful feedback on this research during the online presentation of this paper. Of course, any remaining errors are entirely my own.

Appendix: Language and data source

Abbrev	Place	Chinese	Language	Source
CL	Changliu	长流	Ong-Be	Xin (2008)
CN	Cangnan	苍南蛮话	Eastern Min	Akitani (2005)
CZ	Chaozhou	潮州	Southern Min	Shi (1997)
FZ	Fuzhou	福州	Eastern Min	Chen (1998)
GT	Gaotang	高唐	Far-western Min	Norman (2024)
HK	Haikou	海口	Southern Min	Chen (1997)
HK2	Huangkeng	黄坑	Northern Min	My field notes
HP	Heping	和平	Far-western Min	Norman (1992)
JK	Jinkeng	金坑	Far-western Min	Li (2018)
LC	Lichuan	黎川	Gan	Yan (1993)

SB	Shibei	石陂	Northern Min	Akitani (2008)
TS	Taishun	泰顺蛮讲	Eastern Min	Akitani (2005)
WZ	Wenzhou	温州	Southern Wu	Zhengzhang (2008)
YA	Yongan	永安	Central Min	Norman (1980)
ZL	Zhaili	寨里	Far-western Min	Akitani (p.c.)

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How do Large Language Models (LLMs) Challenge Linguistics?

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Abstract: Geoffrey Hinton — often called the "Godfather of Artificial Intelligence" — has openly criticized Noam Chomsky, raising profound questions about the relationship between linguistics and artificial intelligence. This paper examines four dimensions along which large language models challenge established linguistic paradigms. First, should linguistics pursue a macro or micro-orientation? This debate concerns both the scope of linguistic inquiry and the transformation of its research methods; the paper argues that linguistics must shift from a narrow, discipline-confined perspective toward a comprehensive, interdisciplinary "macro-linguistics" that integrates with the humanities, natural sciences, medicine, and engineering, and that spans phonetics, grammar, semantics, and pragmatics. Second, are language and thought separable or inseparable? Contrary to the traditional dichotomy, this paper argues that human thought cannot be entirely separated from language: the primary purpose of thought is communication, and without new information, thought loses its vitality — artificial attempts to disconnect thought from communication are therefore counterproductive. Third, is language acquisition innate or experiential? Artificial intelligence has significantly challenged Chomsky's innateness hypothesis, abandoning the premise that language is a pre-programmed, innate ability in favor of treating language as fundamentally experiential — a shift validated by the landmark successes of experience-based learning models. Fourth, can AI possess thought, or even constitute life? The paper argues that artificial intelligence

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cannot possess life in the biological sense: AI's language is fundamentally disconnected from genuine thought, linguistic fluency does not equate to autonomous thinking, and AI remains an incomplete imitation of human language and cognition rather than an autonomous thinking entity.

1. Introduction

At the end of 2022, ChatGPT emerged, and artificial intelligence entered the era of large language models. Revered as the "Godfather of Artificial Intelligence," Geoffrey E. Hinton said in an interview on October 8, 2024, upon winning the Nobel Prize, that "[...] neural nets are much better at processing language than anything ever produced by the Chomskyan School of Linguistics" (Nobel Prize 2024, 05:43–05:48; Chinese translation available in Chen 2024). Earlier, in his acceptance speech for the Ulysses Medal at University College Dublin, he had bluntly stated that "linguists were misled for several generations by someone called Chomsky" (UCD Computer Science 2024, 13:41–13:45). His criticism of Chomskyan linguistics has provoked strong reactions within the linguistic community, with some agreeing and others opposing, and no consensus has been reached.

These remarks recall two earlier assessments of Western linguistics. The first is from Bolinger and Sears (1981), who observed that "until linguists can bring their point of view clearly and palatably before the reader at large and the student in the language classroom, they will have only themselves to blame for what one linguist has called the towering failure of the schools to inform ordinary citizens about language. Of no other scientific field is so much fervently believed that isn't so. And not only believed but taught" (p. vi). The second is from Jelinek (1988): "Whenever I fire a linguist, the performance of the speech recognition system improves" — though he also noted that "some of [his] best friends are linguists" (Jelinek 2005). For linguists, the task at hand is not to agree or disagree with Hinton, but to reflect seriously: how have large language models challenged linguistics, and how should linguistics turn these challenges into opportunities?

While Jakobson praised Saussure for his foundational role in modern linguistics, he also noted "numerous contradictions in the teachings of Saussure" (Jakobson 1942/2001：66), suggesting that certain fundamental issues in linguistics have in fact been evolving since Saussure (Shi 2013). Chomsky merely extended this evolution to its furthest point. I have

explored these questions elsewhere, in "Is the Combination of Sound and Meaning Arbitrary? — A Re-reading of Jakobson's Comments on Saussure" (Shi 2013) and "The Enigma of Language: Challenges from Artificial Intelligence" (Shi 2023). The exploratory remarks that follow are offered as a modest contribution toward further discussion.

2. Macro-linguistics or Micro-linguistics?

The debate between macro-linguistics and micro-linguistics concerns the expansion of linguistics' research objects and the transformation of its research paradigms — or, as Shen (2023) put it, the extension of the discipline's connotation and denotation. Saussure (1980: 43) emphasized the primacy of "pure linguistics," stating: "My definition of language presupposes the exclusion of everything that is outside its organism or system — in a word, of everything known as 'external linguistics'". Chomsky (1965) likewise held that the object of linguistic research is the "linguistic knowledge of an ideal speaker-listener." A coherent intellectual thread thus runs from Saussure's pure linguistics to Chomsky's ideal speaker-hearer: both effectively enclose linguistics within a micro-linguistic framework that isolates language from society and human communities.

Micro-linguistics adheres to a reductionist scientific outlook that pursues linguistic regularity, whereas macro-linguistics embraces an evolutionary scientific outlook centered on probabilistic analysis. There is now an urgent need to abandon the narrow perspective of micro-linguistics and instead adopt a macro-linguistic framework — one that is interdisciplinary, data-driven, and grounded in probability and statistics.

What, then, is language? Chao (1980: 3) defined it as "a systematic mode of behavior for human beings to communicate information with one another, articulated through the vocal organs." The British linguist Geoffrey Leech has similarly emphasized that linguistics is inherently interdisciplinary and that language naturally sits at the intersections of multiple disciplines. Linguistics is by nature an interdisciplinary field; it has never been a self-contained discipline.

Scholars such as Roman Jakobson, William Labov, and William S-Y. Wang have both advocated and practiced macro-linguistic research. Jakobson, for instance, investigated language regression in aphasic patients by comparing it with language development in children, producing Child Language, Aphasia and Phonological Universals (Jakobson 1968);

in collaboration with his student Morris Halle and the acoustic phonetician Gunnar Fant, he completed Preliminaries to Speech Analysis: The Distinctive Features and Their Correlates (Jakobson, Fant and Halle 1952). Labov conducted pioneering research on orderly heterogeneity in language variation; after years of extensive surveys, interviews, and experimental measurements, his team produced the three-volume Principles of Linguistic Change: Internal Factors (Labov 1994), Principles of Linguistic Change: Social Factors (Labov 2001), and Principles of Linguistic Change: Cognitive and Cultural Factors (Labov 2010). William S-Y. Wang was the first to construct a computerized corpus of Chinese dialects and founded the theory of lexical diffusion; he currently researches evolutionary linguistics, employing neuroscientific techniques to investigate the neural mechanisms underlying child language production and age-related language decline.

Macro-linguistics holds that the traditional subfields of linguistics — phonetics, lexicology, grammar, semantics, and pragmatics — are not clearly delineated and often overlap. As Chao (1965a/2002: 590) observed, "real language is a system that is to a large extent regular and to a small extent irregular." This observation applies not only to linguistic elements themselves but also to the division of linguistic subfields, categories, and levels, all of which are to a large extent regular and to a small extent irregular. No subfield or level is therefore self-sufficient in the sense of being able to resolve all its own problems from within; only through mutual supplementation and integration can linguistic subfields and levels adequately address their respective research questions.

The notion that phonetics, lexicology, grammar, semantics, and pragmatics exist as isolated, self-contained domains is thus untenable. Consider two examples: why has the study of intonation long remained unresolved? Precisely because it is not a purely phonetic problem. Why has the debate over subject and predicate in Chinese persisted for so long? Because it transcends the narrow boundaries of grammar. This is why Chao (1954/2002: 805) observed that "the connotation of the subject-predicate structure in Chinese is not the agent-action relationship found in most Indo-European languages, but the topic-comment relationship; the agent-action relationship is merely a special case within it." Chao clearly did not regard the boundaries between grammar, semantics, and pragmatics as insurmountable.

Lü and Zhu 's (1952) *A Course in Grammar and Rhetoric* wove together grammar and rhetoric. Lu (2024) proposed a theory of "semantics-constrained grammar", arguing that

"grammatical issues are ultimately semantic issues." Shen (2020) advanced the concept of "macro-grammar," defined as simultaneously encompassing "semantic grammar," "pragmatic grammar," and "phonological grammar." These works attest to a rich tradition of macro-linguistics within Chinese linguistics. John Ohala, for his part, advocated the integration of phonetics and phonology; within Chinese linguistics, the concept of "phonological pattern" represents a research paradigm that uses experimental methods as an efficient means of studying phonology. Chinese linguistics is therefore not lagging behind in either theory or practice.

In summary, one of the most significant implications of AI's challenge to linguistics is that it has empirically shattered the outdated framework of micro-linguistics and pure linguistics, opening an opportunity to establish a new macro-linguistic research paradigm. Linguistics is an empirical science, not a form of mysticism: it demands field investigation, experimentation, exploration, and discovery rather than armchair speculation. Externally, macro-linguistics integrates across the humanities, natural sciences, medicine, engineering, and other disciplines; internally, it spans phonetics, grammar, semantics, pragmatics, and related domains — thereby opening broad new prospects for linguistic research.

3. Are Language and Thought Separable or Inseparable?

In The Enigma of Language: Challenges from Artificial Intelligence, I wrote: "Is language for communication or for thought? Chomsky claims that language is for thought, not for communication — this is open to debate. Are language and thought separable or inseparable? Chomsky holds that they are inseparable — this too is debatable." The ninth section of that paper addresses the question of whether language and thought can be separated; the present paper develops that discussion further.

The relationship between language and thought is a longstanding topic in linguistics. Many textbooks assert that thought cannot exist without language, but in reality it is language that cannot exist without thought. More than twenty years ago, in a general linguistics course, I proposed that human thought can be divided into four types: imagistic thinking, abstract thinking, insightful thinking, and technical thinking. Of these, only abstract thinking is closely bound to language, requiring language to achieve clarity, logical coherence, and expression (Shi 2023). Imagistic thinking — as when a painter expresses ideas through

paintings or a musician conveys emotion through melody — can exist without language. Insightful thinking occurs when a problem lingers unresolved in the mind and, upon an unexpected trigger, resolves in a sudden moment of understanding; this too may occur without language. Technical thinking, manifested in sports, craftsmanship, and the transmission of intangible cultural heritage, can likewise be accomplished without linguistic mediation.

These modes of thinking are not isolated from one another; they are interrelated and complementary. For humans, then, thought can exist independently of language, but language cannot exist without thought — a one-way entailment, and an instance of the asymmetry commonly found in language. People often experience the sensation of "knowing something intuitively but being unable to put it into words," precisely because all human behavior is governed by thought, whose scope is far broader than that of language alone. Clarifying this relationship is essential to understanding why the linguistic output of large language models can be well-formed yet semantically incoherent: such output is grounded solely in linguistic data, not in thought.

In traditional Chinese culture, language and thought are regarded as distinct, as in the Tao Te Ching's statement: "The Tao that can be told is not the eternal Tao; the name that can be named is not the eternal name." In Western culture, by contrast, language and thought are often conflated, as in Ludwig Wittgenstein's dictum: "The limits of my language mean the limits of my world." In fact, linguistic knowledge is not the entirety of human knowledge; people also acquire knowledge through imagistic, insightful, and technical thinking. This is not to diminish the importance of abstract thinking, which uses language as its expressive tool. As Wang (2024) observed, "humans have evolved to become the 'dominants of the Earth' largely because we invented language." Writing in particular — the instrument for recording language — transcends the constraints of space and time, enabling the dissemination and accumulation of human knowledge and allowing later generations to build on the work of their predecessors. This cultural evolution proceeds thousands of times faster than biological evolution. The claim that thought can exist without language is simply a description of fact; it does not deny the pivotal role language plays in human society.

We now turn to the question of whether language serves primarily as a vehicle for thought or for communication. Chomsky argues that language exists for thought rather than communication, but a team of neuroscientists recently published evidence to the contrary in

Nature (Fedorenko et al. 2024), showing that language is primarily a tool for communication rather than thinking. Using functional magnetic resonance imaging (fMRI), the researchers identified brain regions specifically involved in language processing as distinct from those responsible for thinking and reasoning. Their findings revealed that when people engage in various forms of thinking, the brain regions associated with language remain inactive — indicating that thought is supported by other neural systems. Language, in other words, is a tool for communication, and thought is possible without it.

Neuroimaging evidence further supports this conclusion: patients with severe aphasia, who have lost the ability to communicate linguistically, can still solve mathematical problems, play chess, and make decisions. Conversely, patients with intellectual disabilities or neuropsychiatric disorders may show impaired thinking and reasoning while retaining basic linguistic function. Stuttering, which involves disruptions in language production, likewise does not imply any disruption in thinking. And people often remember a person's face but cannot recall their name, demonstrating that direct recall of visual images proceeds independently of the indirect retrieval of linguistic symbols. In short, language is not a necessary condition for thought — a conclusion that is vital for understanding the principles and essence of large language models.

When people prepare to narrate an event, argue a point, or write an article, they first organize their thoughts into a logical sequence and select appropriate words and sentence structures in their minds. This internal language, used in the process of thinking, can be regarded as a form of self-communication — a dialogue with oneself. What, then, is the purpose of thinking? It is to articulate those thoughts more effectively and exchange information with others. And what is the purpose of writing? It is to communicate information more widely by making ideas accessible to others. External language refers to the natural language we use in daily communication, while internal language is pre-linguistic. Only when thought is expressed as language can it be perceived by others and thereby acquire meaning; and it is only through communication that new information is acquired and thought gains content. Without new information, thought loses its vitality and withers. Communication is thus a fundamental condition for the occurrence and development of thought, and the artificial separation of thought from communication is therefore unjustifiable.

4. Is Language Acquisition Innate or Experiential?

Artificial intelligence has abandoned Chomsky's nativist theory of language in favor of an empiricist approach, achieving landmark success in language processing. What, then, is experience? Experience is frequency, and experience is probability: abundant experience means high frequency, limited experience means low frequency, high frequency means high probability, and low frequency means low probability. As Chao (1965b/2002: 522) observed, "when a child learns a language, they listen and listen, hearing what is said in what situations. By associating those utterances with those situations, they come to understand the meaning of what is said." Probability accumulates through repetition, and proficiency is achieved through practice — this is how children learn to speak.

William Labov (2001: 745) similarly wrote that "the actual situation of language learning shows that the frequency with which children use variable rules is matched to their linguistic environment," emphasizing that "this is not a hypothesis about probabilistic matching in child language learning; it is simply a description of observed facts." The same holds for second language acquisition: "to learn a language, one must produce a sufficient quantity and variety of utterances; when one can produce appropriate utterances spontaneously, one can then speak the language fluently" (Chao 1965a/2002: 589). This is how language emerges: proficiency follows sufficient effort.

The essence of language is a probabilistic distribution pattern of linguistic symbols. In the seventh section of The Enigma of Language: Challenges from Artificial Intelligence, which addresses the question of how humans learn language, I proposed a principle of probabilistic matching to explain language acquisition: the essence of both first- and second-language acquisition is the probabilistic matching of linguistic elements with their contexts and domains of discourse. When probability reaches a sufficient threshold, language emergence occurs, and through habit formation it becomes linguistic intuition.

Formal imitation and probabilistic matching are innate instincts shared by humans and animals; probabilistic matching can in fact be regarded as a sophisticated form of imitation. Since all instincts are innate, it follows that language itself is not innate — rather, formal imitation and probabilistic matching are the innate mechanisms underlying language learning. Probability requires the accumulation and storage of practical experience, encompassing both linguistic forms and their content. The Analects of Confucius captures

this well: "To learn and at due times to repeat what one has learnt — is that not after all a pleasure?" — a reminder of the importance of constant practice. Linguists with keen academic intuition have long discovered and studied the probabilistic nature of human language, consciously or unconsciously and to varying degrees, but most of these findings have been neglected or dismissed as peripheral to the "core" of linguistics.

The order in which children acquire the phonemes of their mother tongue, as studied by Roman Jakobson, is in fact determined by probability: high-probability phonemes are acquired first, low-probability phonemes later. George Kingsley Zipf, a professor at Harvard University, proposed Zipf's Law of word-frequency distribution in the 1940s. William S-Y. Wang's theory of lexical diffusion likewise holds that the order of lexical change is determined by word frequency; consistent with this, our study of tone change in the Tianjin dialect (Shi and Wang 2004) found that low-frequency words lead changes toward the standard language, while high-frequency words lead changes away from it. In *Asymmetry and Markedness*, Shen (1999) argued that unmarked elements are high-frequency while marked elements are low-frequency. Grammar is thus the crystallization of usage: high-probability usage becomes rule, and low-probability usage becomes exception. Lu's (2024) theories of the semantic harmony principle and semantics-constrained grammar are likewise closely related to probability — "harmony", after all, is simply the high co-occurrence probability of linguistic elements, while low co-occurrence probability yields "disharmony." Optimality Theory, once highly influential in linguistics, is inherently probabilistic, a feature its proponents may not have fully recognized: "optimality" refers to preferential selection, in which the optimal candidate has high probability and the suboptimal candidate low probability, with no form ever occurring at an absolute 100% rate. The phonological and linguistic patterns constructed from experimental data in our 2004 article are precisely the probabilistic distribution patterns of phonetic and linguistic elements.

Chao (1965a/2002: 587) once defined modern Chinese as "the sum total of all utterances produced by living Chinese speakers" — a definition that may sound familiar today, for it aligns closely with the design philosophy of contemporary large language models. As early as 1965, Chao had outlined this concept and successfully applied it to language acquisition and language teaching, a remarkable achievement. Contemporary AI, in this sense, continues to develop research that these once-marginalized linguists had already initiated, and which all linguists should now embrace.

As noted earlier, "real language is a system that is to a large extent regular and to a small extent irregular" (Chao 1965a/2002: 590). Language is, in fact, a complex adaptive system — an open system. Rules apply to closed systems, while probability applies to open systems: simple closed systems are rule-based, and complex open systems are probability-based. Language is therefore a probabilistic distribution pattern, and learning a mother tongue or a foreign language means mastering this pattern through probabilistic and pattern matching. This is an important and profound truth about human language, and also a core design and operational principle of large language models.

Some scholars claim that the success of AI and the principles of large language models are "inexplicable" — but this is true only if one adheres to nativist theories and rule-based frameworks, which can never adequately explain a probabilistic system like language. In the early days of machine translation, two approaches emerged: a rule-based approach and a probability-based approach, reflecting two opposing views on whether language is fundamentally rule-based or probabilistic. The rule-based approach achieved an accuracy rate of only around 70%, arguably capturing the portion of language that is "to a large extent regular." The probability-based approach was neglected at the time due to limited data, inadequate computing power, and unsophisticated algorithms — but these three obstacles have since been overcome, propelling AI to unprecedented heights. What accuracy does the probability-based approach now achieve? Close to 100% for the roughly 70% of language that is regular, and over 90% for the remaining 30% that is irregular, yielding an overall accuracy rate above 95%. Language, then, is not a rule-based system but a complex adaptive system grounded in probability.

Does deep learning function the same way the human brain learns? Some claim the two are completely different; others argue they are identical. Both views are one-sided — in reality, the two share both similarities and differences. Their primary similarity lies in adherence to the basic principle of probabilistic matching. A large body of experimental evidence in psychology has confirmed probabilistic word segmentation (i.e., statistical learning of speech) in child language acquisition, establishing it as a mature research paradigm; experiments have shown that the human brain perceives and comprehends language predictively, through the mutual matching of input signals' natural features with probability patterns stored in memory.

Humanity has developed numerous scientific and technological innovations by

imitating living organisms, and AI is an incomplete imitation of how humans acquire knowledge and learn language. Artificial neural networks are modeled on the neural networks of the human brain, formed by synaptic connections between neurons; AI can thus be regarded as an incomplete replica of the human brain, or, in Shi Youwei's words[1], "a quasi-bionic product." The so-called "mental lexicon" is the memory repository of the human brain, where words are retained in long-term memory along with their structural and contextual information — analogous to the word-vector database of large language models, in which connection strength corresponds to probability weighting. The success of artificial neural networks, deep learning, and large language models is, to a large extent, a triumph of bionics.

This also offers a simple explanation for a widely observed phenomenon: both child language and AI-generated language rarely contain grammatical errors, for the same underlying reason — the input consists of well-formed linguistic data, and the output is therefore well-formed too.

5. What Are the Differences Between AI Language and Human Natural Language?

With the rapid development of AI, people have begun to debate whether AI can become silicon-based life, whether it might surpass human carbon-based life, and even whether silicon-based life could eventually replace carbon-based life. Ilya Sutskever, former Chief Scientist of OpenAI, has expressed deep concern that large language models may have developed a form of self-awareness, and Elon Musk has issued similar warnings about the potential emergence of self-awareness in ChatGPT. The development of AI has given us the opportunity — and the means — to re-examine the distinctions between life and non-life, consciousness and non-consciousness, thought and non-thought, and language and non-language.

Having discussed, in the preceding sections, the challenges large language models pose to mainstream linguistic theory and human language, this section turns to the challenges they pose to humanity itself. The question can be broken into three levels: (1) What is the fundamental distinction between life and non-life — that is, between living and non-living things? This concerns whether AI can possess life. (2) What is the key difference between

[1] Personal communication.

artificial intelligence and human intelligence? This concerns whether AI is capable of self-awareness and thought. (3) What is the primary distinction between AI language and human natural language? This touches on the similarities and differences between human and machine language learning.

Distinguishing these three levels helps clarify the overall question. People may disagree on the first — the distinction between living and non-living things. Those who agree on the first may still diverge on the second, namely whether linguistic knowledge and thought can be differentiated. And even those who agree on the first two may differ on the third: how to characterize the nature of AI-generated language.

The first question is relatively easy to resolve: AI can never possess life. The term "artificial intelligence" was itself a telling choice, since "artificial" essentially means "not genuine." The world is composed of matter, energy, and information; the essence of life lies in an organism's capacity to obtain energy for survival and reproduction through the exchange of information and matter with its external environment. This endogenous, sustainable balance between energy acquisition and consumption allows life to perpetuate itself — the core criterion by which life is defined, and one that AI clearly cannot meet under current understandings of biology. The notion of "silicon-based life" remains, for now, a fanciful figure of speech.

The second question concerns the fundamental distinction between artificial and human intelligence. Building on the answer to the first, human intelligence is grounded in life, whereas AI is not. The defining feature of autonomous consciousness is subjective agency — the capacity to independently set goals, raise questions, and make decisions. AI does not possess this capacity. Although AI can produce fluent and coherent linguistic output, fluency does not equate to autonomous thinking: linguistic ability is not the same as the capacity for thought. Humans routinely create tools that surpass their own capabilities — cars run faster than humans, ships travel farther than humans can swim — so it is unsurprising that AI should surpass human capabilities in various respects. But every ability AI possesses, linguistic or otherwise, stems from human intelligence: from the decisions, design, and operation that brought it into being. Deprived of human guidance and control, AI would be incapable of anything at all.

The third question compares AI language with human language, and bears most directly on linguistics. Section 4 already highlighted several similarities between the two: human

language is a probabilistic system, and both first- and second-language acquisition rely on probabilistic matching; large language models likewise predict linguistic output based on the co-occurrence probability of words and phrases, itself a form of probabilistic matching. A further parallel is worth noting. Children suddenly begin producing large numbers of words and sentences between eighteen and twenty-four months of age — a phenomenon known as the "language explosion." Large language models exhibit an analogous explosion: once training parameters reach fifty billion, their performance grows increasingly humanlike (Feng and Zhang 2024). In essence, when the probabilities within a complex adaptive system accumulate sufficiently and reach a tipping point, language emerges.

We can now turn to the differences between AI language and human natural language. The essential gulf between them is that AI possesses neither life nor autonomous consciousness. As noted earlier, human language is inseparable from thought, while AI-generated language is divorced from thought — a fundamental difference that underlies many of the shortcomings scholars have identified in AI. AI lacks emotional expression and pragmatic competence: it struggles to understand ambiguity, irony, puns, humor, and other pragmatic meanings in human language, and often produces convincing-sounding but meaningless text. More importantly, AI has no value system, no sense of justice, and no moral compass; it cannot distinguish truth from falsehood, or honesty from deception (Shi 2023). Because AI language is divorced from thought, it lacks the capacity for truth-value judgment and is therefore unreliable — humans must review and filter its output before it can be safely used.

Humans possess the capacity for both language and thought; AI possesses only language, not thought. Human thought precedes, surpasses, and generates language. Because language is derived from thought, human language can reflect part of the process and outcome of human thinking — which is precisely why some people mistakenly believe AI possesses autonomous consciousness.

Human language is grounded in embodied experience, including the background of both interlocutors, the situational context of speech, and other contextual information. Beyond intralinguistic relations, humans thus also acquire knowledge of the connections between language and the external world. AI systems, by contrast, receive only textual input, and can therefore capture only the internal relations between words and sentences. For this reason, some scholars describe AI's linguistic ability as mere "linguistic competence" rather

than "intelligence" (Li 2024), and its knowledge as "linguistic knowledge" rather than "embodied knowledge" (Chen and Chen 2024) — a further sense in which AI remains an incomplete imitation of human cognition. Human language is, moreover, subject to forgetting, psychological preference, and other factors entirely absent from large language models.

It has long been noted that AI requires massive quantities of data — billions or even hundreds of billions of tokens — whereas child language acquisition appears to proceed under a "poverty of the stimulus." Focusing on this quantitative contrast, however, only scratches the surface; what truly matters is a profound disparity in quality. The input children receive through embodied interaction is high-quality, efficient data that integrates speech, semantics, context, events, characters, scenes, appraisal, preference, color, sound, smell, taste, and texture across multiple channels and modalities simultaneously. This data is stored incrementally and optimized in real time through interactive feedback, with probabilistic weights (i.e., connection strengths) continuously adjusted. The data on which AI is trained, by contrast, is comparatively low-quality, inefficient, and inconsistent — consisting only of single-channel, unimodal text — and therefore requires extensive retrospective training and adjustment merely to approximate human interaction. Although newer AI models can process multimodal input, there remains a long way to go before they integrate these modalities with language as seamlessly as humans do.

In fact, the vocabulary exposure of three-year-old children is estimated at roughly 13 to 45 million words (Hart and Risley 1995). If one factors in the multimodal information associated with each word — speech, semantics, context, events, characters, scenes, and so on — and assumes each word-vector carries roughly 100 parameters, the total data input children receive, while not equal to that of AI, is not as disproportionate as it might first appear. Moreover, the optimized linguistic input children receive is far superior in quality to the heterogeneous data on which AI is trained. Why, then, does AI require ever-increasing quantities of data? Because the process resembles panning for gold in sand: the heterogeneous corpus is merely "sand," and only through extensive training, adjustment, and optimization can the "gold" of valid linguistic knowledge be extracted. What is less appreciated is that the data children receive is already "gold."

Finally, and most importantly, AI has no individuality. Because the databases underlying large language models are drawn from the internet, it is impossible to distinguish

among the countless individuals who contributed to the corpus. AI cannot, therefore, understand the varying degrees of intimacy that characterize human interpersonal relationships. Every individual in a human social network, by contrast, is unique, and human language is inherently individualistic — the fundamental difference between AI language and human natural language (Shi 2023).

This raises an intriguing question. AI deep-learning systems can be used for translation between languages, as well as for question-answering and conversation across different languages, all within the same underlying system and without structural modification. Could the "universal grammar" pursued by generations of linguists have, in some sense, already been realized by AI?

6. Conclusion

Two important recent developments in AI merit attention here. First, OpenAI has launched its latest reasoning model, GPT-o1, which adopts a "chain of thought" (CoT) training paradigm and has substantially improved the model's reasoning ability; the new model has reportedly reached a "PhD level" of performance on a number of evaluation metrics. OpenAI CEO Sam Altman has stated that AI's improved general reasoning capability represents a new paradigm for the field. Second, Fei-Fei Li, founder of ImageNet, has co-founded a spatial-intelligence company (World Labs), identifying spatial intelligence as a new research frontier in AI; she believes we are in the midst of a "Cambrian explosion," with potential AI applications and models emerging not only in text but in pixels, video, and audio. Visual-spatial intelligence, in this sense, is as fundamental to cognition as language. And as countless people use AI every day, they are, in effect, training it — making it increasingly aligned with human preferences. The future of AI holds immense potential.

Against this backdrop of rapid AI development, every linguist would do well to reconsider the future directions of linguistics, language teaching, and language research. As Shen (2023) observed, "ChatGPT is both a challenge and an opportunity for us." In a similar vein, Li (2023) noted that "this will help unravel the mystery of first-language acquisition and provide new insights for second-language teaching." Going further, Liu and Zheng (2021) and Liu (2024) argued that "this is the only opportunity for Chinese linguistics to surpass, or even lead, world linguistics." And Yuan (2024) urged that "instead of asking

whether society will abandon linguistics, we should ask what linguistics can truly do for society." These views, from prominent linguists, merit serious attention.

The challenges AI poses to linguistics are, in fact, an excellent opportunity for the discipline to embark on a more scientific path. In a keynote address at the 15th International Symposium on Evolutionary Linguistics this year, I emphasized the idea that different paths can lead to the same destination: "if scholars share the same general direction, different theories and methods will ultimately reach the same conclusions and prove complementary to one another" (Shi 2024). Ideally, different theories and methods harbor no fundamental contradictions and can therefore be integrated into a more universal, comprehensive theoretical system and methodological paradigm. Making linguistics a more scientific field should be our common goal — and Yuen Ren Chao's spirit of "versatility," advocating inclusiveness and openness, embodies precisely this hope for the eventual convergence of different approaches.

The world has entered the age of AI, and everyone's work and life will be affected and transformed to varying degrees. We must first thoroughly revise outdated conceptions, develop a sound understanding of AI, and learn to apply it — becoming adept at conducting language teaching and research with its assistance. At the same time, we must maintain a clear head, think rationally, and objectively evaluate AI's capabilities, since both underestimating and overestimating it are detrimental to using it effectively. We must remain vigilant in scrutinizing AI's outputs and alert to hallucinations — plausible but fabricated content. AI is, at bottom, a tool created and controlled by humans; however powerful its functions may become, now or in the future, this fundamental attribute will never change. Just as we learned to use computers and mobile phones, in the years ahead we will learn to harness AI, adapt to a world it has shaped, and build a better future.

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Case Marking in the Na-Qiangic Languages from a Geolinguistic Perspective

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Abstract: The Na-Qiangic languages, a subbranch of the Sino-Tibetan language family, feature different alignment patterns and a variety of case markers across languages. This study examines the diffusion of transitive subject (ergative) and object (including anti-ergative) markers in Na-Qiangic languages, particularly their relative chronology, through geolinguistic analysis. The findings suggest a strong influence of Tibetic ergativity, but various non-Tibetic forms are found as well. Among these, the U-type marker functions as an object marker in some languages with a continuous regional distribution but as an ergative marker in others, suggesting recent functional development and diffusion.

1. Introduction

This study examines the diffusion of transitive subject (ergative) and object (including anti-ergative) markers in Na-Qiangic languages through geolinguistic analysis. As previous studies have pointed out, case markers were a secondary development in the Tibeto-Burman languages. The Na-Qiangic language group showcases such later developments. This group comprises around 20 genetically related languages that share various typological features. Nevertheless, alignment patterns vary across Na-Qiangic languages, as many as four patterns—nominative-accusative, ergative-absolutive, tripartite, and neutral—are found in them. The forms of the case markers also vary.

This study surveys the ergative and object markers in 37 varieties of Na-Qiangic languages and examines their relative chronology as reflected in their geographical

Shirai, Satoko. 2026. Case marking in the Na-Qiangic languages from a geolinguistic perspective. In LU Lin (ed.) *The Non-Structuralist Turn in Linguistics: Sino-Tibetan Perspectives and Beyond – Papers in Honor of Randy J. LaPolla*, 374–391. doi: https://doi.org/10.5281/zenodo.23790155

distributions.

1.1 Profile of the target languages

The Na-Qiangic languages are spoken in the eastern border regions of the Tibetosphere, from northwestern Yunnan through western Sichuan to southern Gansu, with an enclave in the Chamdo region (Tashi Nyima and Suzuki 2019). This study focuses on the former continuous area in the Eastern Tibetosphere. Figures 1‑4 illustrate the region covered by the study, and Table 1 lists the languages included in the study, with hypothetical genetic groups based on previous studies (Jacques and Michaud 2011, Lai et al. 2020, Honkasalo et al. 2025), the numbers used in the maps, and data sources.

These languages belong to the Sino-Tibetan language family, although their detailed genetic relationship remains unclear. Jacques and Michaud (2011: appendix) proposed the Burmo-Qiangic hypothesis, whereby the Burmo-Qiangic branch is directly derived from Sino-Tibetan and includes the Na-Qiangic subbranch. This view has gained consensus in recent research.

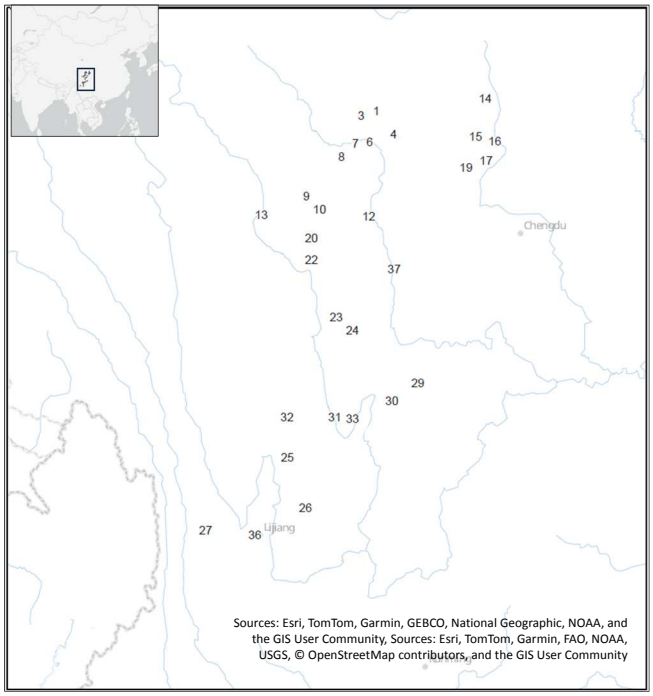


Fig. 1: The Na-Qiangic languages in the dataset

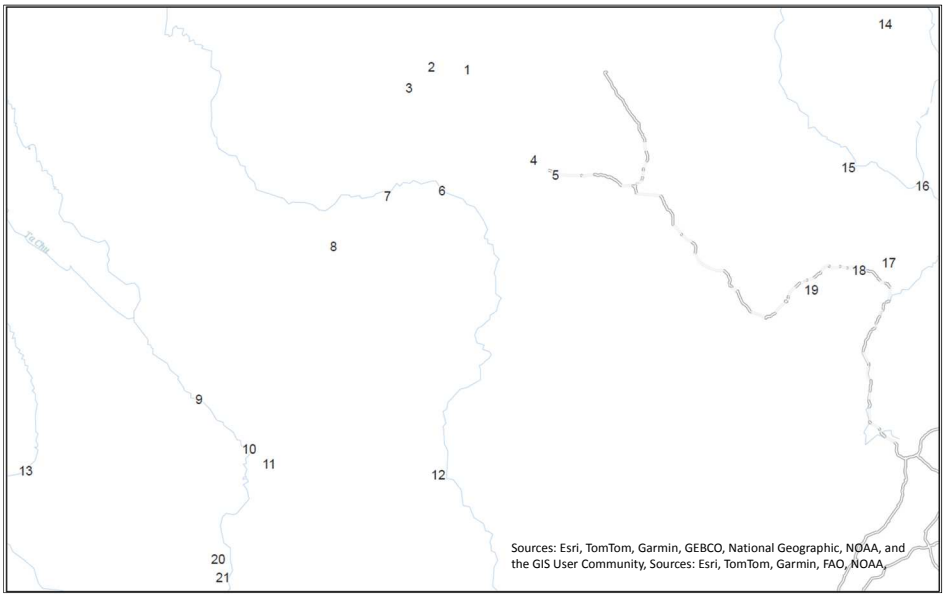


Fig. 2: Languages in the northern area

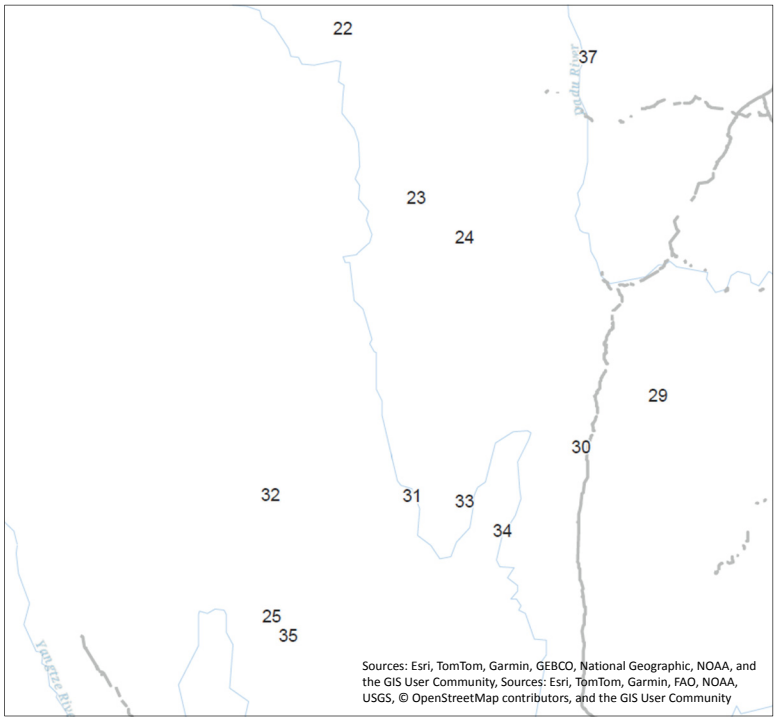


Fig. 3: Languages in the central area

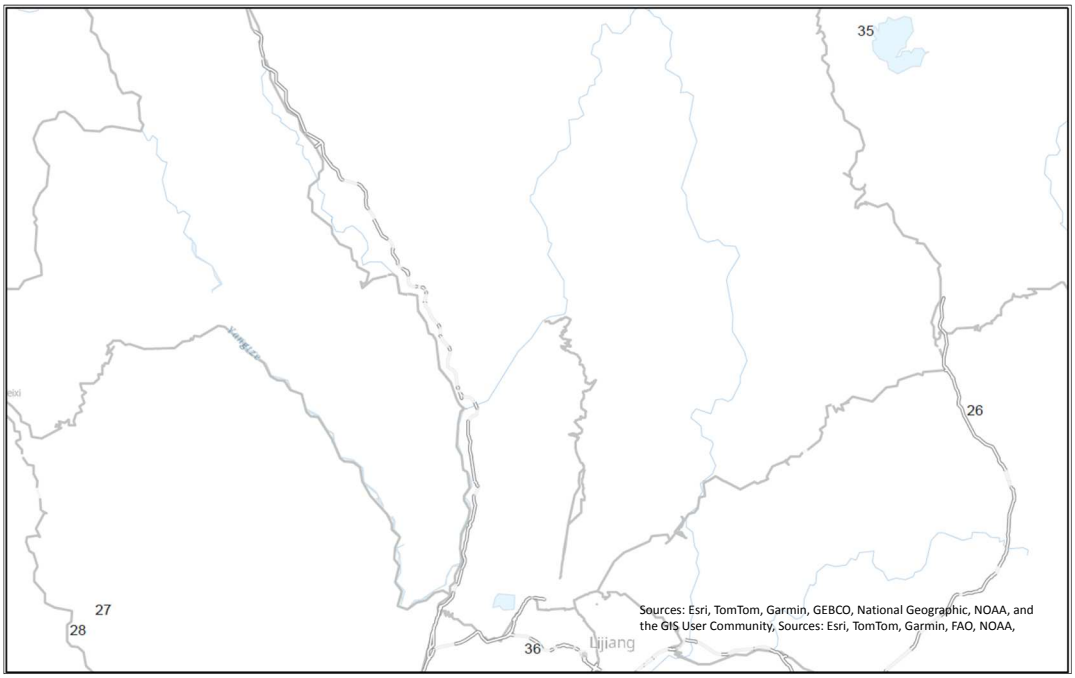


Fig. 4: Languages in the southern area

Table 1: Target languages

Group	No.	Language/Dialect	Source
East	1	Ganmuniao Japhug	Jacques 2017
rGyalrongic	2	Kakhyoris Tshobdun	Sun 2017
	3	rGyaltsu lower Zbu	Gong 2018
	4	Bola Situ	長野 [Nagano] 2018
	5	Cogtse Situ	Nagano 2017
West	6	Yelong Khroskyabs	尹 [Yin] 2007
rGyalrongic	7	Guanyinqiao Khroskyabs	黄 [Huang] 2009
	8	Wobzi Khroskyabs	Lai 2017
	9	Kongse sTau	Jacques, Lai, Antonov & Lobsang Nima 2017
	10	Xianshui sTau	根呷翁姆 [Gengawengmu] 2019
	11	Gexi sTau	黄 [Huang] 2009
	12	Bara Geshitsa	Honkasalo 2019

	13	Nyagrong Minyag	Suzuki 2012
Qiangic (other than rGyalrongic)	14	Aixi Rma	黄、王、毛 [Huang, Wang & Mao] 2019
	15	Ronghong (Yadu) Northern Rma	LaPolla with Huang 2003
	16	Mawo Northern Rma	刘 [Liu] 1998
	17	Madeng (Longxi) Southern Rma	Zheng 2017
	18	Taoping Southern Rma	孙 [Sun] 1981
	19	Puxi Southern Rma	黄 [Huang] 2007
	20	Mätro nDrapa	Shirai's field data
	21	Tratho nDrapa	黄 [Huang] 2009
	22	Waduo nDrapa	龚 [Gong] 2007
	23	Shade Minyag	黄 [Huang] 2023
	24	Darmdo Minyag	黄 [Huang] 1992
	25	Wadu Northern Prinmi	Daudey 2014
	26	Xinyingpan Central Prinmi	Ding 2014
	27	Qinghua Western Prinmi	陆 [Lu] 2001
	28	Dayang Western Prinmi	蒋 [Jiang] 2019
Ersuic	29	Baoan Ersu	张 [Zhang] 2024
	30	Hedong Duoxu	韩、齐、袁 [Han, Qi & Yuan] 2019
	31	Lizu	黄 [Huang] 2009
	32	Shihing (Shixing)	Chirkova 2009, 黄 [Huang] 2009
Naic	33	Luobo Namuzi	黄 [Huang] 2009
	34	Dzolo Namuyi	西田 [Nishida] 2008
	35	Yongning Na	Lidz 2010
	36	Western Naxi	和、姜 [He & Jiang] 1985
Gochang	37	Yutong Gochang	宋 [Song] 2011

1.2 Previous studies

Argument flagging (case marking) is widely found in Tibeto-Burman languages, though the respective forms vary across languages and there are no common cognates. The case-marking systems in Tibeto-Burman might seem relatively old, but each language employs different forms (cf. Huang 2003: 291). However, LaPolla (1994) pointed out that case marking itself is a new development in Tibeto-Burman, referring to the notion of "drift" (Sapir 1921: 150/155). LaPolla (1992, 1995) cited a broad range of examples of ergative and anti-ergative (object) case markers and argued that, because closely related languages often have different markers, these are "very recent" innovations. In particular, regarding the Na-Qiangic languages, LaPolla (1995: 206) claimed that "there is no form we can reconstruct at the Proto-Qiangic level." Huang (2003: 292) also expressed doubts about Proto-Qiang having a case-marking system, citing the significant difference between rGyalrongic and other Na-Qiangic languages.

Shirai et al. (2023) analyzed the alignment patterns in Tibeto-Burman languages using a controlled construction,[1] from the map data of which Shirai (2026: 109) excerpted the target area and rearranged the symbols to focus on the Na-Qiangic languages, as shown in Fig. 5. We find a variety of alignment patterns, including ergative-absolutive and nominative-accusative, even in this relatively small subbranch. This suggests a recent development of grammatical-relation marking.

However, the history of each form has not been examined in detail. This study analyses the diffusion of Na-Qiangic ergative and anti-ergative markers using the geolinguistic method, which is effective for investigating the relative chronology of non-cognate forms (柴田 [Sibata] 1969, Fukushima 2017).

[1] Their examples were limited to highly transitive constructions having highly volitional and affective predicates, definite arguments (cf. Hopper and Thompson 1980), and subject and object at the same level in the animacy hierarchy, as well as having neutral information structure and voice.



Fig. 5: Alignment patterns in the Qiang linguistic area (Shirai 2026: 109)

2. **Ergative markers in Na-Qiangic**

This section presents classified data, distribution maps, and geolinguistic analyses of Na-Qiangic ergative markers. In some languages, the functions of the ergative marker are entwined with semantic factors and information structure. For example, the Bola Situ "ergative" marker *kə* is not used in a neutral predicate but is used when a transitive subject is non-first person and is new information (長野 [Nagano] 2018: 166–167, 212), which is tentatively labeled ergative in this study. However, in Kyom-kyo Situ, the "prominence marker" *kə* marks either a disambiguated transitive subject or a topicalized object (Prins 2017: 217–221), and is tentatively excluded from the study.

2.1 Classification of Na-Qiangic ergative markers

I classified the forms of Na-Qiangic ergative markers in the dataset as follows. Since

we can find a broad range of relatively recent Tibetan influences in Na-Qiangic ergative markers, I list non-Tibetic forms before Tibetan loans to reflect the relative chronology. Numbers in parentheses indicate the number of lects (languages/dialects) with type.

A. no-marking (4): nDrapa dialects (Mätro, Tratho, and Wadu) and Duoxu.

B. U-type.

B-i U (4): Ronghong Northern Rma *wu*, Kongse sTau *-w*, Xianshui sTau *wu*, and Bara Geshitsa *wo*.

B-ii KU (1): Gexi sTau *ɣu*.

B-iii KU+I (2): Western Prinmi dialects, namely Qinghua *gue iɛ* (for singular) and Dayang $gue^{31}je^{31}$ (for singular and dual).

C. ON-type

C-i ON (2): Wadu Northern Prinmi *(g)oŋ* and Xinyingpan Central Prinmi *õ*.

C-ii NON (1): Yutong Gochang *nɔ̃*.

C-iii ON+NI (1): Wadu Northern Prinmi *(g)oŋni*.

D. Tibetan ergative loan

D-i I (8): Mawo Northern Rma *ji*, Yelong Khroskyabs *ji*, Taoping Southern Rma *i*, Puxi Southern Rma *i*, Shade Minyag ji^{33}, Darmdo Minyag *ji*, Baoan Ersu i^{55}, and Dayang Western Prinmi je^{31}.

D-ii KI (9): Kakhyoris Tshobdun *kə*, Ganmuniao Japhug *ku*, rGyaltsu Zbu *kə*, Cogtse Situ *ki*, Bola Situ *kə*, Guanyinqiao Khroskyabs *ɣə*, Yelong Khroskyabs *ɣə*, Nyagrong Minyag ^{h}ce, and Baoan Ersu $kə^{55}$.

D-iii I+KI (1): Baoan Ersu $i^{55}kə^{55}$.

E. Tibetan ablative loan

E-i NI (4): Luobo Namuzi *ɳi*, Wadu Northern Prinmi *ni*, Yongning Na *nɯ*, Western Naxi *nɯ*.

E-ii le (2): Madeng Southern Rma *lè* and Lizu *le*.

X. Others (3): Shihing (Shixing) *rɛ̃*, Aixi Rma *ʂ*, and Dzolo Namuyi *pər*.

Types B-iii (KU+I), C-iii (ON+NI), and D-iii (I+KI) are clearly complex: B-iii combines B-ii (KU) and D-i (I), C-iii consists of C-i (ON) and E-i (NI), and D-iii involves both D-i (I) and D-ii (KI). In addition, Type B-ii might be a fused form of a native morpheme

U (Type B-i) and a loan morpheme KI (Type D-i). These complex forms may reflect long-term language contact.

Although the etymologies of Types B, C, and X are unknown, Types D and E appear to be Tibetan loans. The Written Tibetan ergative marker is {GIS}, of which *-(i)s* is an allomorph following vowels (a zero coda). As Na-Qiangic languages tend not to have codas, Types D-i and D-ii are reasonable as realizations of the Tibetan form borrowed into Na-Qiangic languages. Regarding Types E-i (NI) and E-ii (le), Lidz (2010: 300–302) suggests that they originate in borrowed Tibetan ablative forms (Written Tibetan {NAS} or {LAS}) and are adopted as agentive markers. LaPolla (1995) had already pointed out that ergative-ablative isomorphism is often found in Tibeto-Burman languages.

2.2 Geographical distribution of the Na-Qiangic ergative markers

Fig. 6 shows the geographical distribution of the Na-Qiangic ergative markers in the dataset.

Type A, the no-marking type, is found only in the nDrapa varieties and Duoxu. However, this type is regarded as reflecting the oldest pattern, which has remained unchanged even with the diffusion of case-marking, especially the ergative-marking wave from Tibetan.[2]

Among the forms besides apparent Tibetan loans, Type B is widely distributed both geographically and genetically, as it is found in both southern and northern regions and in genetically rGyalrongic and non-rGyalrongic languages. Type C features a second wide distribution, occurring in three Prinmi varieties in the southern area and in Gochang in the central area.

Among the Prinmi varieties, Western Prinmi has Type B-iii, provisionally regarded as a fused compound of native and Tibetan-loan morphemes, in contrast to the other varieties, which have Type C, probably under the influence of Naic languages, which have Type D-ii. Since the common feature of the Prinmi varieties is a round vowel, B-i (U) and C-i (ON) might be cognate.

Among the Tibetan-loan types, Type D-i (I) is regarded as the oldest. In the colloquial Tibetan of this region, namely the Eastern Tibetosphere, the vowel of the ergative marker {GIS} is generally centralized. In Na-Qiangic languages with a Tibetan ergative loan, Type

[2] LaPolla (2017: 52) notes that "there is no relational morphology that we can reconstruct to P[roto-]S[ino-]T[ibetan] stage."

D-i forms commonly have a front vowel, but most Type D-ii forms have a central vowel, which corresponds to the later colloquial forms. Moreover, Type D-ii is found only in rGyalrongic languages spoken in the north, with the exception of Baoan Ersu in the central region.

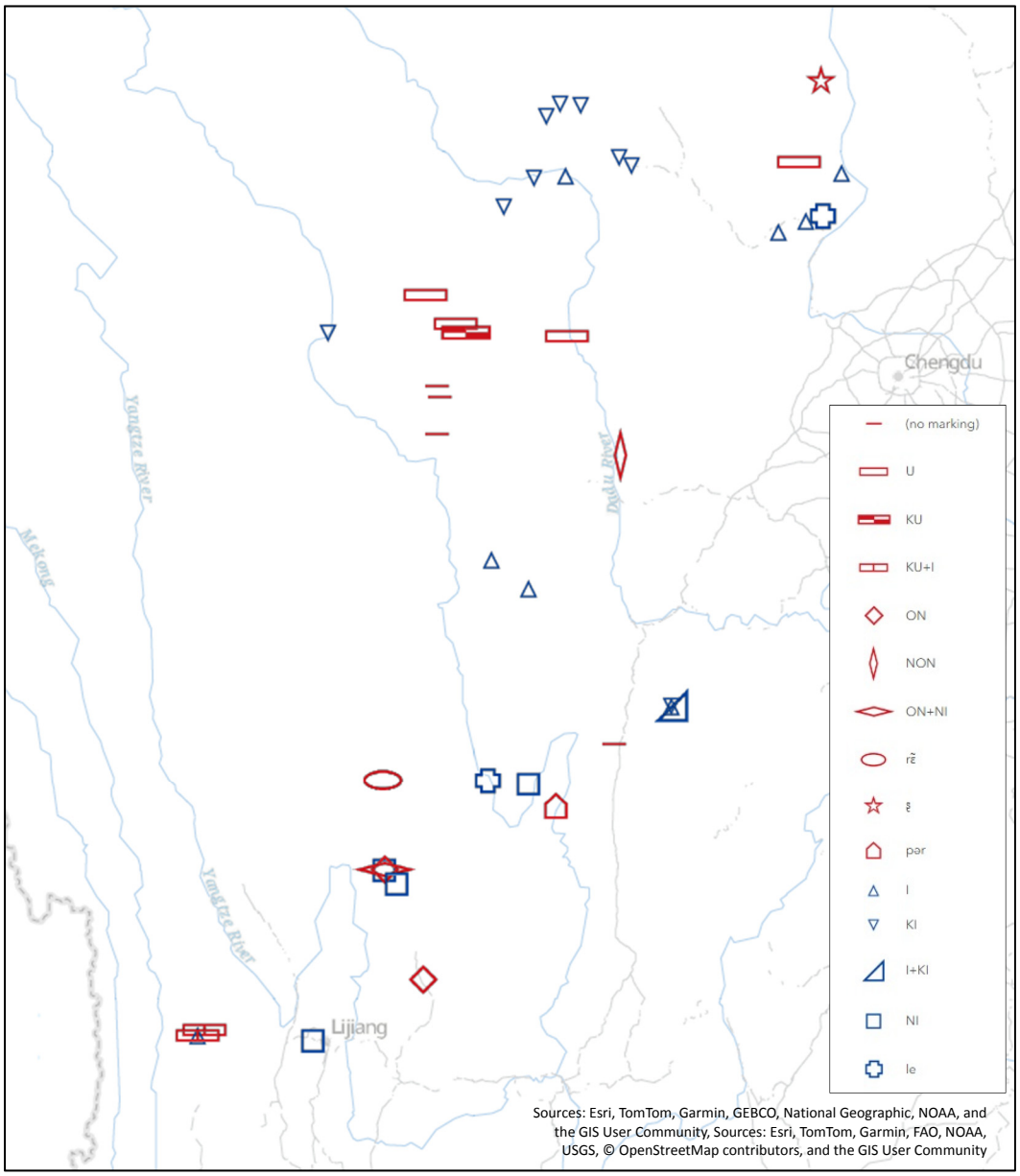


Fig. 6: Na-Qiangic ergative markers

3. Object markers in Na-Qiangic

This section contains classified data, distribution maps, and geolinguistic analyses of Na-Qiangic transitive object markers. The data include the markers for a limited class of nouns, as well as those that primarily mark dative. An example of the latter type is the Mätro nDrapa dative marker *wu*, which is also used with the object of a monotransitive verb; an example of the former type is Mätro nDrapa *pɛrʌ*, which is used only with non-agent humans. However, markers not used with patients of highly transitive predicates have been excluded. For example, in Qinghua Western Prinmi, *tɕi* marks the object of emotion verbs but not the object of other transitive predicates. In addition, those that primarily mark an information structure, for example, the focus-oblique marker *gə* in Bola Situ (長野 [Nagano] 2018: 212–213), are also excluded.

3.1 Classification of Na-Qiangic object markers

Among the 37 lects in the dataset, 23 lack an object marker, thereby sharing the same pattern as Tibetan. I classified the forms of Na-Qiangic object markers in the dataset as follows. Numbers in parentheses indicate the number of lects by type.

A. no-marking (23): Aixi Rma, Kakhyoris Tshobdun, Ganmuniao Japhug, Situ dialects (Bola and Cogtse), Khroskyabs dialects (Yelong, Guanyinqiao, and Wobzi), Bara Geshitsa, Ronghong Northern Rma, Southern Rma dialects (Madeng and Puxi), sTau dialects (Kongse, Xianshui, and Gexi), Darmdo Minyag dialects (Shade and Darmdo), Hedong Duoxu, Luobo Namuzi, Wadu Northern Prinmi, Xinyingpan Central Prinmi, and Western Prinmi dialects (Qinghua and Dayang).

B. sibilant-initial type

B-i SI-type (2): Mawo Northern Rma *ɕi*, and Shihing (Shixing): *sɿ*.

B-ii zie (1): Taoping Southern Rma *zie*

C. U-type (4): nDrapa dialects (Mätro, Tratho, and Wadu) *wu* and Shihing (Shixing) *wu*.

D. VA-type (2): Baoan Ersu va^{33}, and Lizu *wæ*.

E. T-type (3): Dzolo Namuyi *dia*, Yongning *na tɔ*, and Western Naxi *to*.

X. Others (2): Mätro nDrapa *pɛrʌ*, and Yutong Gochang *phø*.

3.2 Geographical distribution of the Na-Qiangic object markers

Most Na-Qiangic languages lack an anti-ergative marker, as Tibetan does. Type A is logically the oldest type, and these languages have retained the non-marking of the anti-ergative (transitive object) argument despite the superstratum pressure from Tibetan.[3]

Nevertheless, 12 of the 37 lects in our dataset have developed anti-ergative markers, whose forms vary significantly, reflecting the shallow time depth of their development. Type B has a relatively wide distribution, though cognacy between Rmaic *ɕi/zie* in the northern regions and Shihing *sŋ* in the southern region is difficult to ascertain. Type C has a second wide distribution, both in nDrapa dialects and Shihing. Types D and E are limited to one subbranch each, namely Ersuic and Naic, respectively. Consequently, I tentatively conclude that Types B and C are older than the other object markers in Na-Qiangic.

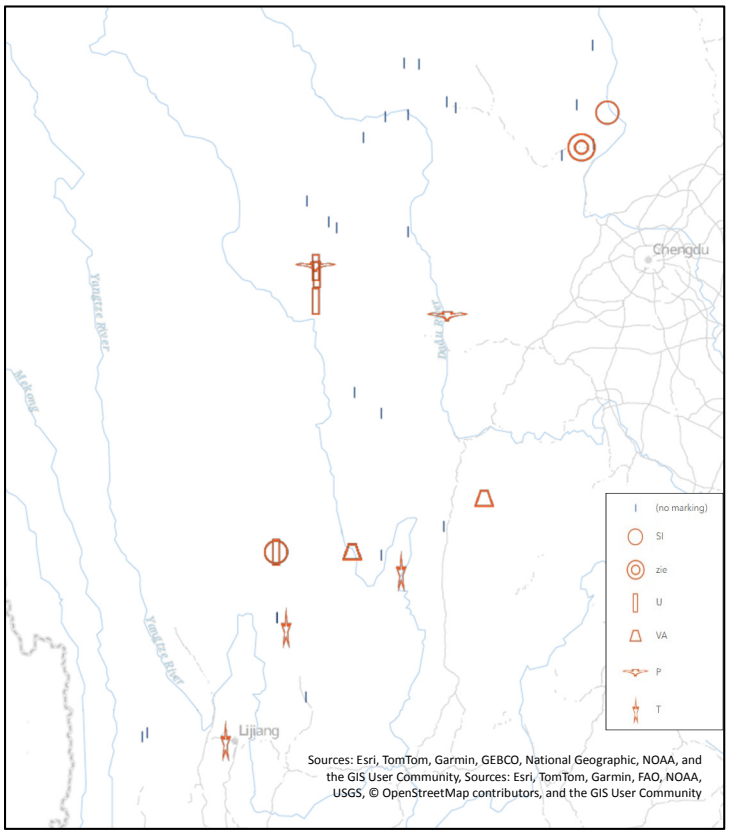


Fig. 7: Na-Qiangic object markers

[3] Janhunen (2007: 97) terms this type of interference "passive negative adaptation."

4. Discussion

Interestingly, the same-form case marker wu has different functions across languages: the Ronghong Northern Rma marker *wu* is the ergative marker (Type B-i), whereas in Mätro nDrapa the marker *wu* is an object marker (Type C). Fig. 8 shows the compiled layers of both ergative markers (Fig. 6) and object markers (Fig. 7). The red horizontal rectangles ▭ indicate Type B-i ergative markers and the orange vertical rectangles ▯ Type C object markers. The former is mainly found in the northern regions, but if we also consider the merged types (Types B-ii and B-iii), Type B (i, ii, and iii) ergative markers show a peripheral distribution in both the northern and southwestern regions. On the other hand, the same or similar forms function as object markers in the central continuous regions, as indicated by the orange vertical symbols. This suggests that the same marker developed into an object marker in the latter lects but into an ergative marker in the former lects, probably under the influence of Tibetan.[4]

[4] We can assume that the original situation was similar to that of Kyom-kyo Situ. As mentioned in Section 2, the Kyom-kyo Situ marker *kə* primarily functions as a discourse marker marking either a disambiguated transitive subject or a topicalized object (Prins 2017: 217–221).

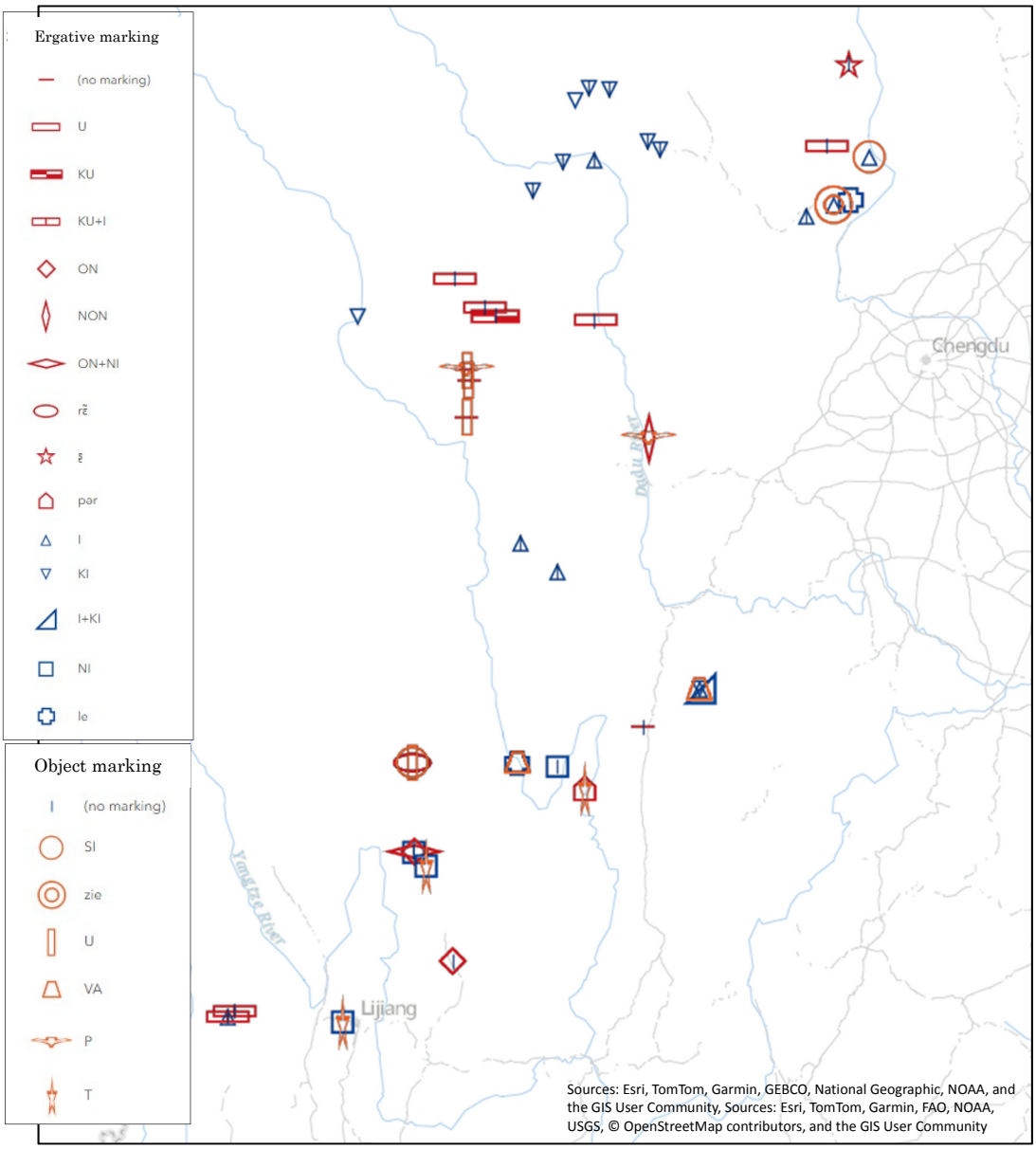


Fig. 8: Na-Qiangic ergative and object markers

5. Conclusion

This study employed the geolinguistic method to examine the development of ergative

and object case markers in Na-Qiangic languages, with a focus on their relative chronology. A limited number of lects lack an ergative marker, whereas as many as one-third of the lects have an object marker. Despite the assumption that the proto-language lacked either marker, we observe imbalances that strongly suggest the influence of Tibetic ergativity.

We found two types of non-Tibetan ergative markers, the U-type and the ON-type. The relative chronology of these types is difficult to ascertain. The Tibetan ergative loan type is further classified into two types, the I-type and the KI-type, of which we conclude that the former is older.

Among the object markers, two types are older than the others: the sibilant-initial type and the U-type. Both are found in different subgroups. Moreover, the U-type object markers have forms identical or similar to the U-type ergative markers. In other words, markers with the same or similar forms function differently in various lects. Finally, the U-type object markers show a continuous distribution in the center of the Na-Qiangic area, suggesting areal development.

Acknowledgments

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Non-Structuralist Linguistics: Paradigm Change and Continuity from a Kuhnian Perspective

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Abstract: Drawing on Thomas Kuhn's model of scientific revolutions, this paper examines the emergence of Non-Structuralist Linguistics in relation to paradigm change and continuity in linguistic theory. It traces developments from Romanticism and Neogrammarianism through Structuralism to the emergence of non-structuralist approaches, considering how competing paradigms challenge earlier assumptions while retaining aspects of established traditions. The analysis is illustrated through two case studies: Systemic Functional Linguistics (SFL) and the Creation of Meaning theory. While acknowledging Structuralism's contributions, the paper argues that its emphasis on formal systems marginalises meaning, context, and actual language use. By contrast, Non-Structuralist Linguistics views language as dynamic, functionally motivated, usage-based, and embedded in cognitive, social, and cultural processes. The two case studies illustrate the importance of empirical induction, holistic analysis, variation, and context in meaning-making. The paper concludes by advocating theoretical flexibility and historical self-awareness, grounded in recognition of the socio-historical contingency of linguistic theories.

1. Introduction

1.1 Grammatical Theories and Their Assumptions

There is a curious phenomenon in linguistics: when studying sociolinguistics, linguists readily employ multiple frameworks (diglossia, language contact, code-mixing). Similarly,

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pragmatists utilize diverse approaches (Grice's maxims, Relevance Theory, Speech Act Theory). Yet in grammatical theory, linguists typically identify exclusively with a single school—Romanticist, Neogrammarian, Structuralist, Formalist, or Functionalist. Such monolithic identification is unusual elsewhere in linguistics (Sapir, 1929).

This article explores major grammatical theories and their contributions to Non-Structuralist Linguistics. Our aim is to encourage reflection on theoretical assumptions often adopted unconsciously.

1.2 The Hidden Influence of Structuralism

In 1951, Zellig Harris and Trager & Smith published foundational structuralist texts assuming that "analysis of a language should begin with phonology, that the methods used for phonological analysis should be extended to morphology and syntax, that there should be no mixing of levels, that distribution was the key to determining the elements of the language, and that meaning should play little or no role at all in the analysis and description of linguistic structure" (Falk, 2023, p. 540).

This framework became so ingrained in linguistic practice that we rarely question it. Most contemporary grammars follow a building-block structure (sounds → morphemes → word classes → sentences), replicating "standard operating procedures" inherited from American Structuralism without recognising their theoretical foundations (Dryer, 2006). Even Basic Linguistic Theory—defined by Dixon (1997) and popularized by Dryer (2006) as taking "as much as possible from earlier traditions and only as much as necessary from new traditions"—retains core Structuralist assumptions about discrete linguistic elements (Dryer, 2006, p. 211).

Three consequences follow from this unawareness: First, we remain oblivious to alternative theories. Second, we accept a priori assumptions without recognition. Third, lacking awareness of alternatives, we risk force-fitting languages into theories through deductive rather than inductive analysis (LaPolla, 2022a).

1.3 Non-Structuralist Linguistics and Kuhn's Framework

Following LaPolla (2022a), we use "Non-Structuralist Linguistics" rather than Noonan's (1999) "Non-Structuralist Syntax" because it encompasses broader approaches—including cognitive linguistics and the Romantic tradition—that treat language as dynamic

communicative behaviour shaped by meaning, context, cognition, interaction, culture, variation, and history. Of course, Non-Structuralist Linguistics is also functionalist in orientation. Importantly, Non-Structuralist Linguistics is not a single grammatical theory but a paradigm encompassing multiple theoretical schools united by rejection of language as a static, self-contained system of discrete units.

To analyse how Non-Structuralist Linguistics emerged as a paradigm in response to Structuralism, we adopt Thomas Kuhn's (1970) model from The Structure of Scientific Revolutions. Kuhn's framework is particularly suited to this task because it recognizes that new paradigms emerge partly as reactions to older ones, influenced by specialized journals, societies, and training backgrounds. Crucially, Kuhn emphasizes how textbooks shape scientific perception, often propagating terms while obscuring limitations and socio-political contexts (Kuhn, 1970).

Kuhn's framework is especially apt for linguistics, which spans both natural sciences (speech physiology) and behavioural sciences. As Sapir (1929) notes, language is simultaneously a physiological phenomenon and "a type of human behaviour" shaped by socio-cultural factors (pp. 213–214). Unlike Popper's (1957) binary falsifiability criterion, which casts judgements in terms of scientific versus pseudoscientific, Kuhn's epistemologically flexible model accommodates science as "a set of beliefs, assumptions, and practices"—far better suited to capturing linguistics' complexity and diversity (Sapir, 1929; Popper, 1957; Kuhn, 1970).

1.4 Article Structure

Sections 3–5 examine three major grammatical traditions—Romanticism, Neogrammarianism and Structuralism (the last including the Prague Linguistic Circle and the London School)—analysing how each conceptualizes language, meaning, variation, and evidence. Section 6 then presents two case studies in Non-Structuralist Linguistics, specifically Systemic Functional Linguistics and LaPolla's Creation of Meaning theory, using naturally occurring Singapore Fuzhou examples to demonstrate how theoretical assumptions shape analysis, while consolidating the defining characteristics of non-structuralist approaches.

2. Conceptual Framework

2.1 Kuhn's Model of Scientific Development

For those unfamiliar with Kuhn's (1970) work, we provide a brief summary of his model. Notable works utilising Kuhn as a lens include Studies in the History of Linguistics – Traditions and Paradigms, edited by Dell Hymes (1974), and Olga Amsterdamska's (1987) Schools of Thought: The Development of Linguistics from Bopp to Saussure. More recently, Kornmesser's (2014) article compares the paradigmatic worldviews of Generative Grammar and Construction Grammar, arguing that competing paradigms can co-exist in a given time frame.

In Kuhn's (1970) account, a paradigm refers to a worldview and common standard that scientists take for granted, defining what methods are used, which problems are worth tackling, and how they are solved (see Fig. 1).

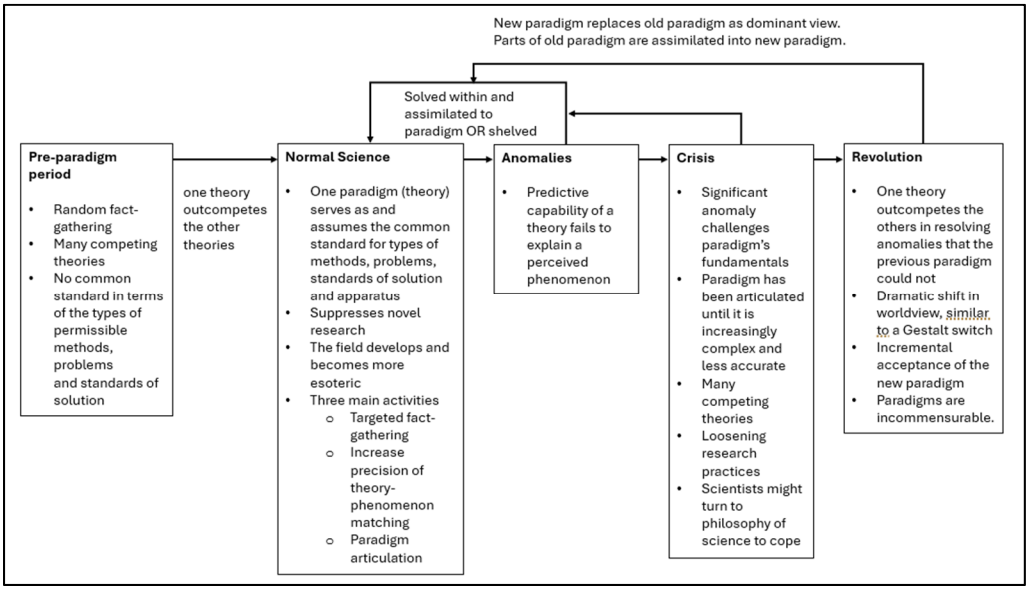


Fig. 1: The Structure of Scientific Revolutions: Kuhn's Model of Paradigm Displacement

Before a paradigm emerges, scientists observe and describe phenomena without uniform procedures. For linguistics, where language study dates to Ancient Greece, this pre-paradigm period is difficult to trace; once terminology standardising language description is established, a paradigm has effectively emerged (cf. Bolinger, 1975, p. 506).

Once established, paradigms enable normal science-work within accepted methods and problems-which aims not "to call forth new sorts of phenomena" (p. 24) and thus suppresses novel research. Yet normal science is "a ramshackle structure with little coherence among its various parts" (p. 49), allowing parts of old paradigms to coexist with new ones, as competing paradigms do in linguistics (Kornmesser, 2014). Three activities dominate: targeted examination of phenomena, increasing precision of theory-phenomenon matching, and "articulating" the paradigm through empirical work.

Discrepancies between prediction and observation are met first with disbelief, on the assumption that "something had gone wrong" (p. 57); anomalies are then either absorbed to articulate the paradigm or shelved. When accumulated anomalies produce a "more profound awareness" of the paradigm's limitations (p. 67), crisis ensues. Scientists respond in three ways: (a) articulate the paradigm further, which grows increasingly "cumbersome and inaccurate" (p. 69); (b) shelve the anomaly, sometimes for external reasons such as politics; or (c) propose alternative theories, proliferating competing accounts as in the pre-paradigm period. "Crises are a necessary precondition for the emergence of novel theories" (p. 77).

When one theory outcompetes the rest, conversion is gradual and cannot be settled by logic alone, because paradigms are "incommensurable"-their metalanguage and assumptions differ, leaving no neutral standard of comparison-so the new paradigm is not necessarily more accurate. Replacement is likewise incomplete: old measurements and instruments persist, reinterpreted within the new paradigm. In terms of worldview, conversion resembles a gestalt switch: "scientists see new and different things when looking with familiar instruments in places they have looked before" (p. 111), and the shift involves the whole construct, not isolated parts.

2.2 Guiding questions

Guided by Kuhn's (1970) model, we will ask the following questions for each grammar theory presented: (1) What are the theory's key arguments for refuting the previous paradigm? (Crisis); (2) What are its fundamental beliefs? (Scientific Revolution)—specifically, (a) how does it define language and view form, meaning, and variation; (b) how does it employ methodology and claim scientific status; and (c) what is its conception of linguistic knowledge and communication; (3) Who are the key figures and works articulating the paradigm? (Scientific Revolution and Normal Science); and (4) What are its shortfalls and

who identified them? (Anomaly). The questions are not necessarily addressed in this order in each section. Sub-questions 2(b) and (c) are taken directly from LaPolla's (2022a) article, with an additional question on form, meaning, and variation written by us.

2.3 Illustrative Data

We apply Structuralism (Section 5), Systemic Functional Linguistics (SFL; Section 6.1), and Creation of Meaning (Section 6.2) to two utterances, Examples (1) and (2), from Sim (2022), a sketch grammar of Fuzhou (福州话), a Sinitic dialect spoken in Singapore based on the Minhou variety. The Singapore Fuzhou variety is moribund, nearly extinct and restricted to the grandparent generation (Lewis & Simons, 2010), featuring language contact and borrowing from Malay, Southern Min, and Cantonese.

In this utterance, speaker GBL recounts the frog picture story (Mayer, 1969). Prior context: the boy searched for his frog among trees while his dog barked at a beehive. This utterance notes that the bees were disturbed and became very angry. Subsequent context: the bees chased the dog and its owner, who fled.

(1) mi$ʔ^{5}$p^{h}u$ŋ^{55}$ k^{h}œy$ʔ^{24}$ i^{55} t͡s^{h}a^{33} tuɔ$ʔ^{5}$, xuɔ^{21} ia^{242} tuai^{21}

蜜蜂	乞	伊	吵	着	火	野	大
bee	AGT	3SG	make.noise	ACV	fire	very	big

'The bees were disturbed by (the dog and) were very angry.'

GBL_Frog_Story_31-32

In this second utterance, speaker YCT recounts a story of how he entered a bookstore situated in Fujian province asking to buy a dictionary on the Fuzhou variety. The customer service personnel remarked, "We do not have this dictionary. Why are you coming to ask for this kind of dictionary (despite) such a time?" She went on to use the idiomatic phrase below:

(2) ny^{33} t͡sia^{53}nɛi^{242} a^{33}: "t͡s^{h}ia$ŋ^{21}$-ma$ŋ^{51}$ li^{32} muo$ŋ^{21}$ u^{53}-a$ŋ^{21}$"

汝	真是	啊	青盲	来	问	乌暗
2sg	really	prt	blind.person	come	ask	darkness

'You are really ah… "(just like) a blind person asking whether it is dark."'

Literal: You are really… simply asking me a useless question.

YCT_Bookstore_4

3. Historical Foundations and the Romanticism Paradigm

3.1 Pre-Paradigm Period and the Socio-Historical Context of Romanticism

Before formalized linguistic paradigms emerged, the study of language in the ancient world was shaped by two forces. First, the invention of alphabetic writing made the correspondence between sound and symbol salient; as Goody and Watt (1963) argue, the alphabet foregrounded to human consciousness the "socially-conventionalised pattern of sound" in language, and literacy in turn enabled the explicit segmentation of words and ideas, encouraging the Greeks to view language—and knowledge itself—as divisible into discrete units (pp. 314–316, 331). Pre-Socratic philosophers accordingly adopted this atomic approach, finding it analytically useful (Amsler, 2023: 11). Second, the spread of empires and multilingualism made the notion of a standardised variety prominent, and language use came to be studied prescriptively by grammarians whose rules were often anchored in religious texts (Amsler, 2023). This long tradition lies on the boundary between Kuhn's pre-paradigm and paradigm stages: a stable inventory of Latin-based categories (noun, verb, case, mood) was already standardised across European scholarship, so a shared descriptive vocabulary—if not yet a shared method—pre-existed Romanticism (Section 2.1).

At the turn of the 19th century, widespread concern over national identity emerged in Europe, catalysed by the French Revolution and the decline of Church authority following the Enlightenment. This climate prompted German philosophers like Herder and Fichte to link language with national identity. Simultaneously, Latin's dominance waned as vernaculars were grammaticised-a process accelerated by the printing press and public education. However, earlier language descriptions often force-fitted languages into Latin or Sanskrit frameworks. For instance, Spanish missionary Francisco Varo's *Arte de la lengua Mandarina* (1703) assumed Mandarin had the same parts of speech as Latin (Zhao, 2025). It was against this backdrop of atomistic analysis and prescriptive Latinization that the Romantic paradigm emerged as a revolutionary approach to understanding language on its own terms.

3.2 Fundamental Beliefs and Methodology of Romanticism

Wilhelm von Humboldt and Heymann Steinthal fundamentally rethought what language is and how it should be studied. They viewed language as expressing a speaker's

collective worldview (Weltanschauung), where each language provides unique conceptual limits and possibilities (Humboldt, 1963). Rather than ranking languages hierarchically, they advocated celebrating linguistic diversity as reflecting the "unique character of a nation," with Humboldt's linguistic notes spanning over 200 languages demonstrating this commitment.

Romanticists treated language as holistic and dynamic. Similar to human physiognomy, language must be viewed as a unified whole rather than simply grammatical components. Humboldt emphasised that "the concept of form in languages stretches far beyond the rules of syntax and word formation" and includes cultural and situational context (Humboldt, 1963, p. 283). Form and meaning vary contextually depending on the speaker's worldview and communicative intent—what Humboldt called the "Gestalt of the communicative act" (Humboldt, 1836/1988, p. 152). Crucially, language is not a finished product but an activity (energia): "language is not a work (ergon) but an activity"—emerging through speaking and thinking rather than existing as a static, completed entity (Humboldt, 1963, p. 280).

This conception of language demanded new methodology. Rejecting reliance on written grammars and prescriptive approaches, Romanticists advocated studying natural, spoken language to examine its "living essence," employing inductive, language-specific analysis using the language's own categories rather than imposing Latin or Sanskrit frameworks. Fieldwork exemplified this approach—evidenced by the Grimms' collection of German fairy tales in both oral and written forms.

3.3 Arguments Against the Previous Paradigm and Key Anomalies

Romanticists opposed prescriptivism and language ranking, rejecting the notion that some languages were "primitive" or inferior. Humboldt argued that "crude and uncivilised languages are quite capable of excellences of structure" and could express complex concepts in single words where others required multiple (Humboldt, 1963, pp. 264–265). Rather than analysing all languages through Latin as a deductive framework, they insisted on studying each language on its own terms and rejected written-text-only approaches, emphasizing natural speech over textual analysis.

However, their metaphor of "language as organism" (growing and decaying) proved misleading. Humboldt's references to Latin "degenerating" while Romance languages "blossomed" were easily misinterpreted as suggesting language hierarchies—contradicting

his own advocacy for equality. The Neogrammarians would later criticize such metaphorical language as unscientific (Section 4).

3.4 Lasting Contributions

Humboldt's methodology profoundly shaped modern anthropological linguistics. Franz Boas adopted and refined his data collection methods, establishing the Boas Trilogy (texts, reference grammar, dictionary) as a standard for language documentation (LaPolla, 2020a). Edward Sapir and Benjamin Lee Whorf inherited Humboldt's belief that language shapes thought, contributing to the Sapir-Whorf hypothesis. His holistic view of language form—as integrated rather than decomposable—anticipated modern integrationist linguistics and resurfaces in 21st-century cognitive linguistics (embodied cognition, emergent grammar) and approaches viewing language as communicative activity rather than static system.

Paradoxically, Noam Chomsky misappropriated Humboldt in *Cartesian Linguistics*, praising him for universal grammar beliefs while ignoring Humboldt's consistent empirical commitment to linguistic diversity (Forster, 2013; Trabant, 2023).

4. The Neogrammarians: From Romanticism to Structuralism

The Neogrammarians are included primarily to trace how Romanticism evolved into Structuralism. While Romanticists prioritized synchronic studies, philology and diachronic research dominated linguistics through the 19th century.

4.1 Socio-historical Context and Key Figures of the Neogrammarians

Nineteenth-century developments in historical linguistics—including Jacob Grimm's discovery of systematic sound change (Grimm's Law, 1822), the Law of Palatals (1870s), and Karl Verner's reformulation (1875)—inspired young German linguists to believe linguistics had finally achieved scientific rigor. The Industrial Revolution's emphasis on technological progress reinforced faith in scientific methodology. Under positivist and psychologistic influences, the principal Neogrammarians—Karl Brugmann, August Leskien, Hermann Osthoff, Berthold Delbrück, Hermann Paul, and Eduard Sievers—published their manifesto, Morphologische Untersuchungen (1878/1967), expressing dissatisfaction with existing historical linguistics methodology.

4.2 Fundamental Beliefs and Methodology of the Neogrammarians

The Neogrammarians defined language as a psychophysical mechanism combining articulatory phonetics (physical) and analogical formation (psychological). Their central tenet was that sound laws are exceptionless—in a given phonetic environment and dialect, sound A invariably changes to sound B (Osthoff & Brugmann, 1878/1967). They explained apparent exceptions through analogical formation: speakers creating new forms based on existing patterns. For instance, overextending "-ed" to "eat" yields "eat-ed." Crucially, they prioritized diachronic research using the comparative method, viewing synchronic studies as secondary. As Hermann Paul argued, immutable features of language change deserved primary attention; semantics and grammar were considered unimportant (Paul, 1920, as cited in Jankowsky, 2023).

4.3 Arguments Against the Previous Paradigm and Key Anomalies

The Neogrammarians rejected three key Romantic notions: (1) Language decay metaphor—they argued empirically against Schleicher's organic model of language decline; (2) Agglutination theory—they advocated understanding words holistically rather than through inflectional endings alone; and (3) "False analogy"—they adopted neutral terminology, rebuking Wilhelm Scherer for labeling irregular changes as "false." Critically, they pioneered causal uniformitarianism: the principle that "language is subject to the same laws in all periods of its development" (Amsterdamska, 1985: 337), countering the belief that ancient languages operated differently from modern ones.

However, despite claiming methodological reform, the Neogrammarians continued using the comparative method unchanged—lacking genuine methodological innovation (Kiparsky, 1974). More significantly, their exclusive focus on diachronic studies neglected language as a systematic whole. Saussure (1916/2011) criticized this approach as having "no basis in reality" and noted that "fundamental problems of general linguistics still await solution" (pp. 4–5).

4.4 Lasting Contributions

The Neogrammarians significantly influenced Ferdinand de Saussure, who studied at Leipzig (1880). Their psychophysical model appeared in Saussure's work, and their rejection

of language decay metaphors pushed linguistics toward descriptivism and acceptance of dialectal variation. However, their exceptionless rule-based approach—an empirically unsupported assumption—persists problematically in modern linguistics. Ultimately, the Neogrammarians established historical linguistics as a rigorous field but created the conditions for Saussure's paradigm shift: their diachronic exclusivity invited a systematic, synchronic alternative**.**

5. Structuralism

The emergence of Structuralism in the early 20th century overshadowed Romanticism, prioritising formal system over lived language use, abstraction over context, and the idealized speaker over empirical data. Given Structuralism's complexity, we begin with general tenets using Saussure's Cours de linguistique générale and academic summaries (Noonan, 1999; Joseph, 2015; Monville-Burston & Waugh, 2023). We then examine Chomsky's Generative Grammar not as a paradigm rupture but as a reinterpretation of Structuralism's foundational assumptions.

Historiographical accounts have debated whether Generative Grammar represents a paradigm break or theoretical continuity. While early accounts emphasised rupture, revisionist scholarship stressed deep continuities (Hymes & Fought, 1981, pp. 10–20; Matthews, 1993). Matthews demonstrated that core structuralist assumptions—separation of form from meaning, linear sentence composition, and generic grammatical categories—transferred into generative theory with minimal modification. Joseph (2002, 2016) argues that 'American structuralism' begins with, rather than ends with, Chomsky. This revisionist perspective, consistent with LaPolla's (2022) characterization of 'Bloomfield–Chomsky Structuralism,' informs our analysis. Finally, we consider national schools including the Prague Linguistic Circle, the Copenhagen Linguistic Circle, and the London School.

5.1 Socio-historical Context and Key Influences on Structuralism

Political upheavals, mass displacement, and international dissemination. The early 20th century's mass displacement from World War I (1914–1918) and national upheavals facilitated cross-fertilization of structuralist ideas across Eastern and Western Europe and into the US. However, Structuralism's reception differed across nations, possibly due to the

pursuit of “intellectual independence” after German dominance in historical linguistics (Joseph, 2015:432). The London School of Linguistics, for instance, developed a distinct approach that drew upon yet critiqued Structuralism, championing usage-based and context-embedded language analysis rooted in British empiricism.

Anthropology and the scientific pursuit. In the interwar period, anthropologists Franz Boas and Edward Sapir advocated equal treatment of all languages, influencing American descriptive linguistics. Boas established the Boasian trilogy—texts, reference grammar, and dictionary—as the standard for language documentation (LaPolla, 2020a). Simultaneously, Structuralism advanced the Neogrammarians' pursuit of a 'scientific' discipline. Ferdinand de Saussure's posthumous textbook inherited their psychophysical model, employing binary categories (langue/parole, synchrony/diachrony) and natural science analogies—such as explaining signifier/signified as H□O (p. 103) or likening language to atmospheric pressure (p. 112). Though Saussure's family lineage in natural sciences (his father, Henri Louis Frédéric de Saussure, was a mineralogist and entomologist; Seuren, 2018) may have influenced this approach, Joseph (2015) argues that post-war scholars “landed on largely the same things” in their quest for “modern and scientific” methods (p. 432).

5.2 Fundamental Beliefs and Methodology

Fundamental beliefs: language as a system. Saussure (1916/2011) argued that “a language constitutes a system” of symbols where the linguistic sign comprises a signifier (form) and signified (meaning), related arbitrarily through social convention. Crucially, langue—the idealized structure shared by all speakers—constitutes the proper object of linguistic study, while parole (actual usage) is dismissed as unsuitable for science. Saussure claimed “natural data have no place in linguistics” (p. 80), prioritising systematic homogeneity over variation.

Relationally derived values and discrete units. Linguistic units derive value relationally—syntagmatically (through sentence arrangement) and paradigmatically (through opposition to other terms). For instance, English sheep and mutton distinguish animal from meat, whereas French mouton does not; thus their values differ despite denoting the same concept. Following this logic, sentences are treated as self-contained wholes composed of discrete units (nouns, verbs, adjectives). Bloomfield–Chomsky Structuralism radicalised this assumption by claiming syntax is autonomous and “independent of meaning”

(Chomsky, 1957, p. 17).

Methodology and nature of knowledge. Saussure advocated a synchronic approach over the previous diachronic emphasis, concentrating on systematic langue rather than variable parole. Influenced by Émile Durkheim, he recognised language as a "social institution" (p. 91), yet maintained it operates largely outside speakers' conscious awareness. Chomsky adopted this separation through competence/performance, framing linguistics as "mentalistic"—concerned with "discovering a mental reality underlying actual behaviour" rather than behaviour itself (Chomsky, 1957, p. 4). Variation was treated as peripheral, explained by extralinguistic factors rather than as constitutive of linguistic systems.

5.3 Structuralist Schools

Noonan (1999, p. 16) identifies three theoretical configurations within Structuralism: (1) the rationalist–empiricist continuum affecting methodology and conception of science; (2) orientation toward functional versus innate explanations; and (3) the universalist–relativist continuum regarding linguistic universals and conversational data.

American descriptivism and formalism. American Descriptivism, pioneered by Boas and Sapir on Native American languages, treated language as manifestation of thought and culture, insisting on capturing dialectal variation. Bloomfield's *Language* (1933) systematised American Structuralism, adopting a positivist, materialist stance against mentalism. He defined language as conventionalised actions enabling communication—an input–output model where meaning derives from "the situation in which the speaker utters it and the response which it calls forth in the hearer" (p. 139). Unlike Saussure's mentalism, Bloomfield attributed language change to automatic articulatory and acoustical factors (Gray, 1980, p. 8).

Bloomfield introduced the distributionalist method and immediate constituent analysis—recursively dividing sentences into smaller units—fostering a "building block" view of language. Though he acknowledged contextual factors, he insisted analysis "must always start from the phonetic form and not from the meaning" (p. 161). Zellig Harris refined distributionalism, introducing kernel sentences and transformations—proposing that "every sentence of the language is a sum of a product of transformations of kernels" (Harris, 1958, p. 29).

Chomsky shifted decisively from empiricism to rationalism, focusing exclusively on

linguistic form. He postulated an "ideal speaker-listener, in a completely homogeneous speech-community" (Chomsky, 1965, p. 3), abstracting from actual usage. Drawing analogies to computational processes, Chomsky's generative linguistics modelled language as algorithmic output. Rejecting behaviourism, he invoked the "poverty of the stimulus" argument: environmental input is insufficient for language acquisition and sentence production (Chomsky, 1986).

Copenhagen School, Geneva School, and Prague Linguistic Circle. Louis Hjelmslev's Copenhagen School developed glossematics, a formal calculus prioritising langue over parole (Gambarara et al., 2023, p. 478), though the school later adopted functionalist orientations. The Geneva School, represented through Saussure's Cours (1916), compiled by Bally and Sechehaye, bridged Neogrammarian and Structuralist paradigms (Gambarara et al., 2023).

The Prague Linguistic Circle (1926–1949) opposed the Neogrammarian "atomic" conception, developing a structuralist-functionalist theory. Rather than insulating language from extralinguistic factors, it qualified the autonomy of langue, foregrounding function and the social embedding of language. Its work on phonology—the phoneme, distinctive features, and markedness—influenced later domains, and its relational, oppositional view of markedness anticipated later typological research on implicational universals (LaPolla, 2002). The PLC held that "it is more useful to start with function rather than structure" (Sériot, 2023, p. 490), developing "functional sentence perspective" (Mathesius, 1961/1975), distinguishing formal articulation from communicative organization—influencing Halliday's work.

London School. The London School emphasised contextualism. Gardiner advanced ideas foundational to speech act theory and discourse analysis; Firth explicitly rejected strict separation of linguistic levels, developing a contextual theory of meaning emphasizing the "context of situation" and conceiving language as polysystemic (inspired partly by Saussure). The Neo-Firthians—Halliday and Sinclair—extended this legacy through Systemic Functional Linguistics and Corpus Linguistics (MacMahon, 2023; McEnery & Hardie, 2023).

5.4 Key Arguments Against the Previous Paradigm and Anomalies

Early critiques of neogrammarianism. Saussure (1916/2011) rejected the

neogrammarians' atomistic, purely historical approach, arguing their comparative method failed to “illuminate” general linguistics (p. 5). Additionally, he noted that “absolute changes are extremely rare” in diachronic sound laws (p. 144), contradicting the neogrammarian principle of exceptionless laws.

Static analysis and neglect of variation. Structuralism operates as “a theory of 'filtered' perception” (Noonan, 1999, p. 12), where non-essential information is discarded rather than processed, producing a reductionist mental model. By prioritising langue over parole, Structuralism champions an idealized, sterile version of language while ignoring variation and language change. Variation is treated as an “aberration” perpetuated by extralinguistic factors (Noonan, 1999, p. 19). Moreover, studying isolated clauses without context neglects coherence and pragmatic function (Givón, 2001, pp. 16–18).

Noonan (1999) counters that “language, as a product of a living entity, can only be understood as a dynamic system, not simply as a static set of categories and their relations within structures” (p. 18). He advocates a materialist model where “the constructs created by the mind mirror the perceived reality” (p. 20), with syntactic units defined by meaning in actual speech rather than abstract relational categories.

Discrete categories and methodological problems. Drawing on prototype theory, Noonan (1999) argues that perceiving linguistic categories as discrete is erroneous; language change thus appears sudden rather than gradual. Croft (2001) identifies methodological opportunism in the distributional method: one can cherry-pick evidence by selecting constructions to justify categories while ignoring counter-evidence (p. 31). The method assumes universal syntactic elements, ignoring language-specific diversity and semantic roles.

Structural limitations and inadequate explanation. Chafe (1968) notes that “Chomskyan linguistics pictures language in terms of a central syntax within which are generated structures that are then subject to semantic and phonological interpretation” (p. 117), preventing adequate explanation of idioms and their syntactic properties (p. 114). Roy Harris (1981) identifies two fallacies: the telementational fallacy—assuming a priori relations between symbols and mental concepts—and the determinacy fallacy—assuming speakers use identical words for identical ideas (pp. 9–11).

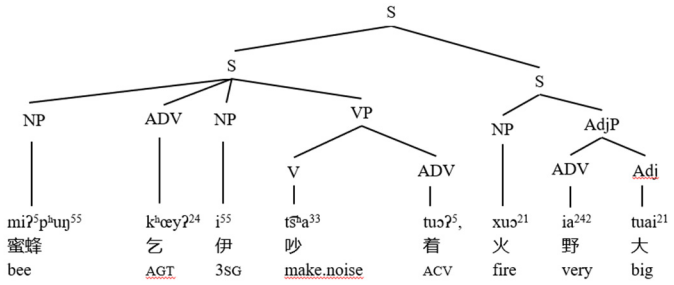
Finally, Structuralism's mentalist explanations do not account for why languages have particular features or their adaptive function. Structural functionalism (e.g., the Prague

Linguistic Circle) appeals to function as explanation, yet this contradicts the structuralist principle of self-containedness (Noonan, 1999, p. 15).

Conclusion. These limitations suggest that exclusively structuralist analysis is insufficient for context-dependent interpretation, discourse function, idiomaticity, variation, and language change. A non-structuralist approach is needed to situate structural patterns within communicative, cognitive, and sociocultural processes.

5.5 Application

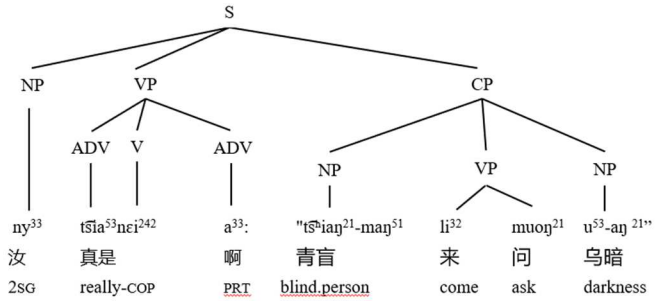
The first Fuzhou example adequately demonstrates issues with the notion of discrete units and values. In Fuzhou, 乞 /kʰœyʔ^{24}/ has a literal meaning of 'give' and can be used as a verb. The choice of labelling it as an adverb that augments the meaning of the verb is derived from the construction itself [NP$_{\text{UNDERGOER}}$ 乞 NP$_{\text{ACTOR}}$ VP] with an achievement verb.



'The bees were disturbed by (the dog and) were very angry.'

GBL_Frog_Story_31-32

The bookstore Fuzhou example (analysed further as Example (2) below) is very similar to that brought up by Chafe (1968), that is, "Sam kicked the bucket", as there are both idiomatic and non-idiomatic shades of meaning. In favouring syntax over semantics and



'You are really ah… "(just like) a blind person asking whether it is dark."'
Literal: You are really… simply asking me a useless question.

YCT_Bookstore_4

phonology, American Structuralism views the idiomatic phrase 青盲来问乌暗 as similar to any other [NP VP NP] construction, failing to account for its idiomatic nuance.

5.6 Contribution to Linguistics

In the first half of the 20th century, the development of general linguistics and the synchronic approach propelled linguistics to be recognised as a discipline with its own rules and system. Beyond linguistics, the structuralist ideas, such as the notion of a system or that the value of a sign is derived from a paradigmatic set of possibilities, took root in anthropology, propagated by Claude Lévi-Strauss. Other fields such as semiology or psychology were also heavily influenced, with psychologist Jean Piaget claiming that he was an early structuralist (Piaget, 1968, as cited in Gambarara et al., 2023).

6. Non-Structuralist Linguistics

Noonan (1999) defines a non-structuralist methodology as a theory that (1) adopts a materialist, rather than a mentalist, model of perception, (2) does not assume that language is built from self-contained, autonomous modules (e.g. syntax, phonology, semantics, pragmatics), (3) allows for non-discrete categories, (4) treats language empirically and analyses actual language use, (5) views language as a real-time, dynamic process rather than an object, and takes account of markedness and frequency, (6) appeals to function as an explanatory framework, (7) does not separate performance from competence, or linguistic knowledge from other kinds of knowledge, and (8) acknowledges universal cognitive categories (pp. 21–22).

Non-structuralist linguistics encompasses a range of approaches that emerged in reaction to Structuralism, including cognitive linguistics (Lakoff & Johnson, 1980; Langacker, 1987/1991; Croft, 2001), Integrational Linguistics (Harris, 1998), and functional approaches such as Systemic Functional Grammar (Halliday, 1985), which subsequently developed into Systemic Functional Linguistics. Other usage-based approaches include Variationist Sociolinguistics (Labov, 1966, 1972; Trudgill, 1974), Conversation Analysis (Sacks et al., 1974; Jefferson, 1978), and Critical Discourse Analysis (Fairclough, 2010; van Dijk, 2008). It is important to note that Halliday and John Sinclair were both students of John Firth, who opposed the structuralist compartmentalisation of phonology and syntax and

regarded the goal of linguistic analysis as "[making] statements of meaning so that we may see how we use language to live" (Firth, 1957, p. 57).

Non-structuralist linguistics is needed because language cannot be adequately explained as a static, self-contained system of discrete forms. Non-structuralist approaches offer tools for analysing how grammatical patterns emerge in use, how they constrain interpretation in context, and how they vary across speakers, situations, and communities.

6.1 Systemic Functional Linguistics

Within this broader non-structuralist landscape, Systemic Functional Linguistics (SFL) represents a central functional framework. Emerging in reaction to formalist Chomskyan generative grammar, functional approaches reconceptualised language as a whole system in which form is shaped by communicative function. Among functional approaches including Givón's work (1979; rev. 2018) and Dik's functional grammar (1997a, 1997b), Halliday's SFL has become the most widely cited and influential.

6.1.1 Socio-historical Factors

Halliday's functional framework stemmed from Firth's theoretical approach, combined with ideas from the Prague School and Hjelmslev (Halliday 1994: xxvi). During World War II, Halliday learned Chinese for military intelligence and subsequently studied Chinese language and literature abroad. He aspired to complete his PhD under Firth at SOAS but was rejected due to communist sympathies. However, he eventually came under Firth's supervision at the London School after his original supervisor's death.

Firth's approach formed the basis of Halliday's systemic functional framework. Firth analysed meaning at multiple levels (phonetic, morphological, syntactical, semantic) using polysystemic analysis with the context of situation as frame of reference. Crucially, Firthian linguistics treats meaning as implying choice at all levels, hence paradigmatic. This notion profoundly impacted Halliday's framework. While developing his SFL approach through PhD analysis of the Chinese Secret History of the Mongols, Halliday employed Firth's paradigmatic axis alongside syntagmatic analysis. SFL also drew from Prague School concepts (Theme and Rheme) and Hjelmslev's notion of distinct language levels, which Halliday expanded into the strata of semantics, lexicogrammar, graphology, and phonology.

6.1.2 Key Figures and Key Works

Hallidayan functional grammar evolved from Scale and Category Grammar (1961) to Systemic Functional Grammar with An Introduction to Functional Grammar (1985), expanding into broader applications across education, translation studies, and social semiotics. Christian Matthiessen collaborated on the third (2004) and fourth (2014) editions. James Martin championed Halliday's Appliable Linguistics at the Sydney School. Ruqaiya Hasan, Halliday's wife, extended SFL through work on discourse, semantics, and social semiotics. Gunter Kress and Theo van Leeuwen adapted SFL's metafunctions to visual grammar in Reading Images (1996; 2020, 3rd ed.).

6.1.3 Fundamental Beliefs

SFL views language as a social semiotic system with interrelated choices for meaning-making. It is functional in three senses: (1) language use shapes the system; (2) different metafunctions—textual, interpersonal, ideational—express types of meaning; (3) a system network of choices constructs forms. Context of situation frames the text; context of culture frames the language system, with linguistic variation conveying meaning in context.

LEXICOGRAMMAR: Unlike Western linguistic tradition treating language as forms to which meanings attach, SFL proceeds from meanings realised through form choice. Grammar and vocabulary comprise the same stratum, hence "lexicogrammar" indicates their interdependence (Halliday 1994: xiv; Halliday & Matthiessen 2014: 7).

CLAUSE AS ORGANISATIONAL UNIT: The clause combines three metafunctional meanings: (1) TEXTUAL—clause as message, creating thematic progression and discourse coherence; (2) INTERPERSONAL—clause as exchange, expressing attitudes and social roles; (3) IDEATIONAL—clause as representation, expressing processes and circumstances. Theme-Rheme structures express message organisation; Mood-Residue structures express interactional meaning; Transitivity structures focus on processes, participants, and circumstances.

SFL targets real language use, making it empirical and scientific. Though not employing traditional hypothesis testing, it is evidence-based, observational, and grounded in data (Halliday & Matthiessen 2014: 7).

6.1.4 Key Arguments Against the Previous Paradigm

Language as Social Behaviour vs Innate Competence: Chomskyan generative theory asserts innate linguistic competence through Universal Grammar, rendering meaning irrelevant. SFL opposes this, positioning language as human social behaviour—a social semiotic system where meaning derives from metafunctional choices. Analysis is text-based rather than sentence-based.

Paradigmatic vs Syntagmatic Relations: SFL arose a reaction to structuralist-formalist focus on syntagmatic relations and syntactic primacy, neglecting meaning. SFL emphasises paradigmatic relations, examining available systemic choices driven by function and meaning-making (Halliday 1994: xxviii).

6.1.5 Criticisms

SFL's social and contextual orientation, paradigmatic emphasis, and discourse focus distinguish it sharply from formal and cognitive traditions. Even among non-structuralist approaches, SFL differs markedly from other functional, cognitive, and constructional theories (Butler & Gonzálvez-García 2014).

Non-mainstream status and complexity. SFL employs unique terminology (metafunctions, transitivity, theme-rheme, lexicogrammar), creating steep learning curves. Its multiple interrelated systemic levels can overwhelm new practitioners.

Perceived lack of rigor. SFL is often dismissed as qualitative and unscientific. However, this misconception overlooks that SFL is evidence-based and empirically rigorous. Increasingly, SFL pairs with corpus-based methodology, enabling large-scale hypothesis testing and quantitative analysis (Butler 2018).

6.1.6 Application

The following examples demonstrate SFL's application to naturally occurring data (analysed using the layout adapted from Li, 2007: 54). Analysing Fuzhou narrative clauses through Theme–Rheme, Mood–Residue, and Transitivity structures shows how SFL's metafunctional toolkit relates specific meaning patterns to the broader language system.

	mi$ʔ^{5}$$p^{h}uŋ^{55}$ 蜜蜂 bee	k^{h}œy$ʔ^{24}$ 乞 AGT	i^{55} 伊 3SG	t͡s^{h}a^{33} 吵 make.noise	tuɔ$ʔ^{5}$, 着 ACV	xuɔ^{21} 火 fire	ia^{242} 野 very	tuai^{21} 大 big
TEXTUAL Clause as Message THEME	Topical theme	Rheme				Ø		
	Topical theme$_1$	Ø				Topical theme$_2$	Rheme	
INTERPERSONAL Clause as Exchange MOOD	Mood: declarative	Residue	Mood: declara-tive				Residue	
	Subject	Adjunct	Complement	Predicator	Adjunct	Subject	Complement	
IDEATIONAL Clause as Representation TRANSITIVITY	Goal	Circumsta-nce	Actor	Material	Circumsta-nce			
	Senser					Phenomenon	Circumstance	Phenomenon
'The bees were disturbed by (the dog and) were very angry.' GBL_Frog_Story_31-32								

	ny^{33}	t͡sia^{53}n$ɛi^{242}$	a^{33}:	"t͡s^{h}i$aŋ^{21}$-ma$ŋ^{51}$	li^{32}	muo$ŋ^{21}$	u^{53}-a$ŋ^{21}$"
CHINESE TEXT	汝	真是	啊	青盲	来	问	乌暗
GLOSS	2SG	really	PRT	Blind. person	come	ask	darkness
TEXTUAL Clause as Message THEME	Interpersonal Theme						
				Topical Theme	Rheme		
INTERPERSONAL Clause as Exchange MOOD	Mood: declarative	Residue					
	Subject	Predicator	Adjunct	Complement			
				Subject	Predicator	Complement	
IDEATIONAL Clause as Representation TRANSITIVITY	Token (carrier)	Process: categorising		Value (attribute)			
				Sayer	Verbal	Verbiage	

6.1.7 Contribution

The SFL framework opened up a social contextual approach to linguistic studies which initially led to much growth in the fields of discourse analysis and genre studies. With the applicability of the framework, discourse analysis expanded beyond the written and spoken text modes into the visual and multimodal. Emulating Halliday's efforts, many scholars used the framework for language description as well. The approach also inspired major changes in language education, giving rise to genre-based pedagogy in language teaching and the teaching of functional communication and academic writing. The framework has since also been applied to translation studies, clinical linguistics, and computational linguistics, attesting to the appliable linguistics trademark of the theory.

6.2 The Creation of Meaning

6.2.1 Socio-historical Factors, Key Figure(s) and Key Works:

"The Creation of Meaning," a theory developed by Professor Randy LaPolla, provides the theoretical framework for this analysis. Drawing on recorded lectures (LaPolla, 2020b; 2021; 2022b) and LaPolla's foundational work on the cultural and cognitive origins of linguistic structure (LaPolla, 2015, originally titled On the Logical Necessity of a Cultural and Cognitive Connection for the Origin of All Aspects of Linguistic Structure), this framework has been successfully applied in related research (Lu, 2022).

The theory is largely inspired by LaPolla's research, particularly his extensive fieldwork and his analyses of Sino-Tibetan and other languages. His early work on Chinese, especially his account of how grammatical relations in Chinese constrain interpretation in ways that differ markedly from English (LaPolla, 1997), played a decisive role in shaping his thinking. As will become evident in our discussion, the theory is also informed by several additional sources. LaPolla's ideas about language as a reflection of one's worldview are clearly indebted to the Romanticist tradition, especially Humboldt, as well as to Sapir and Whorf. Influences from scholars such as Roman Jakobson, Michael Halliday, Paul Hopper, Bronisław Malinowski, Edward Sapir, and Dan Sperber, together with various developments in functional linguistics and pragmatics, can likewise be discerned in this theory, particularly in its view that communication is grounded in abductive inference rather than in the coding and decoding of symbols, thereby avoiding the telementational and determinacy fallacies outlined by Harris (1981). LaPolla (2015) also draws extensively on the different types of

inference proposed by Charles Sanders Peirce, an American philosopher and pioneering semiotician, as well as on the work of H. Paul Grice.

6.2.2 Fundamental Beliefs

Language, form, meaning, and variation: Meaning creation occurs continuously as an adaptive mechanism. LaPolla (2020) notes that "there is a human instinct to try to understand the world through inference" (slide 5). Through inferential capacities, we formulate hypotheses expressed linguistically in philosophy, religion, and science (LaPolla, 2015: 32). Our tendency to infer others' intentions—such as interpreting someone walking towards us with a knife—functions as a survival mechanism, as does our engagement with humour and literature.

Communication as ostension and abductive inference: LaPolla (2020) defines non-demonstrative inference as inference where "the truth of the premises [makes] the truth of the conclusions probable" (slide 7), further divided into induction and abduction. Communication is defined as the hearer's successful abductive inference of the speaker's communicative intention through an ostensive act (LaPolla, 2015: 33). Recognising an act as ostensive—such as interpreting a hand wave or identifying a language—already requires abductive inference.

The hearer creates a context of interpretation by integrating the ostensive act into their knowledge base and system of beliefs (LaPolla, 2021, Slide 5). We construct a frame "in which a possible motivation for the ostensive act would 'make sense'" (LaPolla, 2021, Slide 36). For instance, we interpret Google's abstract landing page symbols because we expect them to spell "Google" based on prior experience. We also infer how an ostensive act will be completed before it finishes, similar to projection in interactional linguistics.

Meaning-making: subjective and non-linguistic: LaPolla (2021) hypothesises that linguistic and non-linguistic communication would show no difference if compared in meaning creation (slide 35). Abductive inference is not limited to language; it is our primary means of creating meaning. Leaving an almost empty rice container on the counter functions as an ostensive act comparable to "please go and buy more rice" (LaPolla, 2022b, 26:30–27:50).

Meaning is subjective and does not exist as an object in the world. We create reality through meaning creation and relevance judgements (LaPolla, 2022b, Lecture 1, part 1,

03:00-03:07). This subjectivity appears in how humans could only reconceptualise the heart's function after the mechanical pump was invented (16:30-18:00).

Language as emergent system: Language is a complex adaptive system that emerges from individuals' communicative efforts, functioning to constrain interpretation. Unlike Structuralism's view, language is not fixed but emergent. Culture refers to "sets of social conventions for carrying out particular tasks," while language is the set of conventions for communication specifically (LaPolla, 2021, Slide 37).

Meaning varies culturally: in Malay, an owl is burung hantu ('bird-ghost'), while in Mandarin Chinese and Fuzhou it is 猫头鹰 /mau^{55} tʰou^{24} iŋ^{55}/ ('cat-head-eagle') and 猫王鸟 /ma^{44} uoŋ^{33} t͡sɛu^{33}/ ('cat-king-bird'). Conventionalisation occurs through repeated use, and once a word exists (e.g., selfie), it shapes thought and worldview. Language patterns influence cognitive categories and how speakers create contexts of interpretation (LaPolla, 2022b, Lecture 1 Part 2, Slide 90). Languages differ because each speech community deems different things important (LaPolla, 2015, p. 40), or due to "similar adaptations to similar environments" (LaPolla, 2020, Slide 82)—"languages differ essentially in what they must convey and not in what they may convey" (Jakobson, 1959, p. 236, as cited in LaPolla, 2020).

Language as a constraint on interpretation: Linguistic and non-linguistic communication are processed in similar brain areas (Xu et al., 2009, as cited in LaPolla, 2015). A diner raising eyebrows at a waiter (non-linguistic) and receiving directions (linguistic) demonstrates parallel processing. Non-linguistic acts may not constrain interpretation as effectively as language, a "specialised tool" developed for this purpose (LaPolla, 2015, p. 34). Language provides clues constraining inference; speakers choose how far to constrain interpretation, which explains why legalese is verbose (LaPolla, 2015, p. 34).

In sum, meaning creation is a type of survival mechanism. Communication is a specific kind of meaning creation in which the hearer successfully infers the speaker's intent, while language is the tool we have developed to facilitate the constrain of interpretation for effective communication (Figure 2).

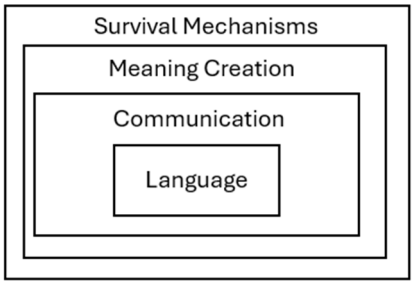


Fig. 2: Summary of Creation of Meaning theory

Meaning is always in flux, not bound to form, and not componential: Contrary to the telementational and determinacy fallacies of the Structuralist paradigm, this theory asserts that linguistic knowledge is not special—it is human behaviour and a by-product of communication. LaPolla (2022b) cites a roll call where he called out for "Alain," but a student pointed to Alain's empty seat and said, "Toilet." Based on his knowledge base, he inferred Alain would return shortly, not go to the canteen or library. If language were simply coding and decoding, understanding would require only componential analysis of "toilet's" dictionary meaning. If language functioned as a conduit (Reddy, 1979), it would not explain misunderstandings or how we understand intentions despite incorrect forms—such as a "wet paint" sign for a "wet floor." These phenomena are easily explained if meaning creation is subjective and non-demonstrative inference. Communication is fundamentally about pragmatics: "there is then no semantics in the sense of words or signs having meaning divorced from actual use by some communicator" (LaPolla, 2021, Slide 36).

LaPolla (2015) states his position explicitly (p. 36): "Language is not a fixed system, it is human behaviour, and changes as we engage in it, like other aspects of our behaviour, such as styles of dress and cooking/eating. It isn't purpose-built, and doesn't exist as an entity anywhere. It is an emergent phenomenon (Hopper, 1987, 2011, 2012), a complex system that is more than the sum of its parts."

Context as the base of communicative acts and meaning creation: LaPolla (2020) underscores that without context, no communication or meaning creation can occur: "The role of the context in the performance of this activity involving the interpretation of utterances is not to supplement semantic meaning; the context is the base on which all communicative activity and meaning creation depends. Rather than saying context

constrains linguistic form, it is the linguistic form that constrains the creation of the context of interpretation. Culture and cognition are the fundamental organizers of experience, and so necessarily influence the construction of the context of interpretation." (LaPolla, 2020, Slides 68-69).

6.2.3 Methodology: Inductive, Holistic, and Comparative Approaches

Language should be described inductively, on its own terms, using natural speech: LaPolla has repeatedly emphasised the need to describe language inductively, rather than force *a priori* categories onto the language (LaPolla, 2016a, 2016b, 2020a). Linguistics is scientific if we acknowledge the nature of language - that it is just one method of communication and an emergent phenomenon that is always in flux.

Language has to be viewed holistically: Instead of the atomistic view of language that Structuralism champions, LaPolla (2025) asserts the importance of a holistic, integrationist treatment of language.

Languages can be examined and compared in terms of inference: Following Jakobson (1959), who notes that "all cognitive experience and its classification is conveyable in any existing language" (p. 234), LaPolla (2015) proposes three questions which help with the comparison of languages by considering the cognitive categories of a language: (1) Do they constrain or not constrain the interpretation of a particular conceptual space? (2) If they constrain the interpretation of a particular conceptual space, how much do they constrain it? (3) If they constrain the interpretation of a particular aspect of a conceptual space, how do they constrain it? LaPolla (2017) further argues that cross-comparison of languages should be undertaken only when considering the reason behind the pattern, if not, we would "end up comparing very different systems that just happen to produce similar-looking results" (p. 552). The three questions are not restricted to cross-linguistic comparison and can be applied to a single language too.

6.2.4 Key Arguments Against the Previous Paradigm

Against the treatment of language as an object separate from the rest of human cognition: Following different strains of structuralism, linguists have become accustomed to assuming language is separate from the rest of human cognition. For instance, Saussure (1916/2011) asserts that language is "a self-contained whole", that "the use of speech is

based on a natural faculty", and that language, although a social product, "is not similar in all respects to other social institutions" (p. 7-8). On the contrary, LaPolla (2015) views language as an emergent phenomenon and a social product no different from other types of human behaviour.

Against the innateness of language: It can be inferred from LaPolla (2015) that what is innate is our tendency to engage in and infer ostensive acts, in other words, the human capacity and propensity for meaning creation. This meaning creation process is not limited to communication, but it is the main way we create meaning.

Against the treatment of context as peripheral/supplementary and a componential analysis of grammar: The structuralist paradigm we are thinking in generally views context as supplementary or peripheral, and simply as something which can augment or alter a meaning that is inherently attached to the form. Instead, language should be treated holistically, with the context of an utterance as the basis for determining its meaning.

6.2.5 Possible Criticisms

While the theory has not gained majority adoption among linguists, we discuss possible criticisms for consistency.

Why did humans develop language? The Creation of Meaning focuses on human communication. Some might question why humans developed language while animals did not. LaPolla (2021) clarifies that human communication is not special; primates and mammals communicate via inference, though with "smaller frontal lobes" and lacking "the physiological ability for the range of sounds we can produce" (Slide 74). Language acquisition occurs through social interaction, our adaptability, and proclivity to create meaning—no different from learning habits like riding a bicycle.

Can culture really explain everything? Heath (2016) laments the neglect of non-configurational languages, arguing that configurational structures have "no obvious connection to extralinguistic cultural patterns such as 'world view'" (p. 488). Trudgill (2011) similarly concedes he cannot explain all phenomena despite analysing language, culture, and physical environment. Alternatively, the motivation behind conventionalised actions may no longer be transparent, though habits persist—such as using a floppy disk icon for save. As language is a complex adaptive system, single causes cannot explain all linguistic features.

6.2.6 Application

In Example (3), 乞 /kʰœyʔ^{24}/ constrains the interpretation of the semantic role that 伊 /i^{55}/ partakes in. In this case, the third person singular (referring to 'the dog') is the one committing the action. Interpretation of this conceptual space is not really constrained, as 乞 /kʰœyʔ^{24}/ can be interpreted to mark a causee or a beneficiary, or even retain its usage as a verb meaning 'give' (Examples (4) to (6)). It is up to the hearer to abductively infer the semantic role of the entity occurring after 乞 /kʰœyʔ^{24}/, based on the situational context. The extension of its usage from the verb 'give' to its function in introducing an entity important to the action can easily be inferred by the hearer.

Singapore Fuzhou uses aspectual markers to constrain the interpretation of whether the action has taken place. In Example (3), the achievement marker 着 /tuɔʔ^{5}/ adds [+telicity] to the verb, so we know that the action of 'mak[ing] noise' 吵 /t͡sʰa^{33}/ has been accomplished or achieved. Four aspectual markers were found in Singapore Fuzhou: the achievement marker 着, the progressive marker 吼 /lɛ^{33}/, the prospective marker 卜 /puɔʔ^{24}/, and the perfective or completive marker 了 /lau33/.

(3) miʔ^{5}pʰuŋ^{55} **kʰœyʔ^{24}** i^{55} t͡sʰa^{33} tuɔʔ^{5}, xuɔ^{21} ia^{242} tuai^{21}
蜜蜂 **乞** 伊 吵 着 火 野 大
bee **AGT** 3SG make.noise ACV fire very big
'The bees were disturbed by (the dog and) were very angry.'
GBL_Frog_Story_31-32

(4) i^{55} t͡suɔ^{21}nœyŋ^{51} **kʰœyʔ^{21}** i^{33} tyʔ^{5} kɔ^{21} lau^{33}
伊 主侬 **乞** 伊 逐 去 了
3SG owner **CAUS** 3SG chase away PFV
'Its owner made it (the cat) go away.'
ZYZ_Cat_Story_5

(5) ou^{24} suɔʔ^{5}-lau^{51} kʰɛiŋ^{33}=ŋiaŋ^{55} **kʰœyʔ^{5}** i^{33} t͡suɔ^{51}-puaŋ^{21}
有 蜀头 犬囝 乞 伊 做伴
EXST one-CL dog=DIM **BEN** 3SG be-company
'There was a small dog to keep him (the child) company.'
YCT_Frog_Story_1

(6) ŋuai^{33} ny^{5} t͡siŋ^{51} na^{242} **kʰœy^{24}~kʰœy^{24}** ny^{33} siɛ^{5}

我 肉 尽 俪 **乞乞** 汝 食

1SG meat very many **give~** 2SG eat

'I have a lot of meat (and will) give (the meat) to you to eat.'

GBL_Frog_Story_8

Words are associated with 'conventional implicatures', i.e. semantic implicatures conventionally associated with particular lexical items (Grice, 1975). In Example (7), speaker YCT can successfully understand the utterance as he knows that the customer service officer was using a conventionalised set of words (i.e., an idiomatic phrase) used by the Fuzhou speech community. Even if it was not conventionalised, based on the context, he can infer that she was not referring to him or anyone else literally, as there was no blind person around and the store was not in darkness.

The inferential process begins with YCT assuming that the customer service officer is speaking to him and that the utterance is meaningful and relevant to context. First, based on his real-world knowledge, YCT can interpret that the proposition of a blind person asking whether it is dark or not (青盲来问乌暗) is unlikely or impossible. By creating a context of interpretation, YCT himself understood the utterance as a silent jab towards him for asking the obvious, by likening him to a blind person, and a weak implicature that the customer service officer assumed that people should know better than to ask to buy Fuzhou dictionaries. As a result, he can abductively infer the customer service officer's communicative intent, that is, "No, Fuzhou dictionaries aren't sold here so stop asking", just that in this example, her reply was more poetic and less literal.

(7) ny^{33} t͡sia^{53}nɛi^{242} a^{33}: "t͡sʰiaŋ^{21}-maŋ^{51} li^{32} muoŋ^{21} u^{53}-aŋ^{21}"

汝 真是 啊 青盲 来 问 乌暗

2SG really PRT blind.person come ask darkness

'You are really ah… "(just like) a blind person asking whether it is dark."'

Literal: You are really… simply asking me a useless question.

YCT_Bookstore_4

6.2.7 Contribution

Compared to linguistic relativists, who use culture as an explanation for linguistic development and variation, this theory goes one step further by considering the human cognition, specifically our ability to infer and understand the world around us, and even couches that in Darwin's theory of evolution. Evident from the discussion above, the Creation of Meaning is an economical explanation for language development and variation. The postulates of this theory are cogent and cohesive – each corollary clearly flows from the ones before, which also presented to us a dilemma in the ordering of the tenets.

It is an explanatory framework that is compatible with all non-structuralist linguistics. In fact, this theoretical framework is one such approach within this paradigm – it has consolidated and distilled various assumptions from non-structuralist descriptive frameworks, rendered them explicit, and augmented them with an evolved version of linguistic relativity. Even so, it is highly likely that reception to this theory will be lukewarm. As demonstrated by the Neogrammarians, the linguistic community seems to prioritise methodological innovation rather than re-definition of the linguistic problem. Nonetheless, this challenge can eventually be surmounted if further examples of its application are made available.

7. Conclusion

In sum, we argue for a paradigm shift in how we conceptualise linguistics and view grammatical theories. From the theories presented, we draw the following conclusions:

Paradigmatic shifts are never absolute. Core postulates may be borrowed, reinterpreted, and reinstated within new paradigms, as Romantic ideas inspired Non-Structuralist Linguistics. More research is needed on discourse structures within each paradigm; textual choices illuminate how theories stake authority and become propagated.

Shaping linguistics in the image of the natural sciences has led to neglect of fundamental language properties. Language should be viewed holistically rather than as mere aggregation, and variation recognised as natural rather than peripheral. Scientific inquiry does not require exceptionless systems. A genuinely empirical approach treats each language on its own terms, takes context seriously, and moves beyond simple grammaticality judgments. A usage-based perspective analyses variation in frequency and markedness.

Crucially, no single theory explains all languages or all aspects of any language.

Linguistics should be recognised as a behavioural science. As Goody and Watt (1963) observe, “the same process of dissection into abstract categories […] leads to the Greek division of knowledge into autonomous cognitive disciplines” (p. 331). By contrast, Sapir (1929) positions linguistics at the crossroads of natural and behavioural sciences, noting its strategic importance: “It is precisely because language is as strictly socialised a type of human behaviour as anything else in culture and yet betrays such regularities as only the natural scientist formulates, that linguistics is of strategic importance for the methodology of social science” (p. 213). Whorf (1956) similarly anticipated linguistics becoming increasingly “psychological and cultural,” since “the very essence of linguistics is the quest for meaning” (p. 79).

Kuhn (1970) highlights textbook bias in portraying science as straightforwardly cumulative. Disciplines progress through socio-historical context, not linearly. When learning theories, we must reintegrate history rather than studying them in isolation, as Hymes and Fought (1974) similarly urge, attending to “personal, institutional, national, and even international factors” (p. 5).

This paper has synthesised five schools of thought around Kuhn's (1970) model of paradigm shifts. Non-structuralist linguistics—represented by Systemic Functional Linguistics and LaPolla's theory—reconceptualises language as usage-based, variable, functionally motivated, and embedded in cognitive, social, and cultural processes, fundamentally breaking with the structuralist ideal of a closed, autonomous system.

8. Future Directions

This paper represents merely the beginning of a broader conversation. Several avenues warrant further exploration. First, a more granular examination of how paradigm shifts actually occur within linguistics—through institutional change, generational turnover, and shifts in funding and research priorities—could deepen our understanding of theory development. Second, the framework we have employed here, derived from Kuhn's model, invites application to other linguistic theories and schools not covered in this analysis, as well as to paradigm shifts in other disciplines. Third, investigating how linguistic theories are transmitted, transformed, and sometimes distorted through textbooks, curricula, and

popular scholarship would illuminate the gap between what theorists propose and what practitioners teach. Finally, as Non-Structuralist Linguistics itself continues to evolve, tracing its internal tensions and emerging sub-paradigms will be essential for understanding linguistics' future trajectory.

We hope this work catalyses further critical reflection on the theories we inherit and the assumptions we take for granted. The history of linguistics is not merely historical curiosity; it is vital for building more robust, empirically grounded, and theoretically honest approaches to language in the decades to come.

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Some remarks on the relationship between endopathic and evidential marking in Tibetic and other languages

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Abstract: This article provides an overview of the relationship between 'endopathic' verbs and evidential marking in Tibetic languages, based on extensive fieldwork across multiple varieties. It then focuses on how a given language describes the inner sensation of other people. Marking depends on the evidential system of a given language and varies even within Tibetic languages. Some Tibetic varieties, as well as Mandarin and Japanese, employ a reported marker to describe an endopathic predicate, suggesting that another person's inner sensation is accessible when obtained from a second-hand source. The article also demonstrates the transference of endopathic marking from Tibetic (rGyalthangic) to Sinitic (Southwestern Mandarin), which was not originally sensitive to the endopathic category.

1. Introduction

The endopathic category is an essential verb category in the Tibetic languages. The term endopathic was coined by Tournadre (1996:206) to indicate an *internal sensory access to information*. Tournadre and Suzuki (2023:391) describe it as follows: 'Endopathic marking encodes inner sensations such as cold, pain and hunger, as well as psychological states and emotions such as fear and anger. In some languages, this may refer to intuitive feelings'.

The endopathic category is grammaticalised in Tibetic languages but only applies to verbs that depict non-observable events or states; that is, they are not directly observable by others and may be perceived only by the experiencer (Tournadre and Suzuki, *ibid*). Thus the

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category of endopathic is related to the notion of 'observability'; only 'non-observable' lexical verb [−Obs] allows endopathic auxiliaries. However, [−Obs] verbs are not only compatible with endopathic auxiliaries but also allow other evidential markers such as factual, egophoric, and inferential.[1] For example:[2]

(1) Lhasa

a. nga grod khog ltogs-kyi 'dug
1 belly be hungry-NPFT.SEN
'I am hungry (right now, I feel hunger!)' [endopathic]

b. nga grod khog ltogs-kyi yod
1 belly be hungry-NPFT.EGP
'I am [often, generally] hungry.'

c. nga grod khog ltogs-kyi red
1 belly be hungry-NPFT.FAC
'I will be hungry.' [factual]

Endopathic conveys *specific access* to information and hence belongs to the evidential (or evidential-epistemic) system in the grammar of the Tibetic languages. Tournadre and LaPolla (2014) argue for a new approach to evidentiality and discuss access to information distinguished from source of information within the evidential system of a language, especially in Tibetic languages.

Endopathic marking in many Tibetic languages is morphologically the same as its sensory counterpart or, in some languages, as the non-visual sensory. However, for this endopathic function, the sensory marker (or non-visual sensory, when applicable) is only compatible with the first person as the experiencer and may not appear with second or third person in affirmative sentences, as in (2).[3]

[1] This situation is comparable to the notion of controllability whereby only the lexical controllable verbs [+Ctr] are compatible with intentional auxiliaries (such as *pa-yin*). However, these verbs [+Ctr] are also compatible with all the other evidential markers.

[2] Examples of the Tibetic languages are provided in the transliteration of Literary Tibetan forms following the system of de Nebesky-Wojkowitz (1956).

[3] While some speakers in the Tibetan diaspora may accept this sentence but interpret it as an inferential marker 'He seems hungry', most speakers reject the sentence.

(2) Lhasa

?? khong grod khog ltogs-kyi ’dug

3 belly be hungry-NPFT.SEN

Intended meaning: ‘He is hungry.’

To render the above meaning, one can use either an inferential or an epistemic auxiliary, as in (3a, b).

(3) Lhasa

a. khong grod khog ltogs-kyi yod sa red

3 belly be hungry-NPFT.SNINFR

‘He seems hungry’ [inferential epistemic]

b. khong grod khog ltogs-bzhag

3 belly be hungry-PFT.INFR

‘He is hungry (from various cues, I infer that he is hungry)’ [inferential evidential]

This article aims to provide an overview of the relationship between endopathic verbs and evidential marking in Tibetic languages. The rest of this article is as follows. Section 2 provides a summary of the endopathic constructions of various Tibetic languages. Section 3 provides endopathic expressions in Mandarin and Japanese to show that they also share a similar template for describing the endopathic status of the third person. Section 4 presents concluding remarks.

2. Endopathic constructions in Tibetic languages

This section provides endopathic constructions in various Tibetic languages, including Ngawa Amdo (NE Section), Bragkhoglung (E Section), Choswateng (SE Section), Thopa (SE Section), Dolpo (SW Section), Leh (NW Section), and Purig (NW Section). Figure 1 presents the locations of these varieties, as well as those of Lhasa (C Section) and Dränjong (S Section).

Endopathic marking generally occurs with verb predicates denoting inner sensation, an emotional state or mental activity. The following examples deal with the inner sensation of ‘hunger’, with necessary comments on other verb meanings.

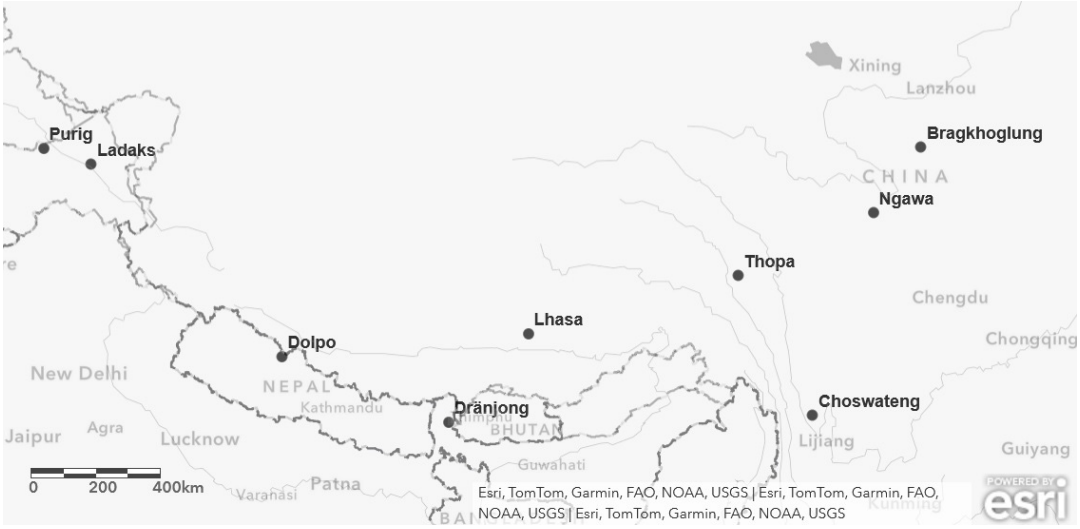


Figure 1: Distribution of the Tibetic languages in study.

The endopathic expression of Ngawa Amdo is marked with the sensory evidential when the subject is first person, and with the inferential evidential otherwise, as in (4).

(4) Ngawa Amdo

a. nga ltogs-ki
1 be hungry-NPFT.SEN
'I am hungry.'

b.?? kho ltogs-ki
3.M be hungry-NPFT.SEN
Intended meaning: 'He is hungry.'

c. kho ltogs-ka.ki
3.M be hungry-NPFT.SNINFR
'He is hungry.' [inferential][4]

Bragkhoglung, a variety of Cone Tibetan (Zou and Suzuki 2022), uses the same system as Ngawa Amdo.

[4] In some northern varieties of Amdo, one finds for the same sentence *khu-dge ltogs-go.ki* (*gi.yod.ki*).

(5) Bragkhoglung

a. nga ltogs-ki snang
   1 be hungry-NPFT.SEN
   ‘I am hungry.’

b. kho rog ltogs-ki bdug gi
   3 be hungry-NPFT.SNINFR
   ‘He is hungry.’

Choswateng, a variety of rGyalthangic Tibetan, takes another marking for the third person’s endopathic expression by adding a hearsay evidential marker (6b). This phenomenon has been widely attested in rGyalthangic, as described by Zhou and Suzuki (2022) on Alangu Tibetan and Suzuki (2024) on rGyalthang Tibetan.

(6) Choswateng

a. nga ltogs-grag
   1 be hungry-NPFT.NVSEN
   ‘I am hungry.’

b. kho ltogs-grag-grag
   3 be hungry-NPFT.NVSEN-HS
   ‘He is hungry.’

Thopa, a pastoralist variety of Khams Tibetan spoken in Chamdo Municipality, exhibits the same morphosyntactic formation of the endopathic expression as Ngawa Amdo (4) and Bragkhoglung (5), using divergent morphemes to mark sensory and sensory inferential evidentials. Furthermore, as demonstrated in (7c), the use of hybrid indirect speech (Tournadre 1992) is permissible in conjunction with hearsay evidential.

(7) Thopa

a. nga ltogs-’gu
   1 be hungry-NPFT.SEN
   ‘I am hungry.’

b. kho ltogs-’du zhin gda’
   3.M be hungry-NPFT.SNINFR
   ‘He is hungry.’

c. kho ltogs-’gu-zer
3.M be hungry-NPFT.SEN-HS
‘He is hungry, as he says.’ / ‘He says he is hungry.’

We now describe the behaviour of the non-visual sensory marker -rak in Ladakse skat[5] based on Norman and Tournadre (forthcoming). In Ladakse skat, non-observable verbs (−Obs) exhibit a specific morphosyntactic behaviour which is different from (+Obs) observable verbs; that is, they have some constraints on the use of auxiliaries, particularly the non-visual sensory auxiliary /-rak/. For example, the auxiliary /-rak/ is compatible with +Obs verbs such as ‘to sing’, ‘to snore’ and ‘to sneeze’ as in (8).

(8) Ladakse skat
a. kho-e lu gyala tang-a**rak** ‘She sings well.’ [I hear her]
b. kho-e nyitḍa tang-a**rak** ‘He is snoring.’ [I hear him]
c. kho-a ṭhit mangpo yong-a**rak** ‘He is sneezing a lot.’ [I hear him]

In such cases, the sound is an external stimulus which other nearby people can hear, and /-rak/ indicates a non-visual *external perception*. However, because the speaker does not have access to the experiencer’s inner perception, it is incorrect to say the following:

(9) *kho ltoks-a **rak** *Intended meaning* ‘She is hungry’

The speaker can only infer the experiencer’s inner sensation because they cannot perceive it directly. They may then use the epistemic form to say:

(10)
a. kho ltoks-**atḍo** ‘She must be hungry.’
b. kho ltoks-**at-thik-duk** ‘She seems to be hungry.’
c. kho ltoks-**tok** ‘She is hungry.’[inferential; I infer from the sound of her belly].

The following sentences are incorrect for the same reason as (9) above.

[5] For a description of Ladakse skat, commonly called Ladakhi in English, we use phonetic transliteration and sentence-by-sentence glossing adapted from Norman and Tournadre (forthcoming). The language described here refers to Ladaks zhungkhor-e skat (Central Ladakhi).

(11)

a. *kho jiks-a**rak** *Intended meaning* ‘He is scared.’

b. *tshering gotsak tang-a**rak** *Intended meaning* ‘Tshering has a headache.’

c. *kho khyaks-a**rak** *Intended meaning* ‘he is cold.’ [he feels cold]

However, since the sentences below put the first person as the experiencer, they are acceptable for speakers.

(12)

a. nga ltoks-a**rak** ‘I am hungry.’

b. nga jiks-a**rak** ‘I am scared.’

c. nga gotsak tang-a**rak** ‘I have a headache.’

d. nga khyaks-a**rak** ‘I am cold.’

It is noteworthy that in some Tibetic languages, the sensory marker may not be the default marker for inner sensations. For example, in Purig, the usual way to say ‘I am hungry’ is to use the factual or neutral form present -et, derived from *yod* (see Zemp 2018, Tournadre and Suzuki 2023).

(13) nga ltogs-et ‘I am hungry.’

However, if one wants to insist on sensory inference and endopathic perception, the following can be said:

(14) nga ltogs-duk ‘Oh I am hungry!’[6]

As shown by Yliniemi (2024), the speaker’s inner sensations in Dränjong (alt. Denjong) also ‘differs from the general Tibetic pattern using sensorials as default markers’. In particular, it uses personal (or egophoric) *in [yin], yod,* ‘neutral’ (or factual) *sbad* as well as some other markers. Although Yliniemi does not specifically state which marker is the default marker to express ‘I am hungry’, it appears to the personal marker *in*.[7] Yliniemi points out that sensory markers are still possible when the speaker wants to express a ‘sudden

[6] We are grateful here to Issa Sabiri, a Kargil native speaker of Purig for his comments (p.c. with N. Tournadre, Leh, January 2025).

[7] As observed by N. Tournadre during his fieldwork in Sikkim in 2010.

discovery or surprise' (*ibid*, 2024: 74). This situation is comparable to that of Purig and, as we will see below, reminds us of Dolpo's pattern.

Another point worth mentioning is the fact that there are subtle grammatical variations in the evidential systems of very closely related systems. This is also true of the endopathic behaviour of the Dolpo dialects. For example, as stated by Tournadre and Vokurková (2025):

> In Nangkhong, [the morpheme /-ɖak/ *grag*] is fully grammaticalized and indicates non-visual information. It is employed for four different senses (auditory, tactile, olfactive, gustatory) as well as for indicating endopathic purpose […] The marker /-duk/ (and its variants) which indicates specific visual as well as global experience (as a general sensory marker) may be also used for these purposes (i.e., four senses + endopathic). Whenever visual information is available, and in the case of synesthetic information, the marker ['dug] /-duk/ is preferred […].

However, in the neighbouring dialect of Tsharka in Dolpo, the marker *grag* /-ɖak/ is predominantly related to 'auditory perceptions (of various sounds, music, and so on), as well as to hearsay' (*ibid*). Moreover, the marker *grag* has an *epistemic connotation* and casts doubt on the statement.

In inner sensations, such as in (15) (adapted from Tournadre and Vokurková 2025), the marker *'dug* is the preferred choice:

(15) Dolpo, Tsharka variety

nga-la	cham.pa	brgyab-**'dug**
1-DAT	a cold	LV (PAST)-PRS+NVSEN

'I have a cold.'

The use of *grag* instead can be translated as 'I feel like I'm getting a cold', where the speaker feels an oncoming cold but is not entirely certain.

As demonstrated above, personal inner sensations and emotional expressions are generally marked in Tibetic languages by general sensory markers or non-visual sensory markers, when available. In contrast, the inner sensations and emotions experienced by other people are marked by inferential and hearsay markings. However, as seen in the cases of Purig, Dolpo, and Dränjong (Denjong), alternative patterns are attested. In Purig, the factual (*yod*) is preferred over the sensory (*'dug*), whereas in Dolpo, the visual sensory (*'dug*) is the

default choice rather than the expected non-visual sensory (*grag*). In Dränjong (Sikkim), the personal (or egophoric) *in* (*yin*) and *yod* seem to be the default forms.

These instances show that in the Tibetic languages, beyond the general pattern in which inner sensations and emotions are indicated by sensory markers, there is some diversity in the marking, and alternative patterns are also attested, particularly the use of egophoric or factual markers, depending on the language.

3. Endopathic constructions in Mandarin and Japanese

The endopathic constructions attested to in Tibetic languages are unique among the Tibeto-Burman languages. Nevertheless, some East Asian languages demonstrate comparable constructions of the endopathic status of third-person subjects. The following discussion focuses on the cases of Mandarin and Japanese. The given construction of Mandarin is limited to Southwestern Mandarin in our first-hand data, because Standard Mandarin (Putonghua) does not have an endopathic marking system. The Japanese case is widely accepted, and the present study describes Standard Japanese and the Harima dialect.[8]

3.1 Southwestern Mandarin

It is widely known that Mandarin does not generally have endopathic marking.[9] However, in a limited range of varieties, the endopathic situation of a third-person subject can be introduced using a hearsay marker, as in (16). The forms of Southwestern Mandarin are transliterated in pinyin.

(16) Yunnanese, uttered by a Tibetic-speaking Tibetan

a. wo e-le
   1 be hungry-LE
   'I am hungry.'

b. ta e-le-shuo
   3 be hungry-LE-HS
   'He is hungry.'

[8] This is the native tongue of the first author.

[9] Li (2015:197-233) discusses information source marking ways of the third person's inner state predicates in Literary Chinese, showing its marking strategies.

The utterance in (16) is provided by a Tibetic speaker, whose native tongue is rGyalthang Tibetan, from Diqing Prefecture in north-western Yunnan. The construction of (16b) follows the rGyalthang Tibetan system, in which the morpheme *grag* (< 'hear') functions as a hearsay marker (Suzuki 2024). A notable phenomenon is that Yunnanese employs the verb *shuo* 'say' to mark a hearsay, not derived from *ting* 'hear' as observed in rGyalthang Tibetan. In (16b), the absence of *shuo* is acceptable and more natural as a Yunnanese expression uttered by Han Chinese speakers.

The use of *shuo* is also attested with endopathic verbs and 'want' verbs such as *yao* 'want, need' (17a, b); however, emotion verbs such as *xihuan* 'like, love' and *pa* 'fear' do not take *shuo* when the third person's endopathic situation is concerned (17c). If *shuo* appears with the last verb type, it only denotes hearsay (17d).

(17) Yunnanese, uttered by a Tibetic-speaking Tibetan

a.?? ta yao zhe-ge
3 need this-CLS
Intended meaning: 'He needs this one.'
(It is possible to interpret this as 'I know well that he needs this one.')

b. ta yao zhe-ge shuo
3 need this-CLS HS
'He needs this one.' / 'He says, "I need this one".'

c. ta pa gui
3 fear ghost
'He fears ghost.'

d.* ta pa gui shuo
3 fear ghost HS
Intended meaning: 'He fears ghost.'
(It is possible to interpret this as 'He says, "I fear ghost".')

It is noteworthy that the hearsay marker *shuo* appears in the final position of an utterance and functions as hearsay. This case has also been reported in Sichuanese (Xiong 2007:75-80). As *shuo* is a verb, its appearance in the sentence-final position is exceptional. Therefore, *shuo* in this case does not function as a verb but as a functional tag. The use of

shuo as a function word is related to hearsay evidential marking, as suggested by its lexical origin 'say', and it reflects a grammaticalisation process. In summary, varieties of Southwestern Mandarin have a basis for the grammaticalisation of *shuo* as a hearsay evidential marker.

The essential trait of (17) is that it is a partial *extension* of the use of *shuo* as an endopathic marker copied from the Tibetic structure and not the *creation* of the endopathic category. Southwestern Mandarin has already acquired a hearsay evidential structure employing *shuo* 'say' at the end of a sentence, which is considered exceptional from the viewpoint of Chinese grammar.

3.2 Japanese

Standard Japanese has a morphological distinction similar to that of endopathic predicate categories. The construction is applied not only to endopathic predicates but also to several other predicates denoting 'want' and 'need'. The Japanese examples below use simplified glossing.[10]

(18) Standard Japanese

a. watasi-ha samu'i
   1-TOP be cold
   'I am/feel cold.'

b. ka're-ha samugat-teiru
   3-TOP be cold.ENDO-CONT
   'He is/feels cold.'

c.?? ka're-ha samu'i
   3-TOP be cold
   (It is unacceptable when the intended meaning is 'he is cold'.)

When describing others' endopathic situations, except for the use of the *-garu* form (18b), the use of hearsay (19a, b) and inferential expressions (19c, d) is also acceptable.

[10] An apostrophe in the Japanese examples means an accent nucleus, functioning to lower the pitch of the following mora(s). The symbol # means a moraic boundary. The acute accent at a word-initial position in Harima Japanese denotes a low-pitch starting (forming a rising pattern); otherwise, every word starts in high-pitch.

(19) Standard Japanese

a. ka're-ha samu'i-tte
   3-TOP be cold-QUOT
   'He is/feels cold.' (literally: 'He said, "I am/feel cold." ')

b. ka're-ha samu'i-sooda
   3-TOP be cold-HS
   'It is said that he is/feels cold.'

c. ka're-ha samu'i-yooda
   3-TOP be cold-SNINFR
   'He is likely to be/feel cold.'

d. ka're-ha samu'i-mitai
   3-TOP be cold-VSNINFR
   'He looks cold.'

In principle, (19a, b) require an external source of information, such as his own words, 'I am cold'. However, this is acceptable even when no source is specified. Examples (19c, d), by contrast, are uttered based on the speakers' inferences.

The use of hearsay expressions is more frequent in the Harima dialect than in Standard Japanese. The *te* form functions as a hearsay marker with its own suprasegmental unit, not a quotative, as in Standard Japanese (cf. 20a); hence, (20a, b) do not cite the words of the subject of each sentence.[11]

(20) Harima Japanese

a. ano hi'to sa'mui-n#ya te
   that person be cold-NML.DECL HS
   'He is/feels cold.' (literally: 'He said, "I am/feel cold." ')

b. ano hi'to sa'mui-nen te
   that person be cold-DECL HS
   'It is said that he is/feels cold.'

Harima Japanese also uses inferential and hearsay markers to represent the third

[11] As the use of the third person pronoun is less frequent in Harima Japanese (Suzuki 2025), the subject is replaced by the word *ano hi'to* 'that person'.

person's endopathic expression. Unlike the *te* form, these markers carry their own evidential meaning, as shown in (21):

(21) Harima Japanese

a. ano hi'to sa'mui-sooya
that person be cold-HS
'It is said that he is/feels cold.'

b. ano hi'to samu-so'oya
that person be cold-SNINFR
'He looks like being cold.'

c. ano hi'to sa'mui-mitaiya
that person be cold-VSNINFR
'He looks like being cold.'

The verb for 'need' also requires a *te* marker for the third person subject in Harima Japanese, as in (22). Standard Japanese does not necessarily employ hearsay or inferential expressions.

(22) Harima Japanese (adapted from Suzuki 2025, ex. 6-9-b)

a. ano hi'to ´okane iru'-n#ya te
that person money need-NML.DECL HS
'He needs money.' (literally: 'He said, "I need money." ')

b.?? ano hi'to ´okane iru'-nen
that person money need-DECL
Intended meaning: 'He needs money.'

c. ano hi'to ´okane ho'sii-n#ya te
that person money want-NML.DECL HS
'He wants money.' (literally: 'He said, "I want money." ')

d.?? ano hi'to ´okane ho'sii-nen
that person money want-DECL
Intended meaning: 'He wants money.'

In Standard Japanese, the verb *hosii* 'want' has its third person form *hosi-garu*; however, the verb *iru* 'need' does not. In Harima Japanese, both *hosii* and *iru* can generate their third-

person forms by adding inferential and hearsay forms following examples from Standard Japanese (18).

3.3 Summary

Southwestern Mandarin does not have any endopathic markings in its original structure. Some varieties show endopathic expressions copied from a Tibetic language, whereas Japanese varieties have original endopathic expressions in their grammar. However, the forms and uses of endopathic expressions exhibit dialectal variations.

The endopathic formation for the third person is summarised in Table 1.

Table 1: Endopathic formation for the third person.

Language	Inferential marker	Hearsay marker
Yunnanese, spoken by Han people		
Yunnanese, spoken by Tibetans		✓
Standard Japanese	✓	✓
Harima Japanese	(✓)	✓

Verb predicates to be marked with an endopathic expression also vary depending on the variety. Table 2 contrasts examples from Yunnanese (spoken by the Tibetic-speaking people), Standard Japanese, and Harima Japanese.

Table 2: Endopathic marking for the third person

Verb categories	Yunnanese	Standard Japanese	Harima Japanese
Sensory	✓	✓	✓
Emotional		✓	✓
Need	✓	(✓)	✓

From a typological point of view, these phenomena suggest that the endopathic formation of Harima Japanese resembles that of Tibetic languages, which use inferential and hearsay evidential markers for verbs with sensory, emotional, and need meaning.

4. Conclusion

This article introduced endopathic constructions in a range of Tibetic languages and presented endopathic-related expressions in Southwestern Mandarin and Japanese. The particular marking of endopathic expressions varies in languages, either with the evidential system or other grammatical derivations. Southwestern Mandarin and Japanese exhibit the marking strategy of the third person's endopathic situation, in which they share commonalities with several Tibetic languages. The article also demonstrated the transfer of endopathic marking from Tibetic (rGyalthangic) to Sinitic (Southwestern Mandarin), which was not originally sensitive to the endopathic category.

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Abbreviations

1	first person
2	second person
3	third person
CLS	classifier

DAT	dative
DECL	declaring form
EGP	egophoric
ENDO	endopathic
FAC	factual
HS	hearsay
INFR	inferential
LE	Sinitic *le* 了
LV	light verb
M	masculine
NPFT	nonperfect
NML	nominalisation
NVSEN	nonvisual sensory
PFT	perfect
PRS	present
QUOT	quotative
SEN	sensory
SNINFR	sensory inferential
VSNINFR	visual sensory inferential

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What Linguistics Fails to Do, What It Can Contribute, and What It Should Do in the Age of AI

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1. Introduction

Professor Randy John LaPolla is a leading scholar whose extensive work spans Sino-Tibetan and historical linguistics, language documentation and fieldwork, linguistic typology, and the philosophy of language. Beyond his foundational contributions to these fields, LaPolla has long kept abreast of cutting-edge developments in language technology and artificial intelligence. In 2023, he published the article "Considering Abduction in Artificial Intelligence," and the following year co-edited the Chinese-language volume *ChatGPT Is Here: How Linguistic Scientists See ChatGPT* with Dr. Xu Yang.

As a researcher working in linguistic typology, quantitative linguistics, and computational linguistics, I take this opportunity to contribute a paper to this Festschrift in celebration of Professor Randy J. LaPolla's remarkable scholarship. Through this contribution, I hope to engage in dialogue with him and fellow scholars on the challenges currently faced by core linguistics in the age of AI, as well as on the potential contributions that linguistics can still make to artificial intelligence.

Since the release of ChatGPT in late 2022 and the subsequent introduction of GPT-4 in 2023 (OpenAI, 2023), large language models have undergone rapid and unprecedented growth. At an early stage, skepticism was widespread across disciplines regarding whether these systems possessed any form of genuine intelligence. A common criticism was that they merely functioned as stochastic parrots (Bender et al., 2021), operating as machines that predict the next word rather than exhibiting true understanding. As development has

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progressed, however, it has become increasingly difficult to deny that contemporary AI systems exhibit a certain degree of intelligence by the end of 2025 (Maslej et al., 2025). These systems are capable of solving previously unseen problems and generating novel solutions, despite well-known limitations such as hallucinations. It is therefore clear that current AI performs relatively well in certain respects and demonstrates a nontrivial level of intelligence.

Natural language processing (NLP) is often regarded as a flagship area of artificial intelligence. Although NLP focuses on language, linguists have played a relatively limited role in its development as both an engineering discipline and a subfield of AI.

LaPolla (2023) makes a deeper point: what current AI lacks is not merely more data, but abductive reasoning—the capacity to infer communicative intentions and create meaning. Drawing on Grice, he further argues that this form of inference lies at the core of human consciousness and is fundamentally pragmatic: it depends on the addressee inferring the communicator's intention within a subjective "context of interpretation." Because this process is inherently linguistic and context-bound, linguistics should not compete with engineering on the terrain of induction, but should reclaim abduction as its irreplaceable disciplinary niche.

Against this background, the present article examines what linguists can meaningfully contribute in the age of AI. In Section 2, we first review several major breakthroughs in the development of natural language processing and show how these advances have progressively excluded the need for explicit linguistic knowledge. In light of this trend, we argue that linguists should not attempt to compete with engineering-driven solutions. Instead, they should consolidate and defend their own disciplinary ground, while using NLP techniques for linguistic research. In Section 3, drawing on research areas associated with Professor LaPolla, we discuss key issues related to the assessment of AI, field linguistics, language description and cross-linguistic comparison in the AI setting. Specifically, we argue that linguists should place greater emphasis on the measurement problem in language, which is essential for strengthening linguistics as a scientific discipline. In addition, greater attention should be given to linguistic data and resources, with AI technologies used to support the whole process of digital linguistic description. Section 4 concludes the whole paper.

2. How Linguistics Has Been Marginalized in the NLP Revolution

Natural language processing, as a subfield of artificial intelligence, has played a central role in this recent wave of AI development. Due to its close association with language, NLP has traditionally been regarded as an applied extension of linguistics, much as mechanics underpins engineering disciplines such as civil, mechanical, and aeronautical engineering. Nevertheless, even before the emergence of large language models, some scholars had already argued that cutting-edge advances in NLP no longer relied on linguistic knowledge. As reflected in Frederick Jelinek's well-known remark, "Every time I fire a linguist, the performance of our speech recognition system goes up," statistical models in many tasks even surpassed linguistically informed approaches in terms of performance. This tendency has become particularly pronounced in the era of large language models. In earlier phases, several attempts were made to develop linguistically informed small models for specific tasks. However, with the advent of LLMs, the performance of these approaches has generally been unable to surpass that of large language models. The long-held view that computational linguistics and NLP represent two sides of the same coin has become increasingly debatable. Contemporary NLP systems and their downstream applications now operate largely independently of traditional linguistic theory and knowledge.

In this section, we demonstrate how several disruptive technological breakthroughs in NLP have achieved superior performance without explicitly incorporating linguistic knowledge. These advances have enabled the solution of tasks that were previously considered nearly unattainable and have effectively addressed several long-standing problems in traditional linguistics. Consequently, linguistically driven approaches are less able to contribute directly to mainstream NLP.

In the representation of linguistic knowledge, embedding techniques encode texts and linguistic units as low-dimensional and dense vectors. Similarity between units is captured through distance relationships in the vector space. Early embedding methods were primarily designed to represent semantic information. Subsequent studies have shown that such representations can also encode a wide range of information beyond semantics. By contrast, traditional linguistic representations rely on structured and symbolic formalisms. These approaches presuppose a large set of predefined categories and structural schemes, such as parts of speech, syntactic constituents, semantic roles, or construction types. When

compared with embedding-based representations, traditional structured approaches exhibit several limitations. First, embedding representations are learned automatically from large corpora through neural network training. This process avoids the extensive manual annotation required by traditional frameworks. In structured representations, category assignment across multiple features often involves subjective decisions, which leads to persistent disputes over category boundaries. Second, each structured framework is typically designed to capture only a single aspect of linguistic structure. In contrast, different layers of neural networks encode different types of information. Lower layers tend to capture lexical and syntactic patterns, while higher layers are more sensitive to semantic and pragmatic information. In addition, the multi-head attention mechanism in transformer architectures allows models to capture multiple types of relationships simultaneously. Finally, contextualized embeddings can obtain the correct meaning of a polysemous word within a given context, rather than relying solely on the meaning of static, isolated word types. They also handle neologisms and unseen words, since the meaning can be guessed based on the context.

For tokenization, contemporary large language models predominantly adopt byte-level tokenization methods. For example, based on co-occurrence frequency, the word *internationalization* may be segmented into *international* and *-ization*. At first glance, this procedure appears similar to morphemic analysis in linguistics. In practice, however, such segments do not always correspond to linguistic morphemes. For instance, *unbelievable* may be segmented as *un* + *belie* + *vable*, where some segments lack clear linguistic meaning. Using the Tokenizer Playground[2] provided on HuggingFace, we can observe that GPT-4 segments the Mandarin two-character word 研究 *yánjiū* 'research' into five tokens. Each token corresponds to what is essentially an unintelligible byte sequence, with vocabulary indices of [163, 254, 242, 33354, 114]. This fully data-driven approach may therefore yield tokens that are not linguistically meaningful. Nevertheless, through context-based embeddings, these tokens can acquire specific meanings in context by combining with other tokens. These techniques segment text into combinations of sub-character units. Therefore, different languages can share a common set of underlying building blocks. For example, GPT-4 uses the cl100k_base tokenizer, which has a vocabulary of approximately 100,000 tokens. With this shared inventory, words and sentences across languages can be composed

[2] https://huggingface.co/spaces/Xenova/the-tokenizer-playground

from the same token set. Such tokenization strategies allow this foundational step of language processing to operate independently of linguistic knowledge of word or construction segmentation. They do not align with the assumption held by many linguists that human language processing is based on constructions, words, morphemes, or other linguistically motivated units. However, this design choice substantially reduces model dimensionality and computational complexity. With the contextualized embedding technique mentioned above, the appropriate meaning of a multi-token linguistic unit or text fragment within context can be derived by combining the basic tokens. This approach enables large language models to handle complex linguistic phenomena, including morphologically complex novel words, code-switching, translanguaging, borrowing, and hybrid forms. These phenomena are difficult to address using traditional NLP systems that rely on linguistically defined rules and predefined tokenization schemes for individual languages.

With respect to pretraining objectives, contemporary models adopt language modeling as the primary pretraining task. Through this process, linguistic knowledge is compressed during pretraining and subsequently generalized to downstream tasks through fine-tuning. BERT employs masked language modeling, in which a subset of tokens is randomly masked and the model is trained to predict the masked items. GPT, by contrast, uses an autoregressive language modeling objective, in which the model predicts the next token given the preceding context. Both approaches rely on self-supervised learning and do not depend on external annotations. They are trained solely on raw text, which substantially reduces the workload associated with data preprocessing and manual labeling. Within linguistics, the cognitive sociolinguistic paradigm focusing on how speakers choose among alternative constructions or near-synonymous lexical items shares a similar goal (see Bresnan et al., 2007, among others, as well as more recent overviews by Pijpops et al., 2024 and Colleman & Noël, 2025). Studies in this tradition typically annotate a wide range of intra-linguistic and extra-linguistic factors, such as style, semantics, discourse context, frequency, and formal properties, and employ multivariate models to predict which construction form is preferred in a given context (Geeraerts et al., 2010). However, this approach faces two major limitations. First, the predictive accuracy achieved by linguistically informed models of constructional alternation is substantially lower than that of modern language models based solely on contextual information. Second, the constructional alternation paradigm relies on multi-layer

manual annotation, which is extremely costly. It is difficult to imagine annotating the large-scale corpora used for training large language models with such detailed linguistic information, given the enormous amount of labor and resources that would be required. In contrast, language modeling relies only on raw textual data and can achieve remarkably high predictive performance. Hence, the primary value of linguistically informed approaches to constructional alternation may currently lie in explanatory analysis, while their predictive advantages appear limited compared with those of modern language models.

With respect to text processing pipelines, modern deep learning approaches typically rely on end-to-end neural network training. This contrasts with traditional NLP pipelines, which involve multiple sequential steps, including word segmentation, lemmatization, part-of-speech tagging, syntactic parsing, semantic analysis, and so on. A problem of the traditional approach is that each processing stage introduces its own error rate, and errors accumulate across steps. More importantly, many types of real-world language data, especially spoken language and informal text, are often ungrammatical or incomplete. For such data, reliable syntactic parsing is frequently infeasible. This limitation arises partly from the lack of appropriate theoretical frameworks and partly from the absence of highly accurate trained parsers that can robustly handle such input. Embedding-based approaches bypass these limitations by learning representations directly from raw language use. They no longer depend on intermediate linguistic analyses. Consequently, downstream applications become more robust when processing noisy and non-canonical language data.

In terms of model architecture, Transformer has become the dominant framework in contemporary NLP. It is a form of self-attention network designed to capture dependency relations among tokens. Unlike classical probabilistic syntactic models, such as probabilistic context-free grammars (PCFGs), Transformer models do not presuppose an explicit grammar that defines well-formed sentences. This design choice results in greater robustness and allows the model to process large numbers of utterances that may appear ungrammatical yet remain interpretable. Current AI systems can successfully interpret inputs that consist of fragmented words, irregular word order, or sentences containing minor errors. Such inputs are common in everyday spoken language. It is difficult to imagine an effective AI system that can only understand perfectly grammatical sentences. A model restricted to analyzing well-formed sentences alone would fail to meet the practical demands of real-world language use.

As shown above, an examination of the core technologies currently involved in NLP suggests that, although NLP is a language-related field, traditional linguistic knowledge has had limited influence on the core architectures of contemporary NLP systems. From an engineering and economic perspective, linguistically informed approaches are unlikely to displace these architectures in the near future.

From an engineering perspective, this situation is not necessarily problematic. A classic analogy can be drawn from aviation. Early aircraft design was partly inspired by the study of birds. However, airplanes differ fundamentally from birds in their biological materials and structures. Because aircraft construction is goal-driven, there is no requirement to fully replicate biological systems. Similarly, although AI systems and human language production rely on different mechanisms and modes of cognition, these fundamental differences in underlying mechanisms and implementation should be acknowledged. Current AI systems can already meet many practical needs. This does not imply that AI must become a form of biomimicry in which its internal mechanisms and outputs closely resemble human language use. Such a goal would only be relevant if future AI development were to pursue systems whose intermediate mechanisms and cognitive processes more closely approximate those of humans, in a manner analogous to humanoid robotics.

In sum, from an engineering perspective, many cutting-edge techniques in mainstream NLP operate without explicitly incorporating current linguistic theories and are unlikely to be replaced by linguistically informed alternatives in the near future. Nevertheless, linguistic theory remains relevant to selected tasks, analyses, and applications, including interpretability, evaluation, low-resource languages, pragmatics, and language documentation. Thus, although linguistics is no longer the primary theoretical foundation for many areas of NLP engineering, this development raises important questions about whether existing linguistic theories adequately capture the patterns learned by contemporary models and whether neural network-based frameworks may offer complementary or, in some respects, more adequate accounts of language.

3. What linguists should do in the age of AI

With the rise of artificial intelligence, many disciplines have actively integrated AI into their research. High-profile examples are frequently reported, such as AlphaFold, which has

dramatically accelerated scientific discovery. However, such successful collaborations rely on two key conditions. First, the field must have clearly defined and valuable research goals. Second, it must possess large and well-structured data resources. Based on the experience of my own research team, interdisciplinary communication has revealed a different situation for linguistics. Scholars from other disciplines often struggle to identify the value that linguistics can offer. When we seek interdisciplinary collaboration, researchers from other disciplines often hold several expectations of linguistics: 1) Linguists are expected to provide systematic frameworks for the classification and description of linguistic phenomena. 2) Linguists are expected to develop quantitative evaluation systems for assessing language abilities. However, such expectations are frequently unmet after closer collaboration. For the first expectation, there are often no mature or readily available resources that linguists can provide for immediate use. This gap is largely due to the research traditions of linguistics. Linguistic studies often focus on small sets of examples rather than systematic frameworks. Furthermore, these frameworks, if they exist, are rarely formalized, digitized, or validated on large-scale corpora. As for the second expectation, in a similar vein, currently linguistics often fails to offer systematic criteria for evaluating certain language-related abilities. Consequently, it seems that linguistics is no longer a pilot science as some scholars previously suggested (Greenberg, 1973; Marcus, 1974; Wu, 1994), but rather an underprepared discipline in the age of AI, given its limited engagement with AI-driven research.

As mentioned in the last section, from an engineering perspective, current linguistic knowledge has only limited capacity to inform the development of natural language processing. Thus, in this section, we argue for a shift in perspective. Linguists should refocus on the core goals of the discipline, namely the evaluation of linguistic abilities, the description of languages, and cross-linguistic comparison. All three issues are major concerns that Professor LaPolla has long engaged with, and therefore seem particularly appropriate to address in this Festschrift contribution. We argue that traditional linguistic knowledge is also not entirely obsolete. Rather, it should be leveraged to establish standardized frameworks for describing linguistic phenomena and evaluating language competence, which can be used to assess the language-related abilities of LLMs. At the same time, the production of linguistic knowledge itself should move toward greater standardization and large-scale data construction. Linguistics could become an explicit target

of AI enablement by defining new NLP task objectives and, on this basis, developing a wide range of language processing tools, software, and products.

Section 3.1 focuses on the evaluation of the linguistic abilities of large language models and lists four possible approaches. Among these, the fourth approach, which is based on text or connected speech, can be regarded as a core method stemming from linguistics. Building on this line of reasoning, Section 3.2 concentrates on the measurement of linguistic texts. It introduces the concept of Glottometrics proposed in my dissertation (Yih, 2023) and argues that it can be viewed as an extended form of linguistic description. Section 3.3 serves as an interim discussion and examines the relationship between traditional field linguistics and corpus-based language description conducted by armchair linguists. As I am not a field linguist, the discussion places greater emphasis on the latter. Section 3.4 highlights the central role of language data and proposes a future framework for the work of descriptive linguists. Finally, Section 3.5 briefly discusses how AI may help address long-standing challenges in linguistic typology, particularly those concerning cross-linguistic comparison, description, and identification.

3.1 Establish language-related evaluation criteria

Since large language models are capable of producing language, their evaluation has become a major focus of current research. We start with LaPolla's (2023) concerns about LLMs' ability to engage in abductive reasoning. Abductive reasoning involves inferring the most plausible explanation for an observed phenomenon and is a central component of everyday human cognition. In most situations, humans rely on probabilistic rather than deterministic forms of inference. With the introduction of techniques such as chain-of-thought (COT) prompting, AI systems have increasingly been able to decompose tasks and produce stepwise responses. But do current AI systems really possess abductive reasoning abilities? We conducted a review of the literature up to the end of 2025, showing that this issue remains controversial. Abe et al. (2024) adopted Peirce's syllogistic definition of abductive reasoning and constructed a dedicated dataset to evaluate several models, including GPT-3.5, GPT-4, Llama-3-8B, and Llama-3-70B. Their results showed that large language models performed substantially worse on abductive reasoning than on deductive reasoning. This finding contrasts with human cognition, where abductive reasoning is generally considered a relative strength. Similarly, Dougrez-Lewis et al. (2025) reported that,

on the RECV benchmark, GPT-4, GPT-4o, and Claude achieved reasonable performance on deductive reasoning tasks but systematically failed on abductive reasoning tasks. Their study also emphasized that generating rationales does not necessarily indicate genuine abductive reasoning ability. In contrast, Pareschi (2023) reported opposing results. In applied settings, GPT-4 was found to exhibit abductive reasoning capabilities, particularly in hypothesis generation and selection within complex and realistic contexts. These behaviors extended beyond superficial pattern imitation. The discrepancies across these studies may partly arise from differences in definitions and evaluation criteria. Nevertheless, they share a common approach in relying on benchmark-based evaluations to assess abductive reasoning in large language models.

Yet these benchmarks largely treat abduction as a logical syllogism. As LaPolla (2023) argues, abduction in language is fundamentally pragmatic: it is the inference of why a communicator performed a particular act in context. Linguistics is uniquely positioned to evaluate this communicative-intention dimension, rather than ceding it entirely to logic and NLI. This requires moving beyond benchmark-based logical syllogisms and developing evaluation protocols that assess how a model infers communicative intent within a specific context of interpretation.

Beyond abductive reasoning, the evaluation of discourse quality and language-related abilities is inherently multidimensional. It includes basic language competence, such as producing fluent, error-free, sufficiently complex, and human-like output. It also involves communicative competence, semantic commonsense knowledge (e.g. recognizing that stones are not edible), and broader world knowledge. In addition, higher-level reasoning abilities are required, including the capacity to understand and produce metaphor, humor, irony, deception, and politeness, which are central to advanced linguistic and pragmatic competence. Further dimensions concern ideology, ethics, values, bias, morality, and creativity. Together, these aspects raise a fundamental question of how AI systems can be made to use language in ways that resemble human communication. Addressing this question requires the development of more comprehensive evaluation criteria. In current AI research, a common approach is to design benchmarks and assess large language models based on their responses. To measure any specific construct, it is necessary to operationalize the abstract concept and construct annotated datasets that reflect it.

However, among the many dimensions involved in language evaluation, only a small

subset has been actively addressed by linguists, such as syntactic probing and studies of semantics and pragmatics. A much larger portion of this work has been undertaken by researchers in computer science, logic, and psychology. For example, abductive reasoning belongs primarily to the domain of logic, and its evaluation is typically situated within the subfield of Natural Language Inference (NLI). Similarly, some psychologists have directly applied psychometric approaches to the assessment of LLMs. This underscores the need to establish standardized theoretical frameworks and tools comparable to psychometrics that can directly and systematically measure language ability.

So far, to our knowledge, at least four approaches to the evaluation of language ability can be identified.

First, the traditional measurement of language ability in neuropsychology has relied on standardized neuropsychological tests. These tests are largely focused on isolated lexical tasks, such as the Boston Naming Test, verbal fluency tasks, repetition tests, comprehension tasks like the Token Test, the Peabody Picture Vocabulary Test, etc. Most of these instruments primarily assess lexical knowledge and provide limited access to more complex linguistic dimensions, including syntax, semantics beyond the word level, and discourse organization.

In the field of language testing, a second type of assessment more commonly takes the form of questionnaires or test items designed to elicit specific responses. While these approaches offer standardized scoring procedures, they often abstract away from natural language use.

As noted earlier, a third benchmark-based assessment is currently the predominant approach for describing language-related abilities in artificial intelligence research.

Finally, a fourth approach is to analyze connected speech production directly. This approach shifts the focus from text-based measurement to the assessment of language ability itself. It has been widely adopted in both second language research and clinical linguistics, where spontaneous or semi-spontaneous speech is used to capture richer linguistic behavior across multiple levels.

It can be seen that the first two approaches are experiment-based, whereas the latter two rely on textual data of language production. What we attempt to emphasize here is that the core strength of linguistics lies in text analysis. This involves using quantitative measures derived from continuous discourse to reflect human language ability, as discussed above.

From such discourse, a wide range of indicators can be extracted, including lexical, syntactic, semantic, pragmatic, and discourse-level measures, along with phonetic measures extracted directly from raw audio data. This perspective is consistent with the From-Corpus-to-Cognition Principle proposed by Schmid (2000). For this reason, the measurement of overt, externalized language output remains a central and indispensable component of linguistic research and provides a window into internal language abilities or knowledge as a latent variable. In the next section, I elaborate on the measurement and/or description of text in language.

3.2 Glottometrics: Solidifying the foundations of scientific study of language

Measurement is the first step of scientific inquiry. If linguistics is to be regarded as a science, it should, like other sciences, develop a dedicated branch that takes accurate measurement as its central goal. Across both the natural and social sciences, specialized fields devoted to measurement have emerged, although under different names, such as chemometrics, biometrics, educational measurement, and psychometrics. Historically, efforts aimed at measuring language can be situated within the tradition of Quantitative Linguistics. However, measurement represents only one of the many concerns addressed within this field. Hence, issues related to measurement in language have not yet developed into an independent disciplinary domain. Moreover, quantitative linguistics has primarily emphasized the quantification of linguistic phenomena in texts, with an exclusive focus on numerical measurement. This paper argues that, in the age of AI, measurement deserves renewed and explicit attention within linguistics and should form a distinct subfield. Yih (2023) proposed the concept of Glottometrics in his dissertation, referring precisely to such a branch of linguistics devoted to the systematic measurement of language.

Yih (2023) extended the scope of measurement, defining it in a general sense as a mapping from a set of objects to a target set; traditional numerical measurement then corresponds to mappings to the set of real numbers.

$$M: \mathcal{O} \rightarrow \mathcal{T}$$

Under this definition, and drawing on Stevens's (1946) classical theory of the four scales of measurement, classification tasks are also treated as a form of measurement. In classification, the target set consists of a finite set of discrete categories. A related case involves mappings to ordered sets, such as the assessment of degrees of animacy. Such a

type of measurement is common in psychological scale construction. Yih further makes a novel contribution by incorporating structural analyses, such as syntactic parsing, into Glottometrics. In this case, the target set is more complex, that is, a set of all theoretically possible syntactic trees that are fully defined under a given set of constraints. Syntactic parsing can therefore be understood as mapping textual input to a space of syntactic structures.

Depending on whether the measured objects are textual or acoustic, Glottometrics can be further divided into textometrics and speechmetrics. From a broader interdisciplinary perspective, Yih also argues that text-based measurement can be placed alongside physical measurement (metrology) and psychometric measurement as part of a more general science of measurement. In addition, concepts traditionally associated with measurement, including units of analysis, measurement error, precision, Type I and Type II errors, measurement standards, and reliability and validity, can be systematically extended to linguistic measurement. Yih provides concrete examples to demonstrate how these concepts can be meaningfully applied within this generalized measurement framework.

If classification of linguistic units and structural analysis of texts are acknowledged as forms of measurement, linguistic measurement has in fact long existed within linguistics under another name, namely *language description*. From this perspective, traditional descriptive linguistics can be subsumed under Glottometrics, provided that the descriptive procedures can be formalized as well-defined mathematical problems, and conducted in a standardized way.

The measurement problem is important for several reasons. First, in current quantitative empirical research on language, different studies may rely on part-of-speech analysis, syntactically annotated corpora, or other types of annotated data based on qualitative classification frameworks. It is well known that the categorization of linguistic units involves substantial debates, which Haspelmath (2007) referred to as *category-assignment controversies* and illustrated with a series of examples. More importantly, categories in linguistics are often not defined on the basis of a single property. Instead, they are typically characterized by a combination of inclusion and exclusion decisions across multiple phenomena. If there is a set of N property switches, then different configurations can in principle yield up to 2^N distinct category definitions, resulting in substantial conceptual complexity. These differences in qualitative definitions would further lead to divergent

frequency counts and, in turn, affect the results of quantitative analyses.

Hence, if the annotation schemes differ, or if identical labels are used to classify different linguistic phenomena, systematic errors may arise. These inconsistencies reduce the reproducibility of single studies as well as the comparability of findings across studies, and place a large body of existing research on an unstable empirical foundation. The errors can further propagate through subsequent stages of analysis and ultimately affect the results and their validity. In measurement science, the Law of Error/Uncertainty Propagation is well established. It states that derived variables are often measured less accurately than variables obtained through direct measurement. This principle, however, appears to be largely overlooked in many areas of quantitative linguistic research.

In addition, despite the growing volume of evaluation and quantitative research, insufficient attention has been paid to the reliability and validity of measured indicators and concepts. Measurement should aim to capture the constructs it is intended to operationalize (Stefanowitsch, 2020). Although a large number of qualitative frameworks and quantitative indicators have been proposed, many of them are designed to represent the same underlying constructs, such as lexical diversity or syntactic complexity. However, the differences among these indicators, the criteria for selecting among them, and the extent to which they truly reflect the intended constructs remain unclear. For validity, a quantitative measure should align with intuitions about the ordering of objects along the target dimension, whereas a qualitative measure should align with intuitive judgments about category membership. Both should ideally be uncontroversial. As for reliability, the ideal requirement is that the same result should be obtained regardless of which annotator performs the measurement, or when, where, and how many times the measurement is conducted. Unfortunately, systematic studies examining the reliability and validity of such measures are still relatively scarce.

Finally, in the age of AI, the importance of linguistic measurement has become even more evident. AI systems are fundamentally probabilistic models. This is especially true for generative AI. Such systems often perform well on tasks that lack a single correct answer, involve relatively loose constraints, or require a degree of creativity. They can also be effective in tasks where approximate or pragmatic completion is sufficient. The success of generative AI in many applications often stems from the fact that these tasks do not involve strictly defined correct answers. However, in domains where clear evaluation criteria exist and high precision is required, reliance on AI alone is problematic. More importantly, such

tasks require a prior clarification of what constitutes the gold standard against which results should be evaluated. Many scientific and analytical contexts are precisely concerned with whether results can reliably and accurately approximate a predefined standard. When AI-generated outputs are overly permissive or exhibit a non-negligible probability of failure, they fail to meet these requirements. Because precision is one of the core objectives of measurement, revisiting and emphasizing measurement issues in the age of AI is not only practically important but also methodologically necessary.

In sum, issues of linguistic measurement constitute a foundational concern that linguists must urgently address in the age of AI. Language is a human-driven complex adaptive system (Liu et al., 2017). The principles of variation and causality that shape language can hardly be understood in isolation from human agents. For this reason, multi-level and multi-dimensional descriptions of language are of particular importance. This section has argued for the necessity of foregrounding measurement as a central concern in linguistic research. The following sections consider the implications of this perspective for descriptive linguistics, linguistic data, and cross-linguistic comparison.

3.3 Interim discussion: Field and armchair approaches to descriptive linguistics

Since LaPolla is a field linguist, a descriptive linguist, and a typologist, readers of this volume are likely to be particularly concerned with issues of language description and cross-linguistic comparison, especially what insights AI can bring to these fields. However, given that I am not a field linguist but rather a typical armchair linguistic researcher, I do not claim expertise in field linguistics. Yet I still consider myself a descriptive linguist. As an interim remark, this section briefly outlines our views on descriptive linguistics.

As noted in the previous section, Glottometrics can in fact be viewed as an updated form of descriptive linguistics, or as an alternative label for it. Before proceeding to the discussion of language description in the age of AI in Section 3.4, it is necessary to clarify the use of the term *descriptive linguistics* in this paper. In the present context, it is not limited to fieldwork on underdescribed languages. Even for widely studied languages such as English and Mandarin Chinese, linguistic description is never exhaustive and can always be refined through additional data and methods. Corpus resources, in particular, enable more fine-grained, detailed and systematic description. For example, the comprehensive grammars of English developed by Douglas Biber and colleagues on the basis of large-scale

corpora also constitute descriptive linguistics and can be characterized as *Corpus-based Descriptive Linguistics* (Biber et al., 1999, 2021). Hence, in the present discussion, descriptive linguistics is understood in a broad sense. It encompasses the work of phonologists, syntacticians, semanticists, and pragmaticians, that is, the core domains of linguistic research. For underdescribed or so-called low-resource languages investigated by traditional field linguists, large-scale corpora are often unavailable. In such cases, researchers may rely on manual generalization of grammatical patterns, resulting in what is commonly referred to as a grammar sketch. Nevertheless, once sufficient data have been accumulated, more fine-grained corpus-based description becomes both possible and necessary. More generally, language-related disciplines and practices have become increasingly specialized. Field linguists tend to operate at the front end of data collection, whereas corpus linguists are more involved in large-scale analysis and modeling. For major languages such as English and Chinese, descriptive work has further expanded to include regional, dialectal, and social variation, reflecting the growing granularity of contemporary linguistic research.

In the age of AI, field linguists continue to hold an irreplaceable role. They pursue clearly defined and enduring goals, including the documentation and preservation of rare and endangered minority languages, as well as the maintenance of linguistic diversity. These goals carry strong humanistic and cultural significance. A central aim of field linguistics is to produce a culturally grounded, language-specific description, typically resulting in a phonological system, an orthography, a lexicon, and a grammar sketch.

In addition, to my knowledge, field linguists often adopt a more explicitly humanistic orientation. They tend to focus on detailed and immersive descriptions of individual languages and specific cases, and they frequently question cross-linguistic categories or predefined descriptive tools. For instance, LaPolla (2023) and LaPolla & Lu (2024) argue that single-language description should proceed inductively from within the language itself. In some respects, this approach resembles unsupervised learning in machine learning. With the integration of AI, it may become possible to automatically identify phonological patterns, induce linguistic categories through clustering, perform grammatical induction, and support automated lexicography. Unlike the more scientistic orientation of linguistic measurement discussed below, LaPolla further emphasizes that linguistic categories should emerge from the internal structure of a language and should ideally reflect the cognitive categories of its

native speakers, just as the native speakers of Chinese clearly possess an intuitive notion of the Chinese characters. At its core, this process resembles alignment in AI, which is technically achievable.

Interestingly, if we ask what AI experts might expect to gain from collaboration with field linguists, this would most likely involve access to rare-language resources rather than descriptive frameworks or theoretical accounts. As AI systems have become increasingly effective at extracting information directly from textual data, often without heavy reliance on manual annotation or prior descriptive analysis, new opportunities also emerge for field linguistics. In the future, it may be possible to establish shared corpus platforms in which digital data from low-resource languages are uploaded in standardized formats during fieldwork itself. Such an approach would maximize data reuse and substantially improve research efficiency.

3.4 Digitalized Language Description

As shown in Section 2, although linguistic knowledge may no longer contribute to the development of NLP at the technical level, it remains valuable in its own right. In the age of AI, data have become a critical resource.

Table 1 Sizes of large-scale databases in other disciplines[3]

Database	Field	Size
Protein Data Bank	Life Science	247,086 structures
UK BioBank	Medicine	~500,000 participants
PubChem	Chemistry	~342 million substances; ~123 million compounds
Materials Projects	Materials Science	200,487 materials 577,813 molecules
OED online	Linguistics	over 500,000 words
WALS	Linguistics	2662 languages 192 typological features
GramBank	Linguistics	2467 languages 195 features

[3] Accessed on December 29, 2025.

Glottolog 5.2	Linguistics	8,612 languages
Ethnologue	Linguistics	7,159 languages
Universal Dependencies v2.17	Linguistics	186 languages 339 Treebanks
CLICS[3] (Database of Cross-Linguistic Colexifications)	Linguistics	3156 language varieties 2919 concepts
Concepticon 3.4.0	Linguistics	140,820 concepts 4,034 entries 466 concept lists

We first provide a summary of representative large-scale databases in other scientific disciplines and most, if not all, well-known databases in linguistics (Table 1). The table demonstrates that, in the natural sciences, databases containing several hundred thousand entries are by no means exceptional. In linguistics, by contrast, apart from the Oxford English Dictionary, which is a long-established online historical dictionary, most existing databases remain relatively small. Among non-lexicographic resources, Concepticon appears to be the database with the largest number of entries. In addition, several large-scale projects seem to have been initiated in Europe, with the exception of Ethnologue, which is based in the United States. In contrast to other non-corpus databases, Universal Dependencies is probably the largest and most commonly used cross-linguistic corpus.

It can be observed that, although some structured linguistic databases already exist, they remain limited in both number and scale when compared with those in other disciplines. The reasons for this situation are complex and may include factors such as funding availability, the size of the research community, and the historical status of this discipline, all of which constrain the feasibility of large-scale empirical research. Yet I do not dwell on this issue further here. What I attempt to illustrate is that, despite often being described as a science, linguistics lags behind many other fields and requires substantially stronger data accumulation. Data constitute the foundation of AI-enabled scientific research. A discipline that relies primarily on introspection or illustrative examples, without sustained accumulation of empirical data, cannot be regarded as a mature science.

If linguistics is to be regarded as a science, linguists should make greater use of advanced automatic tools with high accuracy and produce research outputs in more systematic and structured digital forms. It is therefore necessary to further systematize and digitize traditional linguistic descriptions, and to develop language processing tools and large-scale linguistic databases. In light of this, we propose several criteria for digital literacy for future linguists. Below we outline the complete workflow we propose for knowledge creation in linguistic description.

(i) Construct a classification framework for a specific linguistic dimension or category, drawing on existing classification frameworks in the literature and inductive evidence from corpus data. This framework development process is iterative and may be revised as new data are encountered and previously unobserved patterns emerge.

(ii) Write detailed annotation guidelines and create a gold-standard corpus through careful manual annotation, which may be relatively small in scale. During this process, large language models may be used in a few-shot or example-based manner to assist with initial or difficult annotation decisions in low-resource or structurally complex domains, with human oversight to ensure annotation quality. The annotation should be carried out independently by at least two annotators or quality-control reviewers. Multiple types of reliability and validity should be assessed to ensure the robustness of the scheme.

(iii) Formalize this linguistic problem as a computational task, which in most cases falls into or closely resembles one of several established NLP task types. These include text classification (sequences to classes, e.g. sentiment analysis or spam detection), text quantification (sequences to numerical values), sequence labeling (e.g. tokenization, part-of-speech tagging), sequence-to-sequence modeling (e.g. machine translation), structural analysis (sequences to trees or graphs, e.g. syntactic and semantic parsing), span identification and tagging (e.g. named entity recognition), as well as in-context annotation, where selected textual units or expressions are labeled with reference to their surrounding context.

(iv) Train a neural network model as a stable and controllable task-specific automatic annotator targeting the linguistic dimension under investigation, with performance evaluated against the gold-standard corpus. The purpose is to move beyond online general-purpose AI systems and develop annotators with stronger performance within a specific domain.

(v) Iterate the process. Additional data are continuously incorporated to further refine

and expand the annotated corpus. Through iterative retraining, the annotator can be progressively improved and adapted to broader data coverage and increased linguistic variability.

In fact, a few attempts have already followed this practice. For example, building on earlier work, Jurafsky et al. (1997) refined a classification framework for speech acts, accompanied by a detailed annotation manual[4] and a corresponding corpus in which the speech act dimension was extensively annotated, namely SWBD-DAMSL and the SwDA corpus. We consider this a successful and representative example of linguistic description.

In other domains, however, although classification frameworks have been proposed in articles and monographs, some of which are highly detailed and illustrated with examples for each category, comprehensive and digitized lexicons or resources are still lacking.

The discussion above has focused primarily on specific linguistic dimensions or categories. When the research target is the discourse of particular populations performing specific speech tasks, it is advisable to construct targeted and task-specific corpora, from which relevant lexicons can also be derived, such as concept units associated with elicitation tasks in clinical settings.

When the focus is on a particular phenomenon within a specific language, a dedicated corpus of example sentences should be established. This point is especially relevant to work in theoretical or generative linguistics. In practice, one de facto aim of such research is to identify previously unattested or rare linguistic phenomena, often elicited through acceptability judgment tasks. Such an objective is similar to that of high-energy physics, which investigates rare microscopic particles. Likewise, this linguistic tradition focuses on rare syntactic, semantic, or pragmatic phenomena. Such phenomena are typically scarce in non-specialized corpora of ordinary size and may appear only a few times even in very large general-purpose corpora. From a problem-solving perspective, they resemble unusual or unconventional test cases. At their core, these are low-resource problems. The limitation does not lie in the learning capacity of AI systems, but in the scarcity of relevant examples. To address this issue, future work could construct dedicated example corpora targeting specific rare phenomena and use them for model training, thereby improving model robustness and sensitivity to these linguistic patterns.

Thus far, we have outlined a set of requirements for developing the digital literacy of

[4] https://web.stanford.edu/~jurafsky/ws97/manual.august1.html

future descriptive linguists, particularly those working in core areas of the discipline, as well as potential research directions. These proposals are grounded in strengthening linguistic measurement as a foundational concern, and aim to open up further possibilities for advancing linguistics in the age of AI.

3.5 Cross-linguistic description with finer-grained scales

A final remark concerns linguistic typology, although it is not an application area directly related to AI. Linguistic typology seeks universal regularities of human language, which represent an enduring goal of the scientific study of language and are also an intriguing concern of the broader scientific community (see Liu, 2008; Liu et al., 2017; Futrell & Hahn, 2026 for those published in interdisciplinary journals or journals of other fields such as cognitive science, physics, complex systems). However, although several cross-linguistic databases are now available and a number of large-scale comparative studies have been conducted (e.g. Liu, 2010; Jing et al., 2022; Levshina, 2019, 2022; Futrell et al., 2015; Futrell & Hahn, 2026), the problem of cross-linguistic identification, long recognized as a central challenge in linguistic typology, remains unsolved (Stassen, 2010). There has long been debate over which concepts are language specific and which can be regarded as cross-linguistically general. A widely held view is that semantic and pragmatic functions tend to be cross-linguistically general, whereas linguistic forms and categories are language-specific (e.g. Croft, 2001). On the one hand, many scholars have argued that descriptive categories may be valid within individual languages, but that such categories do not necessarily generalize across languages (e.g. Haspelmath, 2007; LaPolla, 2016). On the other hand, there is broad agreement that at least some formal notions used to describe language can be defined in cross-linguistically general terms, such as word order and patterns of coding identity (Haspelmath, 2010). In practice, many studies rely heavily on the labels provided by existing databases, rather than on independently established cross-linguistic correspondences.

We start with the two classic examples with which LaPolla has often illustrated the challenges of cross-linguistic comparison. First, the English words *squash* and *pumpkin* both correspond to the Chinese 南瓜 *nánguā* ‘pumpkin’, yet they clearly represent two distinct categorical concepts in the minds of native English speakers. Second, *soup* in English corresponds more closely to the Chinese 浓汤 *nóngtāng* ‘thick soup’ rather than 清汤

qīngtāng ‘clear soup’. Therefore, it does not align with the prototypical concept of 汤 *tāng* in the cognition of Mandarin speakers. These examples reveal a recurrent problem in linguistic typology, namely mismatches in form–meaning pairings across languages.

In such cases, if one surveys—or, in the terminology used here, measures—English using a concept scale derived from Chinese, the distinction between *squash* and *pumpkin* cannot be detected. However, if one adopts a more fine-grained conceptual space as a measuring scale, informed by a broader range of languages and supported by visual stimuli, the difference becomes observable.

From a more general perspective, an idealized solution to cross-linguistic comparison, or cross-linguistic description within typological frameworks, would be to enumerate all underlying functional distinctions, such as the referential objects involved, for example finely differentiated object images. In practice, however, this approach is rarely feasible, because the number of concepts is infinite. Putative exceptions include the system of color terms (Berlin & Kay, 1969) or numerals. Color terms can be treated in this way because the physical color space can be completely specified, through the RGB system with three dimensions. Yet in most other cases, such exhaustiveness is difficult to achieve. For instance, the questionnaire-based grammatical survey proposed by Comrie and Smith (1977) lists as many as 212 contexts for anaphoric pronouns in Question 1.6.5, yet even this extensive inventory remains incomplete. This difficulty is further compounded by the involvement of controversial notions such as subject and object. Similarly, traditional semantic roles are themselves coarse-grained abstractions. Hartmann et al. (2014) demonstrated that such roles can be viewed as clusters of more fine-grained, verb-specific semantic roles. Nevertheless, their study remained illustrative rather than providing a complete descriptive framework. This limitation arises because the experiential event structures associated with predicates are not exhaustively enumerable. Selecting verb forms directly therefore constitutes an ad hoc solution, and speakers of different languages may also differ in the granularity with which such distinctions are perceived.

Nevertheless, current limitations in cross-linguistic identification should not preclude cross-linguistic comparison altogether. As with the puzzle of single-language categorization, a glottometric perspective regards these issues as problems of measurement precision and holds that progress in this direction can be achieved incrementally. One possible way forward is to draw on more fine-grained conceptual databases. Substantial progress has

already been made in this direction. As noted in Table 1, Concepticon 3.4.0, the largest database of concepts expressed by human languages to date, currently documents 140,820 concepts across 466 concept lists, while CLICS[3], the Database of Cross-Linguistic Colexifications, provides cross-linguistic colexification analyses for 2,919 concepts. Another approach is to use the embedding-based methods discussed in Section 2 to construct latent multidimensional spaces that represent semantic distinctions along specific dimensions. Once a principled way of characterizing the overall conceptual space is established, the resulting measuring scale can become sufficiently fine-grained.

Of course, it must be acknowledged that even a conceptual database containing over one hundred thousand concepts, or even a fully specified continuous space, still presents practical challenges for empirical investigation. It is clearly unrealistic to expect speakers to produce linguistic data by systematically working through such an inventory, even when visual prompts are provided. This situation is analogous to the impossibility of conducting color-term research by asking speakers to identify the color of each individual pixel in a color space. Such tasks are not only sensitive to external factors such as lighting conditions and contextual variation, but are also likely to be perceived as tedious by participants. In such cases, it may be necessary to define a set of prototypical samples as fixed reference points within the conceptual space. These reference concepts can then be prioritized across languages and supplemented with multimodal resources during empirical investigation.

In summary, as suggested by the subsection title, I hold that cross-linguistic description, or description based on typological frameworks, is indeed possible. However, it should not rely on pre-established cross-linguistic categories, in line with the views of Haspelmath (2007), LaPolla (2016, 2022), among others. Instead, it should be grounded in a fine-grained conceptual space that serves as the measuring scale. From this perspective, typological cross-linguistic comparison amounts to an examination of formal coexpression patterns across languages within this shared conceptual space (Haspelmath, 2023).

In addition, I further argue that category induction within a single language and description based on cross-linguistic typological frameworks constitute two distinct enterprises. If the ultimate goal is to serve typological comparison, it is both permissible and often preferable to adopt standardized labels for cross-linguistic description, provided that a shared tertium comparationis is established. Relying instead on the labels of prior single-language descriptions would require identifying corresponding concepts in each language

and translating them into the terms of the common benchmark before comparison can proceed, a process that is both inefficient and uneconomical. By contrast, the goal of single-language description is fundamentally different. It is more closely aligned with humanistic and culturally grounded fieldwork: representing the cognitive categories of native speakers within a particular language or designing applications better tailored to that language.

Finally, we outline two recommendations for linguistic description that apply to both single-language and cross-linguistic research.

First, we argue that a consensus should be reached that linguistic description, in any case, ought to be grounded in texts or authentic corpus data in context, rather than drawing conclusions solely from decontextualized individual word forms, word types, or lemmas. The latter already represent a first level of abstraction from word tokens that occur in different contexts. For instance, when asking whether 和 *hé* in Chinese is a coordinator or an adposition, the question only makes sense when referring to a specific token of *hé* in a particular sentence. Although the distinction may remain difficult to resolve, and full disambiguation is not always possible, contextualization is a necessary, though not sufficient, condition. This approach is also consistent with the tradition of quantitative typology, which was advocated as early as Greenberg (1960), was largely neglected in the following decades, and has only recently been revived by studies such as Liu (2010), Levshina (2019, 2022), and Gerdes et al. (2021). More broadly, it aligns with LaPolla and Lu's (2024) proposal to adopt an empiricist and inductive approach to linguistic description, in which languages are described through sustained and immersive engagement with actual usage.

Second, greater attention should be paid to the description of imperfect language, such as the language produced by speakers with atypical language development or use, including children, younger and older adults, clinical populations who retain communicative abilities, second language learners, and the like. Although such language varieties may not represent the most standard or idealized forms, they still deserve serious consideration, because in practice, any native language user is capable of understanding such language and is also likely to produce it. Linguistic theories that ignore these phenomena cannot be regarded as complete or as genuinely pursuing linguistic universals. Moreover, an exclusive focus on so-called typical language is unlikely to support the development of satisfactory AI systems. An ideal AI system should be able to robustly comprehend diverse language variants while still producing output that conforms to required standard forms.

4. Concluding Remarks

In this contribution to the Festschrift honoring Randy LaPolla, I discuss the challenges confronting linguistics in the age of AI and outline possible directions for future work by linguists. I depart from views that regard linguistics as a pilot discipline and argue instead that it seems to be rather underprepared. I first reviewed several landmark technologies in the development of NLP and showed how these developments have marginalized linguistic knowledge in mainstream NLP. Many other disciplines had already established the necessary foundations before the advent of AI. Linguistics, however, lacks discipline-specific assessment benchmarks, formalized frameworks, and large-scale structured databases. In response to these challenges, this paper offers several suggestions, including greater attention to issues of linguistic measurement and sustained investment in language data resources. The paper also discusses the relationship between field and corpus-based language description and cross-linguistic comparison, all of which fall within Professor LaPolla's main areas of concern. In sum, the central tenet of this paper is that, if linguistics is to be regarded as a science, it must be practiced scientifically.

A positive development is that the emergence of AI has already prompted large-scale digital and intelligent reforms in linguistics programs at universities (at least within China). Nevertheless, such changes require broader revolutions across the discipline, academia, the research community, and language-related industries. It is our hope that, in the future, linguistics, particularly its theoretical and descriptive branches, can develop more fully as a mature science, enabling researchers to pursue work in this field with greater confidence, even within the current publish-or-perish environment.

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