



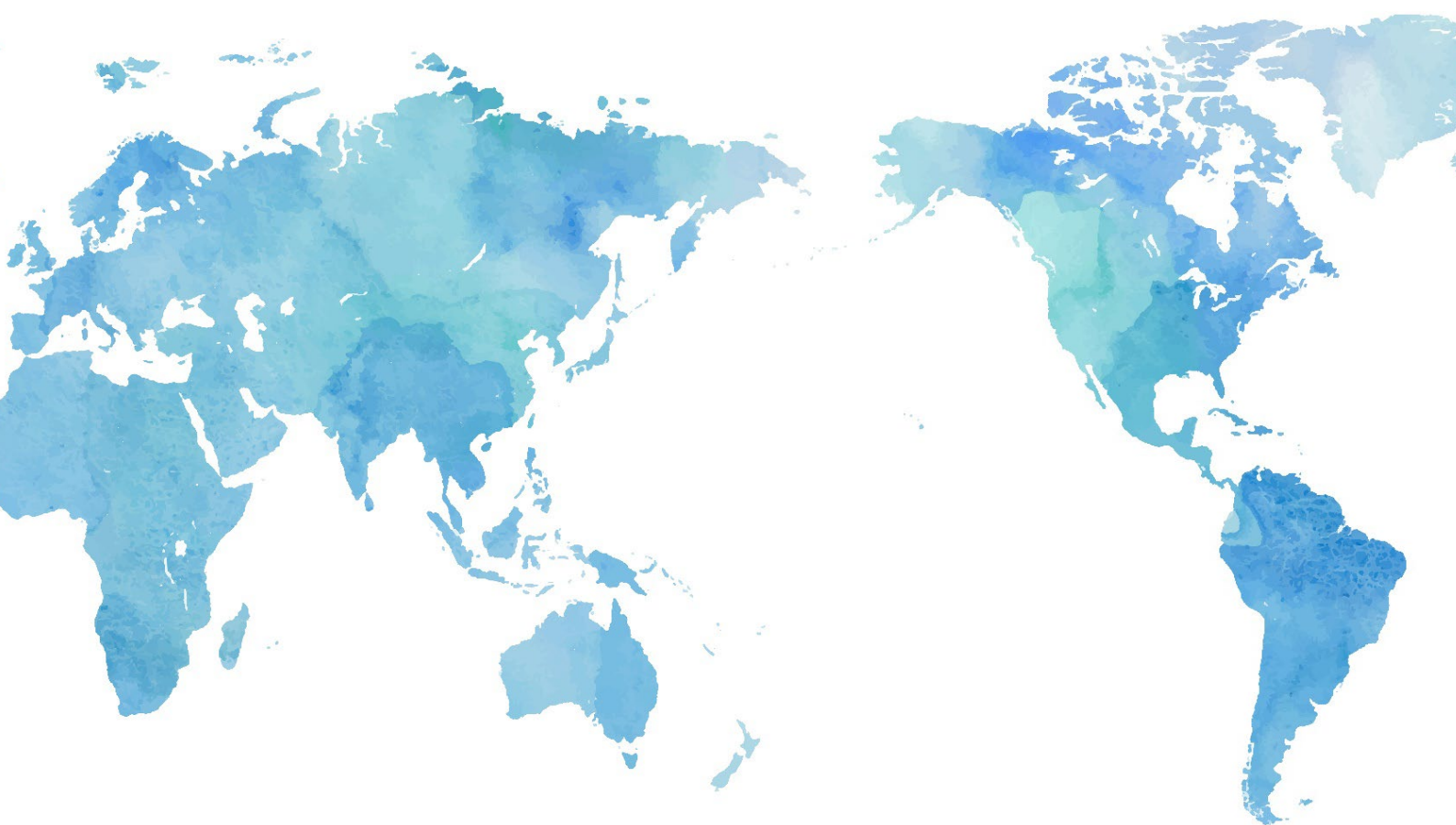
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# **The University of Osaka - Tongji University Joint International and Interdisciplinary Forum: Toward the Integration of Society and Knowledge Official Forum Proceedings**



大阪大学COデザインセンター  
CENTER FOR THE STUDY OF CO\* DESIGN



同济大学外国语学院  
SCHOOL OF FOREIGN STUDIES  
TONGJI UNIVERSITY

**Fellowship for Integration of Knowledge with Society, The University of Osaka**

**School of Foreign Studies, Tongji University**

**The University of Osaka - Tongji University**  
**Joint International and Interdisciplinary Forum:**  
**Toward the Integration of Society and Knowledge**  
**Official Forum Proceedings**

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## Preface

In today's rapidly changing world, the challenges facing humanity and society are becoming increasingly complex and interconnected. Addressing such challenges requires not only advanced specialized knowledge but also integrated and cross-boundary perspectives. To cultivate such perspectives, it is important to create environments where different disciplines can engage in dialogue. International exchange and collaboration between institutions provide valuable opportunities for such dialogue by bringing together diverse academic traditions, methodologies, and cultural perspectives.

*The University of Osaka – Tongji University Joint International and Interdisciplinary Forum: Toward the Integration of Society and Knowledge* was organized in this spirit. The forum was co-hosted by The University of Osaka and Tongji University, two institutions with a long-standing relationship through academic exchange and cooperation. The event provided an opportunity particularly for graduate students from both universities to present their research, exchange ideas, and engage in discussions across disciplinary and national contexts, with faculty members contributing to the discussions and providing guidance.

At the University of Osaka, graduate education reform has been promoted through the Double-Wing Academic Architecture (DWAA), which aims to nurture competitive PhD talent who can contribute to innovation both within academia and across society. The framework emphasizes three knowledge activities: Deepening of Knowledge, Fusion of Knowledge, and Integration of Knowledge with Society. Tongji University has also strengthened interdisciplinary education and research, particularly within the School of Foreign Studies, where initiatives connect fields such as artificial intelligence, linguistics, sociology, medicine, and psychology through problem-oriented approaches.

The idea for this forum emerged during a visit by faculty members from The University of Osaka to Tongji University in March 2025. Through discussions on

interdisciplinary education and international collaboration, both institutions recognized the value of creating a platform for continued dialogue. As a result, the two universities agreed to jointly organize this forum in the fall of 2025.

The present proceedings document the exchanges that took place during the forum. Most of the contributions in this volume are based on presentations by graduate students, reflecting their emerging research interests and interdisciplinary perspectives. By bringing these works together, the volume aims to share the ideas and discussions generated through the forum with a broader academic community and to encourage further dialogue and collaboration.

It is our hope that the ideas presented here will encourage continued dialogue and collaboration between our institutions and beyond, and contribute to shaping new directions in research and education.

We would like to express our sincere appreciation to all the students and faculty members of both universities whose participation made this forum possible.

Goro Yamazaki

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The University of Osaka

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*In Between Fields: Why Cross-Disciplinary Work Is Difficult for Students*

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Joint International and Interdisciplinary Forum:

Toward the Integration of Society and Knowledge

Official Forum Proceedings

**Abstract**

This paper examines the barriers that early-career researchers encounter when conducting interdisciplinary research. Drawing on a review of existing literature and a case study based on the author's own experiences, this paper presents a hypothesis regarding one possible direction for addressing obstacles to interdisciplinary research within the University of Osaka Cross-Boundary Innovation (CBI) Program. According to the perspective developed in this paper, within each particular field of interdisciplinary research practice, not only is general "theory" insufficient, but the very "difficulties" themselves manifest in ways distinct from generality. However, it is precisely these "difficulties" that, we would suggest, hold the key to constructing field-specific methodologies of interdisciplinary activities appropriate to each particular context.

Keywords: Interdisciplinary Research, Methodology of Interdisciplinary Activities, The University of Osaka Cross-Boundary Innovation Program

## Introduction

This paper examines the barriers that early-career researchers encounter when conducting interdisciplinary research. Drawing on a review of existing literature and a case study based on the author's own experiences, this paper attempts to present a hypothesis regarding one possible direction for addressing obstacles to interdisciplinary research within the University of Osaka Cross-Boundary Innovation (CBI) Program<sup>1</sup>.

For the purposes of this paper, we define "interdisciplinary research"<sup>2</sup> as "collaborative research conducted by researchers from multiple disciplines to address thematic concerns that cannot be adequately addressed within the constraints of traditional disciplinary boundaries and its limited expertise." In recent years, interdisciplinary research has been consistently recognized as a significant issue across government, the private sector, and academia, and this recognition seems to have been further accelerated by the emergence of COVID-19 and the intensification of climate change. For instance, in a policy report released by the OECD in 2020, a central concern was how stakeholders from both public and private sectors, together with citizens, could collaborate to address urgent societal challenges (cf. OECD, 2020), such as responding to emergencies like COVID-19 and achieving sustainable development in the context of climate change. Similar reports with comparable objectives can be found everywhere.

Such "interdisciplinary research" is often perceived, particularly within disciplinary communities, not as an integral part of our research but merely as a transient thematic concern driven by contemporary trends (cf. Institute of Medicine, 2000). However, an alternative perspective is possible. As exemplified by ELSI, the implementation of findings from natural sciences into real-world society increasingly requires insights from the humanities — fields outside the natural sciences. For instance, in addressing COVID-19, it is well-documented that analyses utilizing phenomenological qualitative research, a variant of philosophical approach, have been employed alongside sociology, pharmacology, and medicine (cf. Miura et al., 2021).

From the perspective of the humanities, the emergence of generative AI and its advancing capabilities demand a significant reconsideration of the research questions posed by the humanities, which interrogate the modalities of human "thought"—much as transformative technologies have consistently done throughout history. In this sense, interdisciplinary research

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<sup>1</sup> I wish to delimit the scope of this paper in advance. This paper is written under a narrowly circumscribed research interest: namely, "how interdisciplinary research becomes possible within the CBI Program." The methodological approach adopted in this paper—combining "general insights from interdisciplinary research" with "a case study based on my own experience"—is justified only within the bounds of this delimitation.

<sup>2</sup> In this paper, it is not possible to address the distinctions between such terms as "interdisciplinary", "cross-disciplinary", and "cross-boundary." Regarding the differential typologies of interdisciplinary research, Repko (2011) provide detailed analysis.

is an important theme for researchers, whether considered in terms of addressing societal challenges or advancing disciplinary inquiry itself.

Yet a straightforward question emerges here: "Then, how?" Although all stakeholders across government, industry, and academia seek interdisciplinary research, and despite its significance for researchers, it is evident that interdisciplinary research fails to meet the growing demand to address societal challenges in both quality and quantity. Within philosophy, my field of specialization, most early-career researchers—understood here as graduate students ranging from the master's to doctoral levels—do not appear to demonstrate sufficiently high-quality outcomes in interdisciplinary research. Moreover, and more problematically, even among early-career researchers affiliated with the University of Osaka CBI Program which "specializes" in interdisciplinary research in a sense, the situation appears to be equally challenging. This reality suggests a need for further methodological refinement of interdisciplinary research and its implementation.

What accounts for this situation? What obstacles impede early-career researchers from conducting interdisciplinary research? How might "interdisciplinary research" be modeled in order to transcend these barriers, within the CBI Program? These questions constitute the central inquiries that this paper addresses below.

### **Challenges in Interdisciplinary Research: Review of Previous Studies**

In fact, research aimed at identifying the various difficulties or obstacles inherent in interdisciplinary research has been conducted in multiple ways to date. Here, I would like to introduce some of the existing literature that appears particularly relevant to early-career researchers—understood as graduate students from the master's to doctoral levels—and thereby attempt to establish the framework of the problem that this paper engages with. While an extensive body of meta-level reflections on interdisciplinary research exists, I argue that the main elements of these discussions can be condensed into a single conclusion: namely, that conducting interdisciplinary research is extraordinarily difficult when one follows the trajectory of a normal academic career path.

First, there exists a simple issue of competency. According to research by Daniel et al. (2022), early-career researchers engaged in interdisciplinary work frequently lack general methodological frameworks and adequate training. The interdisciplinary research, by definition, requires both learning that transcends disciplinary specialization and the acquisition of its associated techniques, but human resources are finite. Even when accounting for mutual development, attaining competency in two academic domains to a comparable level of

expertise is not easily achieved. This constitutes, in particular, a significant barrier to interdisciplinary research at the career stage when scholars are embarking upon an academic trajectory—we will return to this point shortly.

Second, there exists the problem of evaluation. Kniffin et al. (2017) demonstrate that doctoral students engaged in interdisciplinary research face fewer career advancement opportunities and promotion prospects, compared to those conducting single-discipline research. Exemplified by the Grants-in-Aid for Scientific Research (Kakenhi), the current evaluation system in Japanese academia fundamentally adopts a model wherein researchers evaluate researchers, according to which faculty members are hired (From the perspective of reproduction, this is to some degree inevitable). Interdisciplinary researches, which by their nature do not fit neatly within traditional disciplinary boundaries, may fail to receive recognition as major scholarly achievements within such evaluation system, despite recognition of their societal necessity.

Related to the second problem, there exists a third problem concerning institutional structures (or their absence). Sano points out that despite the prevalence of interdisciplinary practices and theoretical reflection on them, "the participants in these discussions rarely reference one another, and there exist neither institutional frameworks to aggregate, accumulate, and systematize these discussions—such as professional associations or academic journals—nor mechanisms for doing so" (Sano 2023, 128). The absence of such institutional structures (or their insufficient development) undoubtedly obscures the career trajectories for early-career researchers who wish to pursue interdisciplinary research. This absence—particularly manifested in the lack of archival repositories for the accumulation of records—practically impedes the structuring of interdisciplinary research. (We shall return to this theme of archive in the conclusion.)

While there are undoubtedly many other related factors, it is already clear that we cannot fault even the most talented and prudent students for returning to research in disciplinary fields that already possess these structural supports, given at least the elements identified here. In fact, in response to a lot of challenges, Berkes et al. (2024) demonstrate that early-career interdisciplinary researchers tend to reduce their interdisciplinary work and return to their original disciplinary fields. These challenges are consistently severe, particularly for early-career researchers. As the acceptance rate for JSPS fellowships—one of the few income sources available to doctoral students in Japan—declines year upon year, competition for applications intensifies relentlessly. From the perspective of advancing interdisciplinary research, it is even more troubling that the compatibility between this funding mechanism, which is evaluated within the subdivisions of Kakenhi, and interdisciplinary research is fundamentally poor.

Thus, career pressure systematically obstructs early-career researchers from pursuing interdisciplinary trajectories. This dynamic results in the loss of motivated and prospective early-career researchers at precisely the stage when academic inquiry is nascent—a moment when specialization has not yet become highly differentiated and when crossing disciplinary boundaries remains relatively accessible. This attrition of promising researchers is surely not unrelated to the insufficient advancement of interdisciplinary research noted in the introduction.

In this sense, it becomes evident that the "textbook practice" of interdisciplinary research—practices based on methodologies already proven to be "correct"—cannot be directly implemented, due to diverse challenges that confront early-career researchers engaged in actual research. To address these challenges, various approaches have been attempted in multiple ways, including, for instance, the systematization of interdisciplinary research methodologies, the establishment of academic societies in composite fields, and enhanced research funding support.

However, we must recall our guiding question. Our inquiry is: "How does interdisciplinary research become possible *within the University of Osaka, within CBI Program?*" The significance of this delimitation should not be underestimated. In practical contexts where institution-specific design constitutes the central concern, theoretical discussions that possess generality—and which, precisely because of this, risk becoming abstract—are necessary but manifestly insufficient. What is crucial is the reciprocal engagement between theory and practice. Here, departing from the existing literature, I wish to introduce some interdisciplinary practices I have undertaken thus far and examine the challenges inherent within them. Only by comparing these findings against the existing scholarship can theoretically and practically useful ideas emerge.

### **A Case Study of Interdisciplinary Research in CBI Program: My Case**

How, then, do these difficulties manifest themselves in more concrete forms, particularly within our specific institutional context—namely, the University of Osaka CBI Program? In this section, taking the preceding discussion as a guide, I wish to clarify some difficulties of Interdisciplinary activities in CBI more explicitly by reflecting upon my own experience of conducting interdisciplinary research.

I have thus far engaged in interdisciplinary activities within several projects and communities. The central one is, needless to say, the University of Osaka CBI Program. This program<sup>3</sup> that

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<sup>3</sup> For detailed information on the program's contents, see Zhang et al. (2025).

composed by various graduate schools and it selected up to approximately twelve students, and they engage in "Cross-Boundary" activities primarily centered on PBL (Project-Based Learning), over a five-year period spanning from the master's to doctoral levels under the slogan of "Integration of Society and Knowledge."

In particular, within that program, I wish to focus on "group project support" as one of its multifaceted activities. The reason for this focus is that "group project support" represents one of the few systematically structured opportunities within the CBI Program for engaging in interdisciplinary activities—namely, opportunities wherein multiple students can freely select their themes and implement their activity plans with considerable budgetary discretion.

Since I joined the CBI Program in autumn 2023, I have led two interdisciplinary research projects utilizing this support system in fiscal years 2024 and 2025, while also engaging in interdisciplinary research aimed at problem-solving for challenges posed by a private enterprise, within PBL-type seminars incorporated into the program (with regard to the latter, considerations of legal rights preclude discussion here). Below I wish to provide an overview of my activities within group project support, as a kind of ethnographic data and to analyze their structural features.

First, what I conducted in 2024 was a project titled "*Philosophy of mahjong*" (Constructing a New Philosophical Theory of Games through Deep Reinforcement Learning AI Development: A Science-Humanities Fusion Approach Using Japanese Mahjong as a Case Study). This research took the board game mahjong as its primary subject and aimed to construct a theoretical foundation of philosophy concerning the relationship between humans and AI in contemporary society through: (1) interdisciplinary activities involving researchers specializing in philosophy, mathematical probability theory, game development, and information engineering; (2) the development of a mahjong game and deep reinforcement learning AI of mahjong; and (3) the construction of a philosophical theory of games guided by these developments. While this project achieved several outcomes—including three workshops with invited external speakers, multiple research presentations, and co-authored publications (cf. Nakatani et al., 2025)—it also clarified several challenges (discussed below).

Second, the research project conducted in 2025 concern interdisciplinarity itself ("Construction of the Methodology of Interdisciplinarity within CBI Program and its Implementation: Guided by Theoretical and Practical Investigations"). It aimed to theoretically formulate a methodology of interdisciplinary research optimized for the University of Osaka CBI Program and to implement this framework into the program itself. This theorization was guided by theoretical investigations centered on literature review and practical investigations centered on empirical

field research (such as some interdisciplinary activities at Hokkaido University and Kyoto University). As the project is currently ongoing, it is not possible to assess its ultimate success or failure. However, through activities such as workshops and the organization of "The Doors to the Cross-Boundary," considerable progress appears to have been achieved in this project as well<sup>4</sup>.

Upon reflecting on these two years of experience and analyzing their structural features, what becomes evident is that both the content of "interdisciplinary research" practiced in each project, and the difficulties encountered in them differ substantially. Below, I wish to examine these cases from a more comprehensive perspective.

The first case ("Philosophy of mahjong") is, in a certain sense, a failure case. Likely due to several factors (and they emerge as difficulties in the project)—namely, "the top-down theme of the project" (the concept of "Philosophy of Mahjong" originated from my personal idea), "the mismatch between the required skill sets and each participant's disciplinary expertise" (executing implementation-level work outside the narrow specializations of ourselves proved difficult for us at that time), and "the substantial burden of organizing multiple events" (inviting external speakers contributed to contextual framing, but we were unable to effectively integrate their contributions into our project)—compared to the high caliber of collaborative members, this project was unable to achieve sufficiently strong outcomes.

The second case ("the Methodology of Interdisciplinarity within CBI Program") was designed with these difficulties in mind. We minimized the event requiring organization and took "interdisciplinary" itself—a subject of shared concern across the CBI Program to varying degrees—as its central theme. Furthermore, I divided the collaborative members into three working groups (Theory, Fieldwork, and Implementation) and proceeded with activities in ways aligned as closely as possible with each member's particular interests. The rationale for this division and the principle of mutual non-interference was that each participant could concentrate their limited resources within their areas of projects. The abstract problem formulation of "interdisciplinary" also functioned as a framework enabling such division<sup>5</sup>.

Thus, even when their institutional circumstances of both cases are equal, the systems and methods through which "interdisciplinary research" unfolds in both cases differ substantially. It is evident that such case studies and their analyses are highly personal and subjective, with

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<sup>4</sup> This paper itself constitutes part of the activity of this project.

<sup>5</sup> In fact, the activities of the three groups differed to such an extent that each could be considered a distinct research activity. Had members devoted their resources to mutual understanding, it would have been difficult to advance the project as it stands now.

limited sample sizes ( $n=2!$ ), and therefore rigorous argumentation cannot be developed<sup>6</sup>. However, the fact that such marked differences exist even in activities conducted with common leadership within an identical institutional context is extremely noteworthy. If we recall that in research activities within a particular discipline, differences in research themes do not necessarily entail methodological differences, this apparent difference—which at first glance seems natural—is indeed remarkable<sup>7</sup>.

On the one hand, this demonstrates the profound difficulty of the "textbook practice" of interdisciplinary research, as we saw in the preceding section. Specifically, even when holding constant crucial variables such as leadership and the institutional system, the research itself remains subject to substantial influence from an (endless) list of non-generalizable contextual factors: research themes, attributes of research members, relational dynamics between the leader and members, the varying degrees of motivation members bring to the research theme, and concurrent projects in which they are engaged. The complexity of the functions defining how interdisciplinary practice goes on must be clearly mushrooming exponentially, and this, much like the discussion in the preceding section, demonstrates that the "textbook practice" of interdisciplinary research is fundamentally difficult.

However, on the other hand, what is particularly noteworthy for us is that marked differences from "textbook difficulties" are also clearly evident. In fact, grounding our discussion in these concrete practices appears to permit us to suggest a certain hypothesis: might the difficulties typically raised concerning interdisciplinary research—such as "competency," "evaluation," and "institutional structures"—play only a secondary role in the practice of interdisciplinary research within the CBI Program? Rather, might the fundamental difficulty be not these general obstacles, but rather from the inability to appropriately mediate relationships among various actors as they manifest in particular ways specific to "interdisciplinary activities within the CBI Program"?

This can be reformulated in more generalized terms as follows: **Is it not necessary to understand what "interdisciplinary research" signifies by grasping the specific "difficulties" that emerge within a given field in the particular ways unique to that specific location, institution, interpersonal relationships, and so forth, and then to develop the requisite methodologies for that specific context?** Of course, insofar as students in the

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<sup>6</sup> Properly conducted research would likely require more rigorous and quantitative analysis; however, such work cannot be undertaken here. Ideally, science anthropological or philosophy of science research on interdisciplinary research would be necessary. I hope to address this theme in the near future.

<sup>7</sup> For instance, in the discipline of Modern French philosophy research, my field of specialization, the choice of research subject does not fundamentally require marked methodological differences.

CBI Program are themselves part of academia, they (we) also cannot escape the difficulties that existing scholarship have identified concerning competency, evaluation, and institutional structures (particularly for individuals who invest significant effort in interdisciplinary activities alongside disciplinary research, such as myself). However, what manifested itself to me in these interdisciplinary activities in a more acute manner were *distinct difficulties*—namely, issues of motivation and burden-sharing—and planning to facilitate smooth project progression necessitated the construction of approaches that circumvented these challenges.

When considered against the conventional approach that generally regards the methodology of interdisciplinary research as "a model that *enables* one to conduct interdisciplinary research correctly," this appears to me to represent a Copernican turn in the theory of interdisciplinary research. A shift from "understanding the structures of success of interdisciplinary research" to "understanding the structures of failure of interdisciplinary research." Whether this hypothesis proves valid, and what implications it might carry, remain insufficiently clear at this stage. My future task lies in verifying this hypothesis through actual interdisciplinary research practice, and should it prove unsuccessful, in grasping the structural features of such failure.

### **Conclusion: In Between Fields**

The purpose of this paper has been to examine the obstacles that early-career researchers encounter when conducting interdisciplinary research, drawing on both a review of existing literature and a case study based on my own experience, and thereby to present a possible approach for theorizing the methodologies of interdisciplinary research within the University of Osaka Cross-Boundary Innovation Program. According to the perspective developed in this paper, within each particular field of interdisciplinary research practice, not only is general "theory" insufficient, but the very "difficulties" themselves manifest in ways distinct from generality. However, it is precisely these "difficulties" that, we would suggest, hold the key to constructing field-specific methodologies of interdisciplinary activities appropriate to each particular context.

My argument is obviously still developing and remains at the stage of hypothesis presentation. From my current perspective, it should be possible to use traditional theories of interdisciplinary research in a different, reverse manner—instrumentally—in order to derive "methodology" from "difficulty." In other words, to extract field-specific responses to challenges by using traditional methodologies of interdisciplinary research, not as correct method, but to discover difficulties. There should exist some techniques for discovering and extracting this particularity method from the discussions of predecessors that we have critiqued as "textbook." My present interests are directed toward this problematic.

In this context, one important topic would be the "archive." In general, when it comes to doing comparative experiments, the fundamental rule is to hold certain parameters constant while varying the parameters one wishes to compare. Records from the field and its history serve as an effective instrument for relativizing one's own interdisciplinary activities between particularity and generality, and thereby for understanding what one's own "difficulties" actually consist of and which actors are responsible for them. Subsequently, the record of these "difficulties" becomes instrumental for those who encounter such difficulties in the future<sup>8</sup>. Moreover, the documentation of the historicity inherent in that field should reveal its malleability.

These arguments remain hypothetical and require further verification and refinement. In any case, this work must be conducted in the field, and perpetually, between fields. It is undeniable that the theorization of interdisciplinary research must be undertaken as a form of thinking that operates in the space between generality and universality. And it goes without saying that what this paper has undertaken constitutes, in itself, one practice toward such theorization.

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## Declaration of Generative AI and AI-assisted Technologies in the Writing Process

In the writing process, I used Perplexity and DeepL to assist with surveying prior research and translating my manuscript into English. However, I personally verified the content of the prior research and reviewed the English grammar.

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<sup>8</sup> In a certain sense, this approach resembles the recent trend toward "sharing negative data," which has gained significance alongside the application of artificial intelligence. However, what is important here is that; in any case, *the methodology of interdisciplinary research must be reinvented in particular ways*. Avoiding past "difficulties" constitutes merely a secondary methodology toward that purpose. Past success cases do not guarantee one's own success.

## References

- Berkes, E., Marion, M., Milojević, S., & Weinberg, B. A. (2024). Slow convergence: Career impediments to interdisciplinary biomedical research. *Proceedings of the National Academy of Sciences of the United States of America*, 121(32), e2402646121.
- Daniel, K. L., McConnell, M., Schuchardt, A., & Pepper, M. E. (2022). Challenges facing interdisciplinary researchers: Findings from a professional development workshop. *PLOS ONE*, 17(4), e0267234.
- Sano, Y. (2023). What is interdisciplinarity? To escape the "interdisciplinary islands." In H. Hagiwara, T. Suda, H. Mimasu, Y. Sano, K. Manabe, Y. Tanigawa, & K. Sugitani (Eds.), *From Kyoto University: How to cross disciplinary boundaries: Exploring interdisciplinary research born from dialogue* (pp. 127–139). Nakanishiya. [In Japanese]
- Institute of Medicine. (2000). Barriers to interdisciplinary research and training. In *Bridging Disciplines in the Brain, Behavioral, and Clinical Sciences*. The National Academies Press.
- Kniffin, K. M. & Hanks, A. S. (2017). Antecedents and near-term consequences for interdisciplinary dissertators. *Scientometrics*, 111, 1225–1250.
- OECD. (2020). *Addressing societal challenges using transdisciplinary research* (OECD Science, Technology and Industry Policy Papers, No. 88). OECD Publishing.
- Repko, A. F. (2011). *Interdisciplinary research: process and theory* (2nd ed.). SAGE.
- Miura, A., Murakami, Y., & Hirai, K. (Eds.). (2021). *Different perspectives: interview records with COVID-19 survivors and healthcare workers during the pandemic*, (Research Report of the Interdisciplinary Collaborative Research Project “Human Sciences in the COVID-19 Pandemic: Exploration through Fact-Finding Surveys and Intervention Studies,” Graduate School of Human Sciences, Osaka University, Fiscal Year 2020). [In Japanese]
- Nakatani, H., Miyahara, K., Yamamichi, H., Ohara, A., & Kuri, T., (2025). The philosophy of mahjong: An interdisciplinary approach guided by an examination of extended Bergsonism and AI models of deep reinforcement learning, *Investigation of Philosophy*, 52, 238–254. [In Japanese]

Zhang, X., Tsujita, N., Tsujita, T., Otani, Y., & Yamazaki, G. (2025). Fostering interdisciplinary talent through cross-disciplinary project-based learning: A case study from a Japanese national university. In *The Barcelona Conference on Education 2025: Official conference proceedings* (pp. 211–223).

## *Linguistic Indicators of Minor Depression in Chinese Older Adults' Life Stories*

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Joint International and Interdisciplinary Forum:

Toward the Integration of Society and Knowledge

Official Forum Proceedings

### **Abstract**

**Background:** Minor depression is common in older adults, but often undetected, and linked to adverse outcomes. Language analysis can reveal cognitive and affective processes underlying mood disorders, and life stories provide rich data for detection.

**Methods:** We collected life story narratives (High, Low, and Turning points) from 34 healthy and 16 depressed Chinese-speaking older adults. Lexical, semantic, and sentiment features were analyzed using mixed ANOVAs with Bonferroni correction. Five machine learning algorithms then identified optimal feature combinations, evaluated by AUC, accuracy, and F1-score.

**Results:** Depressed participants used more modifiers in High and Low points and had lower mean dependency distances in Turning points. Low-point stories contained more utterances and higher sad intensity. Machine learning models performed best with Low and Turning point features; an XGBoost model with 7 features achieved highest performance in Turning-point narratives (accuracy 0.840, F1 0.743, AUC 0.829).

**Conclusion:** NLP-based models show promise for detecting minor depression in older adults via life stories. Future work should validate findings in larger, diverse cohorts.

**Keywords:** Life story, Older adult, Depression, Natural language processing

## Introduction

By the year 2050, according to the United Nations (UN), one in six persons will be 65+ years of age. Given this increasing number of people entering the worldwide aging community, coupled with lower birth rates, there is concern about the significantly increasing old-age dependency ratio, especially in China, whose population aged 60 and above currently has surpassed 264 million, accounting for over 18% of the total population. One in four older adults experiences issues with their mental health, contributing to 23% of the total global burden of disease related to older adults (Gharib et al., 2024). Mental health problems significantly impact older adults' ability to carry out basic daily living activities, reducing their independence, autonomy, and quality of life. The first step to mitigate these negative consequences is to make a diagnosis. Unfortunately, mental health problems are often undiagnosed and untreated, leaving many older people without proper help (Rashedi et al., 2018).

Words convey important information about people's thoughts and feelings, and can reflect the way in which people experience the world. Online posts and oral speech about mental states, worries, or life stories have been employed to identify mental illness. Scholars have found distinguishing acoustic (e.g., decrease in speaking rate, lower vocal intensity range, greater jitter) and linguistic characteristics (e.g., choice of words, sentiment intensity) of patients with various mental disorders (Cummins et al., 2015; Low et al., 2020; Cummins et al., 2023). Recently, the development of natural language processing (NLP) tools has greatly facilitated the process of automatic feature extraction from speech data (Martínez-Nicolás et al., 2021), and machine learning techniques offer a potent tool for disease detection, making the analysis of language features more convenient.

Minor depression, characterized by depressive symptoms that do not fulfill the severity requirement for major depression, is the most common type of depression experienced by older adults (Beekman et al., 1999; Brenes et al., 2007). Minor depression is a risk factor for major depression, and is associated with an increased number of chronic diseases, functional limitations, increased severity of medical illness, and physical disability (Langa et al., 2004; Brenes et al., 2007). This study harnesses the NLP and machine learning tools to advance research on understanding and distinguishing minor depression among older adults through connected speech, with the goal of improving the early detection of depression and care for the growing aging population.

## Literature Review

Researchers have widely studied linguistic style in relation to mental disorder by leveraging the development of NLP tools such as Linguistic Inquiry and Word Count (LIWC) and Python code.

The heightened self-focus theory of Pyszczynski and Greenberg (1987) suggested that people who are depressed tend to perseverate about themselves. Thus, the use of personal pronouns is suggested to connect with affective states. First-person singular pronouns has been identified as a consistent “hallmark of depression” across various studies (Newell et al., 2017; Viduani et al., 2025). However, some studies found null or opposite effects on their correlation (e.g., Rodriguez et al., 2010; Trifu et al., 2024). Tackman et al. (2019) found that the depression-first-person pronoun effect was substantially reduced when controlled for negative emotionality, which suggested that self-referential language using first-person singular pronouns may be better construed as a linguistic marker of general distress proneness or negative emotionality rather than as a specific marker of depression. On the contrary, first-person plural pronoun usage is linked with better perceived support and an expanded sense of self (Aron et al., 2004; Simmons et al., 2005).

Sentiment features, such as sentiment dominance, sentiment valence, and the use of positive or negative words, are one of the most sensitive linguistic signs of depressive mood (Gumus et al., 2023). Increased negative and positive words may suggest greater emotional awareness, i.e. the ability to identify and communicate one’s emotions (Kranzler et al., 2016). Emotional blunting, a common feature in depression (Christensen et al., 2022), may also help explain why a decrement in emotional words was associated with higher severity of depressive symptoms (Weintraub et al., 2023). Depressed individuals were shown to use fewer positive or emotional words (Rude et al., 2004), and this finding is recently been verified in a non-clinical, normative population (Rodriguez et al., 2010; König et al., 2022; Gumus et al., 2023). Improved depressive states have been found to be associated with heightened use of positive emotion words and little use of negative emotion words (Himmelstein et al., 2018; Hartnagel et al., 2025). A study, however, suggested a greater use of both positive and negative emotion words with improvements in depressive symptoms (Weintraub et al., 2023), but this divergent finding in negative emotion may result from the limitation of the LIWC method, whose analysis is independent of context.

Studies also revealed that lexical richness, ratio of content words, and the organization of text decreased linearly across the severity of mental disorders, and depressiveness correlated with average sentence length and coefficient of coherence (Litvinova et al., 2016; Smirnova et al., 2018; Havigerová et al., 2019; Du, 2023). Barnes et al. (2007) found that before committing suicide, a person used much longer sentences and more question markers in his letters. Similarly, Pestian et al. (2010) and Kim et al. (2019) found that suicide notes had more words or phrases per sentence, fewer complete sentences, and more simple and common words per sentence.

Compared with lexical features, the psychological relevance of syntactic structures in language has not been broadly addressed. Syntactic decisions that participants make in the sequential formulation of clauses can indicate the extent to which they integrate past events in the narrative reconstruction of experiences, and thus the causal understanding reflected in syntax may demonstrate narrators' ability in rationalization and internalization. Zinken et al. (2010) used brief free texts written about current and previous problems to predict the likelihood of completion in guided self-help. The authors concluded that participants using more non-finite complement clauses were more likely to complete the program, and among those who completed, the use of causation words and complex syntax (e.g., adverbial clauses) predicted improvement. Schneider et al. (2023) found that patients with schizophrenia spectrum disorder produced significantly less complex sentences and significantly fewer types of complex sentences compared to healthy controls and major depression patients, but no significant difference was found between healthy controls and depressive patients.

From the perspective of neuropsychology, experimental studies have found that depressed individuals are most prominently affected in the domains of executive function, memory, and processing speed (Potter & Steffens, 2007), results that are consistent with meta-analyses of the broader literature (Feil et al., 2003). Complex sentences require higher cognitive competence. Dependency distance refers to the linear distance measured in terms of the number of intervening words between a parent (governor) and a dependent (Liu, 2008). Mean dependency distance (MDD) is the absolute value sum of the dependency distances divided by the number of dependency relations and is already found to be correlated with aging-related cognitive decline. Together with other linguistic features, MDD can successfully identify Chinese older adults with mild cognitive impairment (Yih et al., 2025). Thus, it can be hypothesized that affected by cognitive decline, depressive individuals may produce more simplified dependency structures when compared with healthy controls.

Based on linguistic markers, supervised learning-based algorithms like Support Vector Machine (SVM), Random Forest, and Logistic Regression, and text mining approaches were able to achieve good results in differentiating depressed and healthy individuals. Most of the studies conducted their experiments based on lexical, semantic, and sentiment features related to depression collected from online forums. Wang et al (2013) focused on 468 users of the Sina Microblog, employing three types of approaches: rules, trees, and Bayes, all of which achieved accuracies around 80%. They discovered that the times of mentioning others was highly predictive of depression. Nguyen et al. (2016) found that when LIWC and topics were used as feature sets in blog post classification, performance was effective, with accuracies of 88% and 93%, respectively. Choudhury et al. (2013) conducted depression detection using SVM and obtained good performance, with an accuracy of 70%. As an overall evaluation, computational models using supervised learning classifiers were able to achieve a 70-90% range accuracy (for more literature, see Arachchige et al., 2021 and Liu et al., 2022).

Previous studies gave us a relatively clear conclusion that a person's mental state is correlated with their language production in various linguistic domains. However, most studies were conducted on adolescents and online forums, whereas the linguistic features of older adults with different levels of depression are rarely studied.

Moreover, although language data collected from online forums, social media, clinical interviews, or brief talks like reporting current feelings via Smart phone (Hartnagel et al., 2024) or Speech Apps (Gumus et al., 2023) showed its effectiveness in identifying mental disorder, there's a key limitation of such data: it is often generated after individuals have already become aware of their psychological struggles or been diagnosed as patients of depression. Unlike spontaneous online posts or clinical interviews, life narratives can be elicited from individuals in daily settings, which allows us to detect the underlying language patterns of depression before a person self-identifies as having a problem. This shifts the application of language analysis from confirming known conditions to a proactive screening mechanism, potentially facilitating earlier support and intervention for at-risk individuals.

Also, linguistic features are undoubtedly related to the language used. For example, Trifu et al. (2024) found no significant differences in the use of the first-person singular personal pronouns between depressive patients and controls, and the authors attributed this result to the specificities of the Romanian language. Romanian language uses

mostly non-accentuated or incomplete forms of first-person singular pronouns and uses self-reporting via inflexional and morphological verbal forms included in the conjugation, and morphemes, respectively. The subject of the sentence is often implicit in the Romanian language; therefore, the actual use of a personal pronoun with the verb is not necessary. Similarly, Lyu et al. (2023) found that the first-person singular pronouns contribute to depression detection in Chinese social media. Reasons for this result may be that the absence of a subject was very common in Chinese social media, and first-person singular pronouns in Chinese are often used as pragmatic empathetic deixis to narrow the psychological distance between addresser and addressee, but more data is needed to confirm this finding.

The present study addresses research gaps by investigating how Chinese older adults with and without depression narrate their life stories. This study comprehensively compares lexical, syntactic, and sentiment differences of older adults with and without minor depression, and discusses the effect of different kinds of life stories on older adults' language. Also, this study tested the possibility of using machine learning algorithms to detect minor depression using life stories.

## **Methodology**

### **Participants**

Fifty-four Chinese-speaking older adults were recruited online or from local communities in China. Each participant got 30-50 yuan or household goods as honorarium. Four participants were excluded from the data set due to their incompleteness of narrative tasks or poor recording quality, leaving 50 older adults as participants in this study. Participants' mean age was 67.36 (from 60 to 93 years old), with 10.15 mean years of education (from 3 to 17 years).

Depression was tested by the 15-item geriatric depression scale (GDS-15), which is a useful tool for multi-category classification of geriatric depression as normal, minor depressive disorder (MnDD), and major depressive disorder (MDD) in communities. Participants with  $GDS < 5$  were grouped as healthy in this study; participants with  $GDS \leq 10$  were grouped as minor depressive older adults, resulting in 34 participants grouped as healthy and 16 grouped as minor depressed. The mean depression score was 3.6 among all participants (from 1 to 10). Detailed statistics are shown in Table 1.

| Group                | Healthy (n=34)   | Depressed (n=16) | t / $\chi^2$ | p      |
|----------------------|------------------|------------------|--------------|--------|
| Age (year)           | 66.97 $\pm$ 7.06 | 68.19 $\pm$ 9.28 | -0.513       | 0.610  |
| Education (year)     | 10.13 $\pm$ 3.36 | 10.19 $\pm$ 3.54 | -0.053       | 0.947  |
| Gender (female/male) | 24/10            | 11/5             | 0.018        | 0.895  |
| GDS - 15             | 2.29 $\pm$ 0.97  | 6.38 $\pm$ 1.86  | -8.273       | <0.001 |

Table 1: Demographic information of the participants.

### Interview

This research used the first three prompts from the part of McAdam’s (2008) Life Story Interview (“Key Scenes in the Life Story”). This is a revised and structured procedure in which the interviewer asked a series of questions designed to probe for the most important episodes in a person’s life story. A general prompt was offered to participants and they were encouraged to narrate without interruption. The interviewer inquired about (a) the most positive experience the participant had had so far (High-point), (b) the most negative or upsetting experience (Low-point), and (c) the experience that marked the biggest change in the participant’s life so far (Turning-point). The exact prompts closely followed McAdams’ (2008) interview.

Interview recordings were transcribed automatically and manually corrected. Transcriptions were then segmented into three files according to High-point, Low-point, and Turing-point tasks. The interviewer’s speech and participants’ filler phrases were removed from the texts before parsing. These transcription segments were then processed using Stanza (version 2.0) package, a Python-based NLP tool, for sentence segmentation, tokenization, part-of-speech tagging, dependency parsing, etc (Qi et al., 2020). Finally, automatic linguistic unit identification and feature extractions were done by self-compiled Python codes.

### Linguistic Features

Based on previous research’s findings, we extracted 21 linguistic features in the present research, which can be divided into three classes: lexical, syntactic, and sentiment. Detailed descriptions of linguistic features are shown in Table 2.

| Domains | Subdomains        | Features (codes)                                 | Calculation methods                                                                                                                                                          |
|---------|-------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lexical | Lexical diversity | MATTR-50                                         | $\sum_{i=1}^{N-n+1} \frac{V_i}{n \times (N - n + 1)}$ <p>n (the window size) is 50 and <math>V_i</math> is the number of types in the <math>i^{\text{th}}</math> window.</p> |
|         | POS features      | the ratio of nouns (noun%)                       | The number of nouns/ the number of total words                                                                                                                               |
|         |                   | the ratio of verbs (verb%)                       | The number of verbs/ the number of total words                                                                                                                               |
|         |                   | the ratio of adjectives (adj%)                   | The number of adjectives/ the number of total words                                                                                                                          |
|         |                   | the ratio of adverbs (adv%)                      | The number of adverbs/ the number of total words                                                                                                                             |
|         |                   | the ratio of conjunctions (conj%)                | The number of conjunctions/ the number of total words                                                                                                                        |
|         |                   | the ratio of pronouns (pron%)                    | The number of pronouns/ the number of total words                                                                                                                            |
|         |                   | the ratio of first-person singular pronouns (I%) | The number of first-person singulars/ the number of pronouns                                                                                                                 |
|         |                   | the ratio of first-person plural pronouns (we%)  | The number of first-person plural/ the number of pronouns                                                                                                                    |
|         |                   | open-closed words ratio (open-closed%)           | the number of open-class words/ the number of closed-class words                                                                                                             |
|         |                   | the ratio of temporal words (time%)              | the number of temporal words/ the number of total words                                                                                                                      |

|           |              |                                                    |                                                                                                                                   |
|-----------|--------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Syntactic | Sentence     | number of utterance (U)                            | The total number of utterances                                                                                                    |
|           |              | mean length of utterances (MLU)                    | The mean number of words in utterances                                                                                            |
|           | Dependencies | mean dependency distance of discourse (MDD)        | $\frac{1}{n-s} \sum_{i=1}^n  DD_i $<br>n is the total number of words in the text, s is the total number of sentences in the text |
|           |              | the ratio of adverbial modifiers (AdvMod%)         | The number of adverbial modifier/ the total number of dependencies                                                                |
|           |              | the ratio of adjectival modifiers (AdjMod%)        | The number of adjectival modifier/ the total number of dependencies                                                               |
|           |              | the ratio of nominal modifiers (NomMod%)           | The number of nominal modifier/ the total number of dependencies                                                                  |
|           |              | the ratio of head-final dependencies (head-final%) | The number of head-final dependencies/ the total number of dependencies                                                           |
| Sentiment | Intensity    | negative intensity (negative)                      |                                                                                                                                   |
|           |              | good intensity (good)                              |                                                                                                                                   |
|           |              | sad intensity (sad)                                |                                                                                                                                   |

Table 2: Linguistic features extracted from transcripts

### Statistical Analyses

Univariate 2×3 mixed ANOVAs (one per measure of interest) were conducted, which included groups (Healthy, Depressed) and tasks (High-point, Low-point, Turning-point), and post-hoc comparisons using Bonferroni corrections.

Machine learning methods combined with feature selection algorithms were employed to identify optimal composite features and feature combinations. Prior to modeling, z-score normalization was performed to enhance training stability and model

performance. Five classifiers were implemented: Linear Discriminant Analysis (LDA), Logistic Regression (LR), Random Forest (RF), Support Vector Machines (SVM), and Extreme Gradient Boosting (XGBoost).

Class imbalance was addressed using the Synthetic Minority Over-sampling Technique (SMOTE), which generates synthetic minority class samples through interpolation between existing instances. The k-neighbors parameter in SMOTE was dynamically adjusted based on the minority class sample size in each training fold to prevent over-sampling artifacts. To ensure robust performance estimation, we implemented 5-fold Stratified Cross-Validation, preserving class distribution in each split.

For feature selection, Recursive Feature Elimination (RFE) was applied to the complete feature set to systematically evaluate model performance across different feature subset sizes and identify the optimal feature combination. RFE operates by recursively eliminating the least important features based on classifier-derived importance rankings, with comprehensive evaluation performed across feature subsets ranging from 1 to 21 features for each algorithm.

Model performance was comprehensively assessed using accuracy, precision, recall, F1-score, and AUC metrics. Hyper-parameter optimization was conducted for each classifier using grid search with cross-validation. All pre-processing steps, including feature selection and SMOTE resampling, were strictly applied within cross-validation loops to prevent data leakage and ensure unbiased performance estimation.

## **Results**

### **Differences in groups and tasks**

Univariate ANOVAs were conducted on 21 linguistic features on group (1: Healthy, 2: Depressed) and task (1: High-point, 2: Low-point, 3: Turning-point) respectively. The results showed no significant interaction effect on group and task ( $p > 0.05$ ).

Mild differences in life narrative production were found between healthy and depressed older adults. Notably, in the High-point life stories, the ratio of adjectives was significantly higher in the depressed group than in the healthy group ( $F(1,48)=5.318$ ,  $p=0.023$ ,  $\eta^2=0.036$ ). In the Low-point task, the ratio of adverbial modifiers was also significantly higher in the depressed group ( $F(1,48)=5.867$ ,  $p=0.017$ ,  $\eta^2=0.039$ ). In the

Turning-point task, MDD was significantly higher in the healthy group than in the depressed group ( $F(1,48)=5.027, p=0.026, \eta^2=0.034$ ).

There were significant differences in syntactic and sentiment indicators between different tasks within the Healthy group. The number of utterances ( $F(2,96)=4.969, p=0.008, \eta^2=0.065$ ), and sad intensity ( $F(2,96)=9.862, p<0.001, \eta^2=0.120$ ) were significantly higher in the Low-point Task than in the High-point and Turning Point tasks. MDD ( $F(2,96)=2.415, p=0.092, \eta^2=0.032$ ) was higher in the Turing-point Task and in the Low-point Task. Negative intensity was higher in the Low-point Task than in the Turning-point Task ( $F(2,96)=2.721, p=0.069, \eta^2=0.036$ ).

In the depressed group, the ratio of adjectives was significantly higher in the High-point Task than in the Low-point Task ( $F(2,96)=2.878, p=0.059, \eta^2=0.038$ ). Similar to the Healthy group, sad intensity ( $F(2,96)=5.290, p=0.006, \eta^2=0.068$ ) was significantly higher in the Low-point Task than in the High-point and Turning Point tasks.

### **Machine learning classification**

Many models and feature combinations exhibit distinct performances in terms of two evaluation metrics: accuracy and AUC. However, accuracy is a deceptive and unreliable metric for imbalanced data, whereas AUC measures the model's ability to distinguish between classes, independent of the class distribution or the classification threshold. A high F1-score indicates that the model achieves a good balance between finding most of the positive cases (Recall) and ensuring its positive predictions are reliable (Precision). Thus, after filtering the models based on the highest AUC, models with the highest F1-score are shown in Table 4.

In the High-point narrative task, the model with the highest AUC was achieved by an SVM model with 1 feature (negative intensity), reaching the AUC value of 0.80 (Accuracy: 0.70, Precision: 0.55, Recall: 0.82, F1: 0.65). For the Low-point narrative task, the highest AUC was achieved by an XGBoost model with 4 features (U, sad, pronoun%, AdvMod%), and its AUC reached 0.83 (Accuracy: 0.76, Precision: 0.70, Recall: 0.70, F1: 0.64). XGBoost models performed best in the Turning-point task. A model with 6 features reached the highest AUC, reaching the AUC value of 0.85, mean ACC reaches 0.80, Precision: 0.79, recall: 0.62, F1: 0.66, and the feature set includes MLU, negative, sad, time%, MDD, and NomMod%.

| Task    | Model   | ACC  | precision | recall | F1   | AUC  | features                                                            |
|---------|---------|------|-----------|--------|------|------|---------------------------------------------------------------------|
| High    | XGBoost | 0.84 | 0.77      | 0.73   | 0.74 | 0.74 | 3: MLU, adj%, verb%                                                 |
| Low     | XGBoost | 0.80 | 0.68      | 0.80   | 0.70 | 0.78 | 10: U, Good, Sad, MATTR-50, adv%, pron%, time%, verb%, MDD, AdvMod% |
| Turning | XGBoost | 0.84 | 0.84      | 0.75   | 0.74 | 0.83 | 7: MLU, negative, Sad, time%, MDD, NomMod%, we%                     |

Table 3: Feature sets selected in the three tasks

## Discussion

When narrating High-point life stories, older adults with depression showed a higher ratio of adjectives than healthy older adults. It is believed that participants with depression recalled significantly more summary memories in response to a request for a positive self-defining memory than did participants with lower depression scores (Moffitt et al., 1994). This over-general memory, characterized by difficulty in retrieving specific events with more concrete details (Bucci & Freedman, 1981), may cause the frequent use of adjectives instead of concrete verbs or nouns referring to what exactly happened (Yahya & Rahim, 2023). Also, positive memories in depressed individuals sometimes exhibit an interwoven with nostalgia, sadness, or a sense of loss for past happiness, creating a linguistic demand for diverse adjectives to depict complex psychological states. However, the negative intensity and sad intensity showed no significant difference.

In the Low-point task, the ratio of adverbial modifier dependencies (AdvMod%) was significantly higher in the depressed group than in the healthy group, and absolutist and causal thinking may be related to this result. Cognitive theory of depression proposes that absolutist thinking is one of the cognitive biases that depressed individuals tend to exhibit. It is characterized as polarized, all-or-nothing thinking with no middle ground for other possibilities, exhibiting difficulty tolerating ambiguity and ambivalence. Absolutist words like adverbial intensifiers and modal verbs were more prevalent in anxiety, depression, and suicidal ideation forums than in non-affective group forums, and are more reliable markers of depression than negative emotion words (Al-Mosaiwi & Johnstone, 2018).

Turning points are specific events that are perceived to alter the normal flow and direction of one's life. Compared with High- and Low-points, Turning-point narration may be more complex and requires more cognitive and psychological process, for it emphasizes meaning-making (Thorne & McLean, 2002; Throne et al., 2004), i.e., finding the significance of events with high tension and conflict to people's following lives or values. This study found that MDD was higher among healthy participants than depressed individuals in the Turing-point task. Higher MDD suggests that healthy older adults' stories are syntactically complicated, using more modifiers and conjunctions to integrate disparate events, causal relationships, and emotions into a coherent narrative framework. Different from a higher degree of causality among depressed participants in the Low-point task, which suggests their rumination as a response to distress, when there's a higher need for meaning-making, older adults with depression revealed a more frequent addressing of descriptive rather than analytic thought strategies.

Studies found that major depressive disorder among older adults is associated with reduced syntactic abilities (Xu et al., 2023). People with mild depression predominantly used single-clause sentences and reduced sentences, and compound sentences were more commonly used than complex ones. Atypical/inverse word-order usage was also revealed in depressive patients (Smirnova et al., 2018). Moreover, MDD has been shown to be a key textual measure reflecting cognitive abilities relating to memory (Liu, 2008) and is found to be linked with older adults' cognitive impairment (Yih et al., 2025). Systematic review and meta-analyses revealed that the severity of depression is related to reduced cognitive performance in episodic memory, executive function, and processing speed (McDermott & Ebmeier, 2009; Rock et al., 2014). Thus, significantly lower MDD in the depressed group may also result from the decline in several cognitive domains as a side-effect of depression.

Negative intensity and first-person pronouns are widely established as markers of depression in highly influential literature (e.g., Tausczik & Pennebaker, 2010; Al-Mosaiwi & Johnstone, 2018; Chung & Pennebaker, 2019). In this study, depressed older adults produced higher sad intensity and lower good intensity when compared with the healthy group, but the use of first-person pronouns was irregular, and all these data showed no significance. This divergence may stem from different task paradigms. Online self-narratives or self-generated discourse about mental state essentially elicit emotion-driven speech, yielding high emotional density, emphasizing the evaluative function of narrative. In contrast, semi-structured life review requires participants to give more referential information about their experiences. Participants need to recall,

select, organize, and make sense of self-focused personal experiences and thus increase the focus on self but attenuate the focus on emotion, consequently leading to a dilution of emotional salience in the language.

When looking at the differences between tasks, language in the Low-point narrative task is significantly different from High- and Turning-point narratives, especially in terms of the number of utterances and sad intensity. The controversy of the characteristics of negative experiences has long been debated. Trauma Superiority theory holds that traumatic events are remembered better than non-traumatic events, and are assumed to be “superior” to other memories since they would be recalled more vividly and accurately (Sotgiu & Rusconi, 2014). By contrast, Trauma theory asserts that traumatic memories are more fragmented, disorganized, and less coherent compared to nontraumatic memories. Poorer memory for trauma has been linked to the activation of defense mechanisms such as, for example, dissociation and repression (Whitfield, 1995; Alpert et al., 1998), and studies have found that positive memories contain more details and are remembered more clearly and more vividly than traumatic or intensely negative memories (Tromp et al., 1995; D’Argembeau et al., 2003). In the present study, Low-point narratives have more utterances than speech in the other tasks, especially in the healthy group, but POS features and lexical diversity showed no significant difference, suggesting neither the superiority nor inferiority of Low-point experiences among older adults with minor depression.

### **Detection of minor depression using ML algorithms**

As an overall evaluation, computational models developed for detecting depression using learning classifiers and text mining approaches were able to achieve a 70-90% range accuracy (Arachchige et al., 2021). Initializing RFE estimators, 5-fold stratified cross-validation, and SMOTE for handling class imbalance, the current study has obtained several models with certain feature combinations that reach a mean accuracy and AUC higher than 0.80. However, due to the imbalanced data set, we should be cautious of the mean accuracy of models and put more emphasis on the AUC and F1 value. Our best result is in an XGBoost model in Turning-point narratives with 7 features, reaching an AUC value of 0.8286 and F1 value of 0.7433, but the model’s performance, potentially unstable due to the small sample size, is lower than established benchmarks. For example, Khan & Alqahtani (2024) reported near-perfect metrics (Accuracy: 0.994, F1: 0.991) using TF-IDF with linear models, and Fatima et al. (2019) achieved an F1 of 0.9171 with an MLP classifier. This gap can be largely attributed to

fundamental differences in data provenance. Unlike previous studies that leveraged explicitly disease-centric discourse from platforms like Facebook, Twitter, Reddit, or online support forums (OSF), our data comprises daily life narratives from a minor depression cohort. In such narratives, depressive linguistic manifestations are inherently more indirect and nuanced, posing a greater challenge for classification.

Linguistic feature sets of the best-performing models in different tasks (Table 5) are inconsistent, whereas different tasks relied on distinct feature types. The High-point task was primarily driven by syntactic and lexical features (MLU and POS features). Models with the best performance in the Low-point and Turning-point tasks depended on linguistic dimensions combining sentiment, lexical, and syntactic features. For model and task selection, XGBoost consistently delivered top performance across all tasks, and models in the Low- and Turing point tasks performed better than in the High-point task.

## **Limitations**

This study has several limitations that should be considered when interpreting the results. Firstly, the generalizability of the findings is constrained by the relatively small sample size, particularly the group of older adults with minor depression ( $n=16$ ). Although statistical corrections and machine learning techniques to address class imbalance were employed, the limited number of participants may affect the stability and accuracy of the observed effects and the machine learning classification performance.

Secondly, the selection of linguistic indicators was not exhaustive. Certain features salient in depression research, such as the use of absolutist words (Al-Mosaiwi & Johnstone, 2018), concrete and abstract words (Tausczik & Pennebaker, 2010), or coherence and redundancy (Smirnova et al., 2018), were not examined due to the current lack of reliable, validated Chinese word lists for such categories. Subclinical depression is also found to be related to a high use of words that indicate cognitive processing and meaning-making concerns (e.g., because, realize, understand) and attributions about negative events found in life-narrative stories (Adler et al., 2006).

Finally, the analysis primarily focused on how participants narrated their life stories rather than what they said. Future research would benefit from a larger sample size, a wider array of linguistic features, and the incorporation of content analysis methods,

such as word frequency statistics followed by qualitative thematic analysis. This integrated approach would more fully illuminate the core themes in older adults' life narratives and their underlying psychological states.

## **Conclusion**

Depression in older adults is a serious health problem with a poor prognosis. Life review shows the potential of reducing depressive symptoms, and improving life satisfaction in older adults through the course of looking for meaning (Pot et al., 2010; Jiang et al., 2024), but life narrative does more than that. This study found that Chinese older adults with minor depression used more modifiers in their High- and Low-point narratives, but produced simplified dependency structure in Turning-point narratives. Machine learning models, especially the XGBoost, can accurately detect the signs of depression using life narratives, further proving the significance of life review and demonstrating the possibility of using life stories in the assessment and prediction of minor depression among older adults.

## References

- Adler, J. M., Kissel, E. C., & McAdams, D. P. (2006). Emerging from the CAVE: Attributional style and the narrative study of identity in midlife adults. *Cognitive therapy and research*, 30(1), 39-51.
- Al-Mosaiwi, M., & Johnstone, T. (2018). In an absolute state: Elevated use of absolutist words is a marker specific to anxiety, depression, and suicidal ideation. *Clinical psychological science*, 6(4), 529-542.
- Alpert, J.L., Brown, L.S., & Courtois, C.A. (1998). Symptomatic clients and memories of childhood abuse: What the trauma and child sexual abuse literature tell us. *Psychology, Public Policy, and Law*, 4, 941–995.
- Aron, A., McLaughlin-Volpe, T., Mashek, D., Lewandowski, G., Wright, S. C., & Aron, E. N. (2004). Including others in the self. *European review of social psychology*, 15(1), 101-132.
- Barnes, D. H., Lawal-Solarin, F. W., & Lester, D. (2007). Letters from a suicide. *DeathStudies*, 31(7), 671–678.
- Beekman ATF, Copeland JRM, Prince MJ. Review of community prevalence of depression in later life. *British Journal of Psychiatry*. 1999;174:307–311.
- Brenes, G. A., Williamson, J. D., Messier, S. P., Rejeski, W. J., Pahor, M., Ip, E., & Penninx, B. W. (2007). Treatment of minor depression in older adults: a pilot study comparing sertraline and exercise. *Aging and Mental Health*, 11(1), 61-68.
- Bucci, W., & Freedman, N. (1981). The language of depression. *Bulletin of the Menninger Clinic*, 45(4), 334.
- Christensen, M. C., Ren, H., & Fagiolini, A. (2022). Emotional blunting in patients with depression. *Annals of General Psychiatry*, 21(1), 10.
- Chung, C. K., & Pennebaker, J. W. (2019). Textual analysis. In H. Blanton, J. M. LaCroix, & G. D. Webster (Eds.), *Measurement in Social Psychology* (pp.153–173). Austin:Taylor &Francis Group.

- Cummins, N., Dineley, J., Conde, P., Matcham, F., Siddi, S., Lamers, F., ... & RADAR-CNS Consortium. (2023). Multilingual markers of depression in remotely collected speech samples: A preliminary analysis. *Journal of affective disorders*, 341, 128-136.
- Cummins, N., Scherer, S., Krajewski, J., Schnieder, S., Epps, J., & Quatieri, T. F. (2015). A review of depression and suicide risk assessment using speech analysis. *Speech communication*, 71, 10-49.
- D'Argembeau, A., Comblain, C., & Van der Linden, M. (2003). Phenomenal characteristics of autobiographical memories for positive, negative, and neutral events. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition*, 17(3), 281-294.
- De Choudhury, M., Gamon, M., Counts, S., & Horvitz, E. (2013). Predicting depression via social media. In *Proceedings of the international AAAI conference on web and social media* (Vol. 7, No. 1, pp. 128-137).
- Du, X. (2023). Lexical features and psychological states: A quantitative linguistic approach. *Journal of Quantitative Linguistics*, 30(3-4), 257-279.
- Fatima, I., Abbasi, B. U. D., Khan, S., Al-Saeed, M., Ahmad, H. F., & Mumtaz, R. (2019). Prediction of postpartum depression using machine learning techniques from social media text. *Expert Systems*, 36(4), e12409.
- Feil, D., Razani, J., Boone, K., & Lesser, I. (2003). Apathy and cognitive performance in older adults with depression. *International journal of geriatric psychiatry*, 18(6), 479-485.
- Gharib, M., Borhaninejad, V., & Rashedi, V. (2024). Mental health challenges among older adults. *Adv Med Psychol Public Health*, 1(3), 106-107.
- Gumus, M., DeSouza, D. D., Xu, M., Fidalgo, C., Simpson, W., & Robin, J. (2023). Evaluating the utility of daily speech assessments for monitoring depression symptoms. *Digital health*, 9, 20552076231180523.

- Hartnagel, L. M., Ebner-Priemer, U. W., Foo, J. C., Streit, F., Witt, S. H., Frank, J., ... & Sirignano, L. (2025). Linguistic style as a digital marker for depression severity: An ambulatory assessment pilot study in patients with depressive disorder undergoing sleep deprivation therapy. *Acta Psychiatrica Scandinavica*, 151(3), 348-357.
- Hartnagel, L. M., Emden, D., Foo, J. C., Streit, F., Witt, S. H., Frank, J., ... & Sirignano, L. (2024). Momentary Depression Severity Prediction in Patients With Acute Depression Who Undergo Sleep Deprivation Therapy: Speech-Based Machine Learning Approach. *JMIR Mental Health*, 11, e64578.
- Havigerová, J. M., Haviger, J., Kučera, D., & Hoffmannová, P. (2019). Text-based detection of the risk of depression. *Frontiers in psychology*, 10, 513.
- Himmelstein, P., Barb, S., Finlayson, M. A., & Young, K. D. (2018). Linguistic analysis of the autobiographical memories of individuals with major depressive disorder. *PloS one*, 13(11), e0207814.
- Jiang, V., Galin, A., & Lea, X. (2024). Life review for older adults: an integrative review. *Psychogeriatrics*, 24(6), 1402-1417.
- Khan, S., & Alqahtani, S. (2024). Hybrid machine learning models to detect signs of depression. *Multimedia Tools and Applications*, 83(13), 38819-38837.
- Kim, K., Choi, S., Lee, J., & Sea, J. (2019). Differences in linguistic and psychological characteristics between suicide notes and diaries. *The Journal of General Psychology*, 146(4), 391–416.
- König, A., Tröger, J., Mallick, E., Mina, M., Linz, N., Wagnon, C., ... & Peter, J. (2022). Detecting subtle signs of depression with automated speech analysis in a non-clinical sample. *BMC psychiatry*, 22(1), 830.
- Kranzler, A., Young, J. F., Hankin, B. L., Abela, J. R., Elias, M. J., & Selby, E. A. (2016). Emotional awareness: A transdiagnostic predictor of depression and anxiety for children and adolescents. *Journal of Clinical Child & Adolescent Psychology*, 45(3), 262-269.

- Langa KM, Valenstein MA, Fendrick AM, Kabeto MU, Vijan S. Extent and cost of informal caregiving for older Americans with symptoms of depression. *American Journal of Psychiatry*. 2004;161:857–863.
- Litvinova, T., Zagorovskaya, O., Litvinova, O., & Seredin, P. (2016). Profiling a set of personality traits of a text's author: A corpus-based approach. In A. Ronzhin, R. Potapova, & G. Nemeth (Eds.), *Speech and Computer: Proceedings of the 18th International Conference, SPECOM 2016* (pp. 555–562). Budapest, Hungary: Springer International Publishing.
- Liu, D., Feng, X. L., Ahmed, F., Shahid, M., & Guo, J. (2022). Detecting and measuring depression on social media using a machine learning approach: systematic review. *JMIR Mental Health*, 9(3), e27244.
- Liu, H. (2008). Dependency distance as a metric of language comprehension difficulty. *Journal of Cognitive Science*, 9(2), 159–191.
- Low, D. M., Bentley, K. H., & Ghosh, S. S. (2020). Automated assessment of psychiatric disorders using speech: A systematic review. *Laryngoscope investigative otolaryngology*, 5(1), 96-116.
- Lyu, S., Ren, X., Du, Y., & Zhao, N. (2023). Detecting depression of Chinese microblog users via text analysis: Combining Linguistic Inquiry Word Count (LIWC) with culture and suicide related lexicons. *Frontiers in psychiatry*, 14, 1121583.
- Martínez-Nicolás, I., Llorente, T. E., Martínez-Sánchez, F., & Meilán, J. J. G. (2021). Ten years of research on automatic voice and speech analysis of people with Alzheimer's disease and mild cognitive impairment: a systematic review article. *Frontiers in Psychology*, 12, 620251.
- McAdams, D. P. (2008, April). *The life story interview*.
- McDermott, L. M., & Ebmeier, K. P. (2009). A meta-analysis of depression severity and cognitive function. *Journal of affective disorders*, 119(1-3), 1-8.

- Moffitt, K. H., Singer, J. A., Nelligan, D. W., Carlson, M. A., & Vyse, S. A. (1994). Depression and memory narrative type. *Journal of Abnormal Psychology*, 103(3), 581.
- Nanomi Arachchige, I. A., Sandanapitchai, P., & Weerasinghe, R. (2021). Investigating machine learning & natural language processing techniques applied for predicting depression disorder from online support forums: A systematic literature review. *Information*, 12(11), 444.
- Newell, E. E., McCoy, S. K., Newman, M. L., Wellman, J. D., & Gardner, S. K. (2017). You sound so down: Capturing depressed affect through depressed language. *Journal of Language and Social Psychology*, 37(4), 451–474.
- Nguyen, T., Venkatesh, S., & Phung, D. (2016, November). Textual cues for online depression in community and personal settings. In *International Conference on Advanced Data Mining and Applications* (pp. 19-34). Cham: Springer International Publishing.
- Pestian, J., Nasrallah, H., Matykiewicz, P., Bennett, A., & Leenaars, A. (2010). Suicidenote classification using natural language processing: A content analysis. *Biomedical Informatics Insights*, 3, 19–28.
- Pot, A. M., Bohlmeijer, E. T., Onrust, S., Melenhorst, A. S., Veerbeek, M., & De Vries, W. (2010). The impact of life review on depression in older adults: a randomized controlled trial. *International Psychogeriatrics*, 22(4), 572-581.
- Potter, G. G., & Steffens, D. C. (2007). Contribution of depression to cognitive impairment and dementia in older adults. *The neurologist*, 13(3), 105-117.
- Pyszczynski, T., & Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: a self-awareness theory of reactive depression. *Psychological bulletin*, 102(1), 122.
- Qi, P., Zhang, Y., Zhang, Y., Bolton, J., & Manning, C. D. (2020). Stanza: A python natural language processing toolkit for many human languages. *Proceedings of the 58th annual meeting of the association for computational linguistics: System demonstrations* (pp. 101–108). Association for Computational Linguistics.

- Rashedi V, Malakouti SK, Rudnik A. (2018). Community mental health services for older adults in Iran. *J Kermanshah Univ Med Sci*, 22(2), e78947.
- Rock, P. L., Roiser, J. P., Riedel, W. J., & Blackwell, A. (2014). Cognitive impairment in depression: a systematic review and meta-analysis. *Psychological medicine*, 44(10), 2029-2040.
- Rodriguez, A. J., Holleran, S. E., & Mehl, M. R. (2010). Reading between the lines: The lay assessment of subclinical depression from written self-descriptions. *Journal of personality*, 78(2), 575-598.
- Rude, S., Gortner, E. M., & Pennebaker, J. (2004). Language use of depressed and depression-vulnerable college students. *Cognition & Emotion*, 18(8), 1121-1133.
- Schneider, K., Leinweber, K., Jamalabadi, H., Teutenberg, L., Brosch, K., Pfarr, J. K., ... & Stein, F. (2023). Syntactic complexity and diversity of spontaneous speech production in schizophrenia spectrum and major depressive disorders. *Schizophrenia*, 9(1), 35.
- Simmons, R. A., Gordon, P. C., & Chambless, D. L. (2005). Pronouns in marital interaction: What do “you” and “I” say about marital health?. *Psychological science*, 16(12), 932-936.
- Smirnova, D., Cumming, P., Sloeva, E., Kuvshinova, N., Romanov, D., & Nosachev, G. (2018). Language patterns discriminate mild depression from normal sadness and euthymic state. *Frontiers in Psychiatry*, 9, 105.
- Sotgiu, I., & Rusconi, M. L. (2014). Why autobiographical memories for traumatic and emotional events might differ: Theoretical arguments and empirical evidence. *The Journal of Psychology*, 148(5), 523-547.
- Tackman, A. M., Sbarra, D. A., Carey, A. L., Donnellan, M. B., Horn, A. B., Holtzman, N. S., ... & Mehl, M. R. (2019). Depression, negative emotionality, and self-referential language: A multi-lab, multi-measure, and multi-language-task research synthesis. *Journal of personality and social psychology*, 116(5), 817.

- Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of language and social psychology*, 29(1), 24-54.
- Thorne, A., & McLean, K. C. (2002). Gendered reminiscence practices and self-definition in late adolescence. *Sex Roles*, 46, 267–277.
- Thorne, A., McLean, K. C., & Lawrence, A. M. (2004). When remembering is not enough: Reflecting on self-defining memories in late adolescence. *Journal of Personality*, 72, 513–542.
- Trifu, R. N., Nemeş, B., Herta, D. C., Bodea-Hategan, C., Talaş, D. A., & Coman, H. (2024). Linguistic markers for major depressive disorder: a cross-sectional study using an automated procedure. *Frontiers in Psychology*, 15, 1355734.
- Tromp, S., Koss, M.P., Figueredo, A.J., & Tharan, M. (1995). Are rape memories different? A comparison of rape, other unpleasant, and pleasant memories among employed women. *Journal of Traumatic Stress*, 8, 607–627.
- Viduani, A., Cosenza, V., Fisher, H. L., Buchweitz, C., Mota, N., Piccin, J., ... & Kieling, C. (2025). First-person pronouns as linguistic markers of depression among Brazilian youths. *Brazilian Journal of Psychiatry*, 47, e20244058.
- Wang, X., Zhang, C., & Sun, L. (2013, December). An improved model for depression detection in micro-blog social network. In 2013 IEEE 13th *international conference on data mining workshops* (pp. 80-87). IEEE.
- Weintraub, M. J., Posta, F., Ichinose, M. C., Arevian, A. C., & Miklowitz, D. J. (2023). Word usage in spontaneous speech as a predictor of depressive symptoms among youth at high risk for mood disorders. *Journal of affective disorders*, 323, 675-678.
- Whitfield, C.L. (1995). The forgotten difference: Ordinary memory versus traumatic memory. *Consciousness and Cognition*, 4, 88–94.
- Xu, C., Wongpakaran, N., Wongpakaran, T., Siri Wittayakorn, T., Wedding, D., & Varnado, P. (2023). Syntactic Errors in Older Adults with Depression. *Medicina*, 59(12), 2133.

Yahya, N. H., & Rahim, H. A. (2023). Linguistic markers of depression: insights from english-language tweets before and during the COVID-19 pandemic. *Language and Health*, 1(2), 36-50.

Yih, T., Yang, H., Huang, L., & Yao, Q. (2025). Identifying syntactic biomarkers of cognitive impairment in Mandarin-speaking older adults by applying machine learning approaches across multiple speech tasks. *Aphasiology*, 1-30.

Zinken, J., Zinken, K., Wilson, J. C., Butler, L., & Skinner, T. (2010). Analysis of syntax and word use to predict successful participation in guided self-help for anxiety and depression. *Psychiatry research*, 179(2), 181-186.

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***Integrating Knowledge and Society Across Disciplinary Boundaries***  
***—A Case Study of the Toyono Michi-no-Eki Project—***

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**Abstract**

In this article, we focus on the challenges encountered and lessons learned from this project, as a case study of a multidisciplinary collaboration conducted among postgraduate students. Our project is proposing a concept design for a *Michi-no-Eki* to Toyono Town Office (a municipality located in northern Osaka Prefecture). We faced challenges in two respects: Firstly, our members come from different majors and disciplinary backgrounds. Secondly, there are various stakeholders including not only students and instructors, but also tourists, the local government, companies, and residents. We overcame these challenges by respecting each member's role in light of their respective strengths/characteristics, while simultaneously adopting a flexible approach, thereby establishing a shared conceptual ground and maintaining project momentum. This article will describe how we navigated these collaborative processes in the context of the *Michi-no-Eki* project and will present the key lessons learned from these.

**Keywords:** Multidisciplinary collaboration, Postgraduate students, Case study

## Introduction

CBI Program (Cross-Boundary Innovation Program) is the program for doctoral students selected from The University of Osaka and it aims to develop PhD holders with high expertise and versatility for a new era who can integrate different specialized fields. The Program provides a course called “General Cross-Boundary Innovation”, a long-term project-based seminar where students address actual social problems with civil companies, municipalities, NPOs and so on as providers of issues in specific areas or fields (The University of Osaka Cross-Boundary Innovation Program, n.d.).

## Case Study

Our project in General Cross-Boundary Innovation course is proposing a concept design for a *Michi-no-Eki* to Toyono Town Office (a municipality located in northern Osaka Prefecture). our goal in this project is identifying the basic functions of *Michi-no-Eki*, Roadside Station in Japan and designing a new function required for the planned *Michi-no-Eki* in Toyono Town. Michi-no-Eki provides rest amenities, information services, and community-linkage functions on the roadside, and in recent years, they have been further utilized as platforms for regional industry promotion and resident engagement (Ministry of Land, Infrastructure, Transport and Tourism, n.d.). Our first task is to survey the current status and operational models of Michi-no-Eki nationwide. Based on these findings, we then aim to formulate a new concept that includes unique perspectives of university students while incorporating both the local context and the interests of relevant stakeholders. The goal of our work is to develop a concept that makes Toyono Town an attractive destination not only for road users but also for surrounding residents and tourists.

To achieve our goal, we set 4 processes, firstly, we gather information about Toyono Town and *Michi-no-Eki*. Secondly, we identify the issues to be tackled related to Toyono Town or *Michi-no-Eki* in general. Thirdly, we make pieces of ideas for *Michi-no-Eki* in Toyono Town, and the finally, we collect these pieces of ideas and make a proposal as a whole and submit it to Toyono Town Office.

We faced 2 main key challenges during the whole process above.

The first challenge occurred in between second and third process, where we created the pieces of ideas of proposal based on the issues that we identified. We often had scattered discussion in this stage, because all of our team member has different expertise, for example, law, pharmacy, statistic and sociology. We have different approaches to the issues due to different

values and a lack of a unified framework. Therefore, we've decided to use common thought process, called "Design Thinking" (Design Thinking Institute at Eirene Management School, n.d.). In this way, we define a concrete and consistent persona, which is ideal customer of *Michi-no-Eki* with concrete age, feature, gender, and so on. We set several personas based on the issues identified in the second process, and then we could create the ideas to tackle with these issues.

The second challenge occurred in between the third and fourth process, where we made the proposal based on the ideas that we created in the third process. In this stage, we had to balance each stakeholders' expectations to *Michi-no-Eki*. For examples, Toyono Town Office wants to promote tourism and regional farming industry, tourists want well-functioning retail facility and enjoyable experience, local companies want to expend the sales of local products, and residents want to receive community services such as childcare support.

Therefore, we created 2 evaluation criteria, "Business and Public Functions", and made smaller indicators in each group based on each stakeholders' expectations. Then we evaluated each idea which we made in the third process, and could integrate these ideas into one proposal.

## **Conclusion**

We worked on *Michi-no-Eki* project in the CBI program as a collaboration process with multidisciplinary doctoral students and various social actors. We proposed a concept design for a *Michi-no-Eki* at Toyono town, and we got 2 main challenges. One is the scattered discussions caused by diverse expertise which we have, and we managed this challenge by using common thought process called "Design Thinking". The other challenge was balancing diverse interests among stakeholders and we tackled this challenge by setting 2 evaluation criteria "Business and Public Functions".

Through these processes, we could make a final proposal to Toyono Town Office and this project gave us the insights of how we carry on multidisciplinary work especially with actual social actors.

## References

The University of Osaka Cross-Boundary Innovation Program. (n.d.). Advanced course curriculum: Cross-boundary innovation. <https://www.cbi.osaka-u.ac.jp/teaching/innovation/>

Ministry of Land, Infrastructure, Transport and Tourism. (n.d.). Michi-no-Eki outline. <https://www.mlit.go.jp/road/Michi-no-Eki/outline.html>

Design Thinking Institute at Eirene Management School. (n.d.). What is design thinking?. <https://designthinking.eireneuniversity.org/what-is-design-thinking/>

***Machine Learning Identifies Infant Speech Preference as an Important Predictor for  
Early Autism Risk Detection***

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**Abstract**

While conventional ASD risk assessments rely on later-emerging behavioral features, early vocal preferences offer infant-available predictive markers. Therefore, multimodal measures integrating behavioral features with vocal preference may enhance autistic risk prediction accuracy. This study developed machine learning models to identify high autistic risk infants using multimodal measures, including gaze duration of sound contrasts (speech vs. non-vocal; speech vs. monkey calls) and learning/motor scores. Analysis of 9/12 month infant data (56 high-risk, 82 low-risk) showed SVM performed best after optimization (71.43% accuracy, AUC=0.46). Average model feature importance analysis identified that key predictors are 9-month human-over-monkey preference, 9-month speech-over-nonspeech preference, and 12-month receptive language percentiles. Findings demonstrate that gaze-based speech preference assessment addresses critical limitations of traditional behavioral markers, and when integrated with predictive modeling, opens new pathways for significant advances in early autism risk detection.

Keywords: Machine learning, Early autistic risk identification, Multimodal behaviors, Speech preference

## Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by persistent deficits in verbal/non-verbal communication, impaired social reciprocity, and restricted/repetitive behavioral patterns (American Psychiatric Association, 2013). Symptom severity and functional impact demonstrate pronounced individual heterogeneity across all racial, ethnic, and socioeconomic groups (Alsharif et al., 2024). Crucially, attenuated behavioral manifestations in specific subpopulations (notably females) frequently evade timely clinical recognition compared to more overt presentations (e.g., in males), resulting in significant diagnostic delays (Solomon et al., 2012). This discrepancy occurs despite equivalent core social-communication impairments, thereby creating intervention access disparities that compound functional challenges throughout the lifespan. Consequently, early identification remains a clinical imperative, as evidence-based interventions initiated during critical developmental windows substantially improve long-term adaptive outcomes. Beyond autistic children themselves, their infant siblings, who face substantially elevated autism risk ( $\approx 19\%$  diagnosis rate by age 3 versus  $\approx 1.5\%$  in the general population) (Ozonoff et al., 2011), likewise warrant careful monitoring from infancy.

Current approaches to early autism diagnosis primarily rely on identifying behavioral markers emerging in toddlerhood (Hyman et al., 2020). However, certain infant signals, such as speech sound bias, may offer earlier indicators of autism risk. This is critical because infants must distinguish meaningful speech from background noise to acquire communication skills (Liberman & Whalen, 2000; Pinker & Jackendoff, 2005; Sorcinelli et al., 2019) and support their language and social development (Vouloumanos & Werker, 2007; Werker & Curtin, 2005). Typically developing (TD) newborns exhibit a natural bias towards speech over many other sounds, a preference believed to underpin essential learning processes (Kuhl, 1988; Vouloumanos & Werker, 2007). Crucially, speech processing ability in infancy consistently predicts later language and social skills (Cristia et al., 2014), including joint attention (Roberts et al., 2013). While autistic children often lack typical speech preferences, the degree of speech bias they do exhibit nevertheless predicts receptive language ability (Paul et al., 2007) and sensitivity to syllable changes (Kuhl et al., 2005). Furthermore, infant preferences for speech over non-biological non-speech sounds show differential predictive value for later developmental outcomes among siblings of autistic children (Curtin & Vouloumanos, 2013; Vouloumanos & Curtin, 2014).

Eye tracking, a non-invasive measurement technique, offers enhanced precision in detecting atypical visual patterns in infants later diagnosed with autism (Papagiannopoulou et al., 2014). Substantial evidence links autism to aberrant eye-tracking behaviors (Senju & Johnson, 2009).

In infant siblings of autistic children, measuring gaze duration toward different auditory stimuli complements traditional behavioral assessments in predicting subsequent linguistic development, social communication skills, and autism-related behaviors (Sorcinelli et al., 2019). Furthermore, eye tracking can be effectively combined with measures of speech bias, as gaze patterns directly reveal subtle variations in young children's auditory attention.

Building on the potential of combining speech preference and gaze behaviors for early detection, machine learning offers a promising approach to further enhance autism risk identification. By providing an unbiased and reproducible secondary assessment (Sasson & Elison, 2012; Yaneva et al., 2020), machine learning can integrate these multimodal signals with other observational behaviors. Therefore, this study investigates whether machine learning algorithms and gaze patterns reflecting speech preference can effectively facilitate traditional behavioral features in distinguishing infant siblings of autistic children from siblings of TD children. This distinction is based on combined measures of: (1) established behavioral and language assessments (Autism Observation Scale for Infants, AOSI; MacArthur-Bates Communicative Development Inventories, CDI; Mullen Scales of Early Learning, MSEL), and (2) gaze patterns reflecting auditory preferences during exposure to speech, non-biological non-speech sounds, and monkey calls.

Our predictor framework capitalizes on complementary developmental windows to capture emergent risk trajectories. At 9 months, auditory processing features, including gazing responses to speech and non-speech stimuli, reveal pre-symptomatic tuning atypicality, while concurrent behavioral observations contextualize risk before language onset. By 12 months, standardized language assessments quantify emerging communicative deficits alongside behavioral features that track consolidating autism characteristics as diagnostic profiles. This staged multimodal design aligns with established neurodevelopmental cascades, wherein early auditory anomalies precede observable symptoms, which subsequently manifest as measurable social-communication and language delays (Sorcinelli et al., 2019). Given the study's feature dimensionality and sample size, we posit that 1) models robust to limited data will optimally leverage these temporally stratified inputs; 2) 9-month speech processing metrics, particularly auditory preference for speech, will predict autistic risk comparable to conventional linguistic and behavioral markers.

## **Methods**

### ***Dataset***

The dataset was obtained from a public repository (Sorcinelli et al., 2018) containing eye-tracking measures from 9-month-old infants during exposure to speech, non-biological non-speech sounds, and monkey calls. Participants included siblings of autistic children (SIBS-A;

27 male, 29 female) and siblings of TD children (SIBS-TD; 38 male, 44 female). The participants without group or gender information were excluded. Missing values in gaze duration measures were addressed through median imputation.

Auditory stimuli comprised monkey calls, monosyllabic nonsense speech words ('lif', 'neem'; 6 tokens each) spoken by a female native English speaker (pitch: 197-350 Hz; duration: 525-1155 ms), and acoustically matched non-speech analogues (Vouloumanos et al., 2001; Vouloumanos & Werker, 2004). These analogues were time-varying sinusoidal waves replicating the fundamental frequency and first three formants, preserving the duration, pitch contour, amplitude envelope, relative formant amplitude, and relative intensity of the speech tokens. Crucially, non-speech analogues differed in lacking natural voice quality and biological realism and utilizing four independent sound sources versus the single vocal tract source of speech. Infants were tested using an infant-controlled preferential looking procedure in a sound-attenuated room (sound level:  $60 \pm 5$  dB). Seated on a parent's lap 89 cm from a monitor, infants initiated trials by fixating a central stimulus (Cooper & Aslin, 1990; Vouloumanos & Werker, 2004). Looking time to the screen, provided by the dataset publisher, was coded offline frame-by-frame (30 fps) by observers being blind to trial type; reliability was high (ICC = .98,  $p < .001$ , based on 20% double-coding). Supplementary measures included the AOSI (9/12 months) (Bryson et al., 2008), MB-CDI (12 months) (Fenson et al., 1993), and MSEL (12 months) (Mullen, 1995).

### ***Machine Learning Models***

A predictive modeling framework was developed to classify autism risk groups (SIBS-TD versus SIBS-A) using behavioral features measured during infancy. The analytical approach incorporated systematic data preprocessing and multiple classification algorithms. Missing values were addressed through k-nearest neighbors imputation ( $k=5$ ), followed by robust scaling to minimize outlier effects. Class imbalance was systematically managed through differential weighting and synthetic minority oversampling during cross-validation. Five classification algorithms were implemented: 1) XGBoost with asymmetric error weighting (Chen & Guestrin, 2016), 2) LightGBM with gradient-based sampling (Ke et al., 2017), 3) Random Forest with balanced class weighting (Breiman, 2001), 4) Support Vector Machine with radial basis kernel (Chang & Lin, 2011), and 5) Multilayer Perceptron with early stopping regularization (Rumelhart et al., 1986).

Model development employed stratified 3-fold cross-validation with hyperparameter optimization through grid search. Balanced accuracy, defined as the mean of sensitivity and specificity, served as the primary model selection criterion. The support vector machine

emerged as the optimal classifier based on test set AUC performance. The three top-performing classifiers were subsequently integrated into a stacked ensemble using logistic regression as a meta-classifier, validated through 5-fold cross-validation.

Performance evaluation encompassed accuracy, AUC, and F1 scores. Model interpretation included feature importance assessment through Gini impurity decomposition for compatible tree-based algorithms (XGBoost, LightGBM, and Random Forest). Aggregate importance scores were computed by averaging across these models, providing insights into key behavioral predictors. Classification thresholds were optimized via F1-score maximization for the optimal classifier. Diagnostic visualizations included receiver operating characteristic curves, precision-recall plots, and confusion matrices. The computational implementation utilized Python with scikit-learn (v1.0), XGBoost (v1.5), and LightGBM (v3.3) libraries.

## Results

The machine learning models were evaluated on an independent test set representing 15% of the overall cohort (n=138). Among the evaluated approaches, the Support Vector Machine (SVM) demonstrated superior classification accuracy at 71.43%, substantially outperforming alternative methods (Table 1).

Table 1. Summary of models' outputs

|                       | Accuracy | AUC  | F1   |
|-----------------------|----------|------|------|
| XGBoost               | 38.10%   | 0.38 | 0.32 |
| LightGBM              | 38.10%   | 0.32 | 0.32 |
| Random Forest         | 47.62%   | 0.40 | 0.42 |
| SVM                   | 71.43%   | 0.46 | 0.63 |
| Multilayer Perceptron | 57.14%   | 0.64 | 0.40 |
| Ensemble              | 42.86%   | 0.42 | 0.40 |

The SVM maintained robust performance across both risk groups, correctly classifying the majority of cases despite the complexity of predicting developmental outcomes from infant multi-modal features. The SVM also achieved the highest F1-score (0.63), indicating balanced precision and recall in identifying both risk groups (Figure 1).

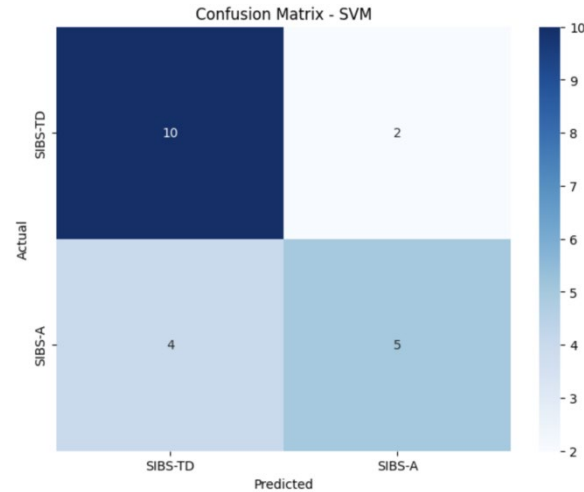


Figure 1: Confusion matrix of the SVM model.

Notably, the Multilayer Perceptron model showed the highest AUC (0.639), suggesting better risk probabilities. However, this apparent advantage did not translate to practical clinical utility, as evidenced by its lower accuracy (57.14%) and substantially reduced F1-score (0.40). This performance pattern indicates potential calibration issues where probability estimates didn't consistently correspond to correct classifications. The ensemble approach, while theoretically promising, failed to outperform the best individual classifier in this application.

Figure 2 presents the average feature importance derived from three tree-based models (XGBoost, LightGBM, and RandomForest) that support intrinsic importance metrics. The hierarchical ranking reveals the preference for Human speech over monkey calls at 9-month-old as the most influential predictor, demonstrating substantially higher importance than other features. This is closely followed by the preference for Human speech over non-speech calls at 9-month-old and the receptive language percentile of MSEL at 12-month-old, indicating that speech preference measures and receptive language abilities constitute critical predictive signals for autism risk classification.

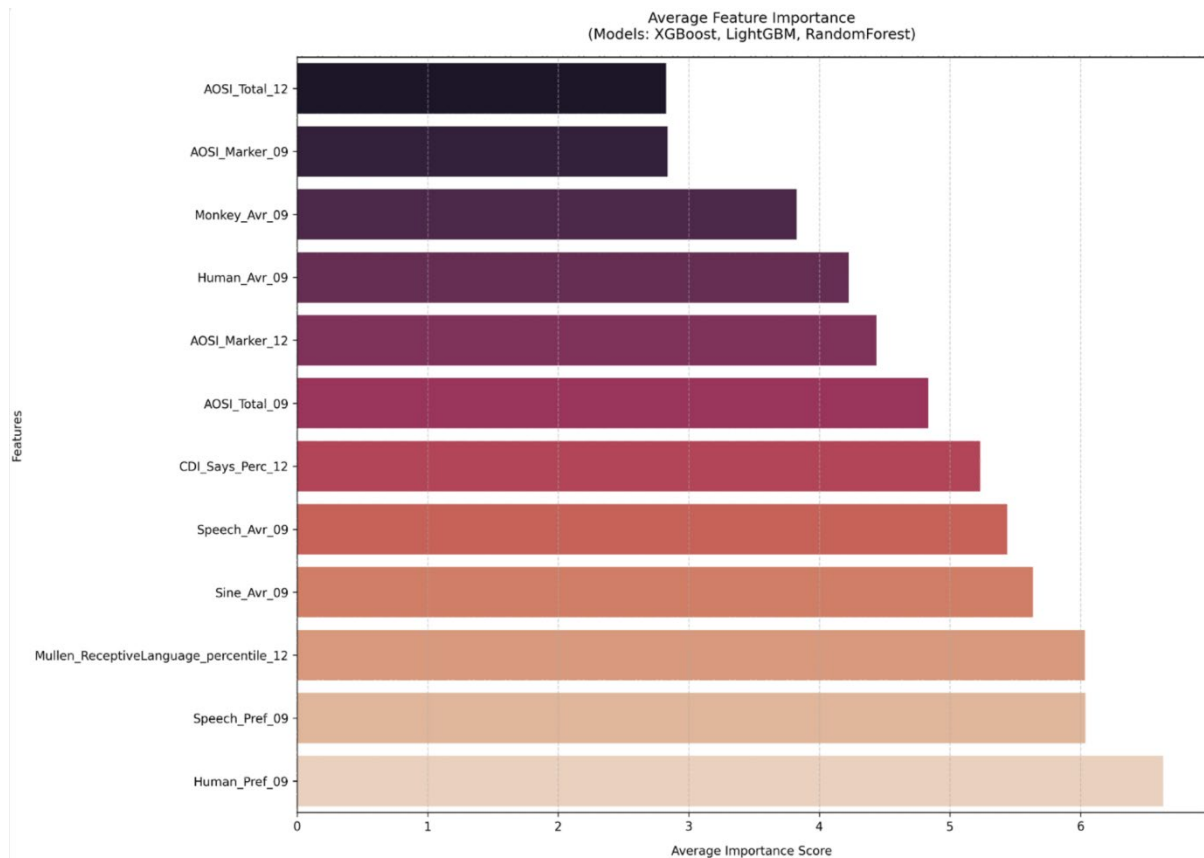


Figure 2: Average feature importance of the three tree-based models ('09/12' for the age in months; 'Avr' for average looking time during speech trials; 'Perc' for Percentile; 'total' for total scores of 18 items in AOSI, indicating severity; 'marker' for total number of AOSI items scored between 1 and 3, indicating the breadth of symptom expression; 'Pref' for preference, i.e., looking time difference between different trials).

Mid-range importance features include some auditory processing metrics (average looking time during Sine and speech trials at 9 months old), Expressive language ability (CDI Says percentile at 12 months old), and autism observational scores (severity of symptoms at 9 months old and breadth of symptoms at 12 months old). Notably, other early auditory responses (average looking time during Human and Monkey trials at 9 months old) showed moderate predictive value. The symptom breadth at 9 months and symptom severity at 12 months showed lower importance.

## Discussion

This study investigated the utility of machine learning algorithms in differentiating infant siblings of autistic children from siblings of typically developing children using integrated behavioral assessments and gaze-based auditory preference measures. Five classification models were evaluated: XGBoost, LightGBM, Random Forest, Support Vector Machine, and

Multilayer Perceptron. The Support Vector Machine achieved superior classification performance and the highest F1-score. Feature importance analysis across tree-based models identified the preference for human speech over monkey calls at 9 months as the most influential predictor. This was closely followed by the preference for speech over non-speech sounds at 9 months and receptive language abilities at 12 months. Moderately important predictors included expressive language skills at 12 months, some auditory processing metrics, autism observational total score at 9 months, and autism observational marker at 12 months. Autism observational marker at 9 months and autism observational total score at 12 months demonstrated relatively lower predictive importance.

### ***Performance of Machine Learning Models***

Among the evaluated models, the SVM model demonstrated superior performance across key clinical metrics, achieving the highest accuracy and F1-score in differentiating SIBS-A and SIBS-TD infants. The performance divergence between SVM and other models stems from core algorithmic differences that become particularly consequential in autism risk prediction. While the Multilayer Perceptron showed marginally better ranking capability, its substantially lower accuracy and F1-score reveal fundamental limitations in converting risk stratification into actionable classifications. This calibration gap reflects neural networks' requirement for larger samples to translate probabilistic sophistication into reliable decisions (Alwosheel et al., 2018), whereas SVM's structural risk minimization provides stronger generalization for small-sample, low-dimensional data, where its training complexity remains manageable due to limited observations (Yu et al., 2003). These differences are exacerbated in simple binary autism risk prediction, where feature scarcity and limited samples amplify SVM's suitability. This performance pattern aligns with established machine learning principles, where complex models often underperform some simpler alternatives in data-constrained scenarios like our infant sibling cohort (Alarifi et al., 2023).

In infant autism sibling screening, the narrow window for effective interventions (Vivanti et al., 2019) highlights the need to prioritize reliable classification over marginal improvements in ranking metrics. False negatives carry irreversible consequences, making sensitivity-optimized accuracy a non-negotiable priority. Simultaneously, F1-score balances this sensitivity against precision, reducing false positives that strain clinical resources and cause familial distress. While AUC measures probabilistic ranking quality, its clinical limitations are mitigated by clinician-led secondary assessments. SVM serves as a potentially operational decision-support tool, identifying infants warranting comprehensive evaluation while acknowledging its probabilistic nature. This framework stresses actionable performance

(accuracy/F1) over theoretical ranking sophistication (AUC), as timely identification with managed false positives aligns with the ethical imperative of preventing missed interventions.

### ***Speech preference as a predictive feature of autistic risk***

Feature importance analysis confirmed the importance of speech processing, identifying 9-month auditory speech preference over monkey calls as the strongest predictor, followed by 9-month speech-nonspeech differentiation and 12-month receptive language. These results suggest that speech preference can be a reliable predictor for early autistic risk prediction, like other linguistic or behavioral symptoms. Preferences for speech early in infancy may play an important role in setting typical linguistic and social communicative development, particularly for infants with autistic siblings, who are themselves at higher risk for later being diagnosed with autism, developing language or other developmental delays, or showing subclinical features of autistic characteristics of the broader autism phenotype (Ozonoff et al., 2014).

The moderately weighted predictors, including 12-month expressive language ability, autism behavioral scores, and absolute looking time to auditory stimuli at 9 months, demonstrate relatively limited standalone value in predicting autistic risk. While isolated gaze duration measures provide some utility by indexing undifferentiated attention to auditory stimuli, they lack diagnostic specificity for autistic risk prediction, primarily due to their inability to capture infants' discriminative processing of socially meaningful sounds. In contrast, speech preference, measured through preferential attention to human speech versus nonspeech sounds or monkey calls, provides superior predictive power because it directly indexes early consciousness of the social auditory system (Vouloumanos & Curtin, 2014). When infants consistently favor speech over nonspeech/monkey calls, it reflects specialization for useful vocalizations (Vouloumanos & Werker, 2004), which in turn facilitates richer language exposure and responsive caregiving interactions (Warlaumont et al., 2014). Thus, while conventional measures offer reliable insights, speech-over-nonspeech and human-over-monkey preference provide new evidence for early autistic risk.

The symptom breadth at 9 months and symptom severity at 12 months showed lower importance in our predictive model. This finding should not be interpreted as diminishing the established clinical value of these behavioral measures, which remain essential diagnostic indicators across numerous studies (Hosozawa et al., 2020; Hyman et al., 2020). Rather, their reduced weighting reflects inherent developmental constraints: at 9 months, infants' limited behavioral repertoire constrains comprehensive symptom breadth assessment, while at 12 months, symptom severity measures capture phenotypes still undergoing dynamic consolidation. This is precisely where auditory preference measures offer critical

complementary value. Speech-nonspeech and human-monkey contrast paradigms objectively quantify subtle attentional biases through gaze patterns toward socially meaningful sounds (Sorcinelli et al., 2019), circumventing reliance on overt infant behaviors that may be transient or situation-dependent. By detecting early neurodevelopmental signals months before robust behavioral symptoms stabilize, speech preference provides a unique window into emerging social communication tendency. Thus, while behavioral measures maintain their diagnostic significance, speech preference metrics enhance predictive sensitivity during this developmental period by capturing foundational responses that precede observable symptoms.

## **Limitation**

This study's identification of machine learning's potential and speech preference as an early predictor advances autism risk detection, yet has several limitations. First, findings derived exclusively from the small and low-dimensional sample limit generalizability to screening contexts. Second, our cross-sectional assessment captures a single developmental snapshot, which cannot characterize dynamic risk trajectories across infancy. Third, though multimodal feature integration demonstrated superior predictive validity over single-modality approaches, the probabilistic risk estimates remain adjunctive to, not replacements for, comprehensive clinical evaluation. Future validation should increase the sample size, include more features, and develop interpretable interfaces that translate feature importance into clinical workflows.

## **Conclusion**

This study demonstrates that infants' preference for human speech, measured through their gaze patterns when hearing speech versus other sounds, serves as a powerful early predictor of autism risk. Machine learning analysis confirmed that this speech preference outperformed traditional developmental measures in identifying infants with higher autistic risk. While later language skills and behavioral observations provided valuable insights, the simple act of observing whether infants consistently favored listening to people over other sounds proved most revealing. This discovery highlights how fundamental auditory social attention is to early development, and how its measurement creates new opportunities to identify infants needing support, long before clear behavioral symptoms emerge. Combining machine learning with speech preference measurements opens new pathways for significant advances in early autism risk detection.

## **Data statement**

The data used in this study are publicly available under the Creative Commons Attribution 4.0 International (CC BY 4.0) license and have been cited appropriately in compliance with the license terms.

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## References

- Alarifi, H., Aldhalaan, H., Hadjikhani, N., Johnels, J. Å., Alarifi, J., Ascenso, G., & Alabdulaziz, R. (2023). Machine learning for distinguishing saudi children with and without autism via eye-tracking data. *Child and Adolescent Psychiatry and Mental Health*, 17(1), 112. <https://doi.org/10.1186/s13034-023-00662-3>
- Alsharif, N., Al-Adhaileh, M. H., Al-Yaari, M., Farhah, N., & Khan, Z. I. (2024). Utilizing deep learning models in an intelligent eye-tracking system for autism spectrum disorder diagnosis. *Frontiers in Medicine*, 11. <https://doi.org/10.3389/fmed.2024.1436646>
- Alwosheel, A., van Cranenburgh, S., & Chorus, C. G. (2018). Is your dataset big enough? Sample size requirements when using artificial neural networks for discrete choice analysis. *Journal of Choice Modelling*, 28, 167–182. <https://doi.org/10.1016/j.jocm.2018.07.002>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed). American psychiatric association. <https://www.psychiatry.org/psychiatrists/practice/dsm>
- Breiman, L. (2001). Random Forests. *Machine Learning*, 45(1), 5–32. <https://doi.org/10.1023/A:1010933404324>
- Bryson, S. E., Zwaigenbaum, L., McDermott, C., Rombough, V., & Brian, J. (2008). The Autism Observation Scale for Infants: Scale Development and Reliability Data. *Journal of Autism and Developmental Disorders*, 38(4), 731–738. <https://doi.org/10.1007/s10803-007-0440-y>
- Chang, C.-C., & Lin, C.-J. (2011). LIBSVM: A library for support vector machines. *ACM Trans. Intell. Syst. Technol.*, 2(3), 27:1-27:27. <https://doi.org/10.1145/1961189.1961199>
- Chen, T., & Guestrin, C. (2016). XGBoost: A Scalable Tree Boosting System. *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, KDD '16*, 785–794. <https://doi.org/10.1145/2939672.2939785>
- Cooper, R. P., & Aslin, R. N. (1990). Preference for infant-directed speech in the first month after birth. *Child Development*, 61(5), 1584–1595.

- Cristia, A., Seidl, A., Junge, C., Soderstrom, M., & Hagoort, P. (2014). Predicting Individual Variation in Language From Infant Speech Perception Measures. *Child Development*, 85(4), 1330–1345. <https://doi.org/10.1111/cdev.12193>
- Curtin, S., & Vouloumanos, A. (2013). Speech preference is associated with autistic-like behavior in 18-months-olds at risk for Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 43(9), 2114–2120. <https://doi.org/10.1007/s10803-013-1759-1>
- Fenson, L., Dale, P., Reznick, J., Thal, D., Bates, E., Hartung, J., Pethick, S., & Reilly, J. S. (1993). *The MacArthur Communicative Development Inventories: User's Guide and Technical Manual*. Singular Publishing Group.
- Hosozawa, M., Sacker, A., Mandy, W., Midouhas, E., Flouri, E., & Cable, N. (2020). Determinants of an autism spectrum disorder diagnosis in childhood and adolescence: Evidence from the UK Millennium Cohort Study. *Autism*, 24(6), 1557–1565. <https://doi.org/10.1177/1362361320913671>
- Hyman, S. L., Levy, S. E., Myers, S. M., COUNCIL ON CHILDREN WITH DISABILITIES, S. O. D. A. B. P., Kuo, D. Z., Apkon, S., Davidson, L. F., Ellerbeck, K. A., Foster, J. E. A., Noritz, G. H., Leppert, M. O., Saunders, B. S., Stille, C., Yin, L., Weitzman, C. C., Childers, D. O., Jr, Levine, J. M., Peralta-Carcelen, A. M., Poon, J. K., ... Bridgemohan, C. (2020). Identification, Evaluation, and Management of Children With Autism Spectrum Disorder. *Pediatrics*, 145(1), e20193447. <https://doi.org/10.1542/peds.2019-3447>
- Ke, G., Meng, Q., Finley, T., Wang, T., Chen, W., Ma, W., Ye, Q., & Liu, T.-Y. (2017). LightGBM: A Highly Efficient Gradient Boosting Decision Tree. *Advances in Neural Information Processing Systems*, 30. [https://proceedings.neurips.cc/paper\\_files/paper/2017/hash/6449f44a102fde848669bdd9eb6b76fa-Abstract.html](https://proceedings.neurips.cc/paper_files/paper/2017/hash/6449f44a102fde848669bdd9eb6b76fa-Abstract.html)
- Kuhl, P. K. (1988). Auditory perception and the evolution of speech. *Human Evolution*, 3(1), 19–43. <https://doi.org/10.1007/BF02436589>
- Kuhl, P. K., Coffey-Corina, S., Padden, D., & Dawson, G. (2005). Links between social and linguistic processing of speech in preschool children with autism: Behavioral and electrophysiological measures. *Developmental Science*, 8(1), F1–F12. <https://doi.org/10.1111/j.1467-7687.2004.00384.x>

- Liberman, A. M., & Whalen, D. H. (2000). On the relation of speech to language. *Trends in Cognitive Sciences*, 4(5), 187–196. [https://doi.org/10.1016/S1364-6613\(00\)01471-6](https://doi.org/10.1016/S1364-6613(00)01471-6)
- Mullen, E. (1995). Mullen scales of early learning. In *Circle Pines*. American Guidance Service. <https://www.sciencedirect.com/topics/psychology/mullen-scales-of-early-learning>
- Ozonoff, S., Young, G. S., Belding, A., Hill, M., Hill, A., Hutman, T., Johnson, S., Miller, M., Rogers, S. J., Schwichtenberg, A. J., Steinfeld, M., & Iosif, A.-M. (2014). The Broader Autism Phenotype in Infancy: When Does It Emerge? *Journal of the American Academy of Child & Adolescent Psychiatry*, 53(4), 398-407.e2. <https://doi.org/10.1016/j.jaac.2013.12.020>
- Ozonoff, S., Young, G. S., Carter, A., Messinger, D., Yirmiya, N., Zwaigenbaum, L., Bryson, S., Carver, L. J., Constantino, J. N., Dobkins, K., Hutman, T., Iverson, J. M., Landa, R., Rogers, S. J., Sigman, M., & Stone, W. L. (2011). Recurrence risk for autism spectrum disorders: A Baby Siblings Research Consortium study. *Pediatrics*, 128(3), e488-495. <https://doi.org/10.1542/peds.2010-2825>
- Papagiannopoulou, E. A., Chitty, K. M., Hermens, D. F., Hickie, I. B., & Lagopoulos, J. (2014). A systematic review and meta-analysis of eye-tracking studies in children with autism spectrum disorders. *Social Neuroscience*, 9(6), 610–632. <https://doi.org/10.1080/17470919.2014.934966>
- Paul, R., Chawarska, K., Fowler, C., Cicchetti, D., & Volkmar, F. (2007). “Listen My Children and You Shall Hear”: Auditory Preferences in Toddlers With Autism Spectrum Disorders. *Journal of Speech, Language, and Hearing Research*, 50(5), 1350–1364. [https://doi.org/10.1044/1092-4388\(2007/094\)](https://doi.org/10.1044/1092-4388(2007/094))
- Pinker, S., & Jackendoff, R. (2005). The faculty of language: What’s special about it? *Cognition*, 95(2), 201–236. <https://doi.org/10.1016/j.cognition.2004.08.004>
- Roberts, S., Fyfield, R., Baibazarova, E., Van Goozen, S., Culling, J. F., & Hay, D. F. (2013). Parental Speech at 6Months Predicts Joint Attention at 12Months. *Infancy*, 18, E1–E15. <https://doi.org/10.1111/inf.12018>
- Rumelhart, D. E., Hinton, G. E., & Williams, R. J. (1986). Learning representations by back-propagating errors. *Nature*, 323(6088), 533–536. <https://doi.org/10.1038/323533a0>

- Sasson, N. J., & Elison, J. T. (2012). Eye Tracking Young Children with Autism. *Journal of Visualized Experiments (JoVE)*, (61), e3675. <https://doi.org/10.3791/3675>
- Senju, A., & Johnson, M. H. (2009). The eye contact effect: Mechanisms and development. *Trends in Cognitive Sciences*, 13(3), 127–134. <https://doi.org/10.1016/j.tics.2008.11.009>
- Solomon, M., Miller, M., Taylor, S. L., Hinshaw, S. P., & Carter, C. S. (2012). Autism Symptoms and Internalizing Psychopathology in Girls and Boys with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 42(1), 48–59. <https://doi.org/10.1007/s10803-011-1215-z>
- Sorcinelli, A., Ference, J., Curtin, S., & Vouloumanos, A. (2019). Preference for speech in infancy differentially predicts language skills and autism-like behaviors. *Journal of Experimental Child Psychology*, 178, 295–316. <https://doi.org/10.1016/j.jecp.2018.09.011>
- Sorcinelli, A., Vouloumanos, A., Ference, J., & Curtin, S. (2018). *Data for: Preference for speech in infancy differentially predicts language skills and autism-like behaviors* (Version 1) [Dataset]. Mendeley Data. <https://doi.org/10.17632/npw24yrjf6.1>
- Vivanti, G., Dissanayake, C., Duncan, E., Feary, J., Capes, K., Upson, S., Bent, C. A., Rogers, S. J., & Hudry, K. (2019). Outcomes of children receiving Group-Early Start Denver Model in an inclusive versus autism-specific setting: A pilot randomized controlled trial. *Autism*, 23(5), 1165–1175. <https://doi.org/10.1177/1362361318801341>
- Vouloumanos, A., & Curtin, S. (2014). Foundational Tuning: How Infants' Attention to Speech Predicts Language Development. *Cognitive Science*, 38(8), 1675–1686. <https://doi.org/10.1111/cogs.12128>
- Vouloumanos, A., Kiehl, K. A., Werker, J. F., & Liddle, P. F. (2001). Detection of sounds in the auditory stream: Event-related fMRI evidence for differential activation to speech and nonspeech. *Journal of Cognitive Neuroscience*, 13(7), 994–1005. <https://doi.org/10.1162/089892901753165890>
- Vouloumanos, A., & Werker, J. F. (2004). Tuned to the signal: The privileged status of speech for young infants. *Developmental Science*, 7(3), 270–276. <https://doi.org/10.1111/j.1467-7687.2004.00345.x>

- Vouloumanos, A., & Werker, J. F. (2007). Listening to language at birth: Evidence for a bias for speech in neonates. *Developmental Science*, 10(2), 159–164. <https://doi.org/10.1111/j.1467-7687.2007.00549.x>
- Warlaumont, A. S., Richards, J. A., Gilkerson, J., & Oller, D. K. (2014). A Social Feedback Loop for Speech Development and Its Reduction in Autism. *Psychological Science*, 25(7), 1314–1324. <https://doi.org/10.1177/0956797614531023>
- Werker, J. F., & Curtin, S. (2005). PRIMIR: A Developmental Framework of Infant Speech Processing. *Language Learning and Development*, 1(2), 197–234. (world). <https://www.tandfonline.com/doi/abs/10.1080/15475441.2005.9684216>
- Yaneva, V., Ha, L. A., Eraslan, S., Yesilada, Y., & Mitkov, R. (2020). Detecting High-Functioning Autism in Adults Using Eye Tracking and Machine Learning. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 28(6), 1254–1261. <https://doi.org/10.1109/TNSRE.2020.2991675>
- Yu, H., Yang, J., & Han, J. (2003). Classifying Large Data Sets Using SVMs with Hierarchical Clusters. *Proceedings of the Ninth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, 306–315.

## ***Translanguaging: Evidence from Nairobi and Its Social Contribution***

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### **Abstract**

Nairobi, the capital city of the Republic of Kenya, is a multilingual city where people speak diverse languages such as Swahili, English, and ethnic languages. In Nairobi, speakers do not necessarily distinguish linguistic resources based on the “names” of languages such as “Swahili” or “English” when making meanings. Instead, they can develop their own way of speaking by using the full range of their repertoire inclusively. To explain this sort of language practice, the concept of *translanguaging* has been gaining academic attention. Translanguaging refers to multilinguals’ practice of constructing and drawing an inherently multilingual linguistic repertoire for meaning-making, without strictly adhering to the socially and politically determined boundaries. Although translanguaging originated in Bilingual education, it has been increasingly used as a framework to comprehend multilinguals’ everyday language practices. This article aims to articulate everyday language practices in Nairobi, employing translanguaging as an analytical grid. In addition, it addresses the social contribution of revealing everyday multilingual practices.

Keywords: Translanguaging, Language practice, Kenya

## 1. Introduction

Approximately 42 languages are spoken in the Republic of Kenya (Dwivedi, 2014). Specifically, urban areas, such as Nairobi, experience a multilingual environment where people speak Swahili and English as official languages, as well as diverse ethnic languages. Speakers communicate with one another using various linguistic resources. A survey of 935 residents in Nairobi revealed 41 languages as mother tongues, with the average number of languages spoken by an individual being three (Githiora, 2018).

Although people occasionally entirely “switch” between languages based on the situation or interlocutor, instances of blending diverse language within a single utterance are also observable, as illustrated below:

(1)

...“Si unisaidie simu yako *nicall* huyu jamaa ananitumia pesa, ndio tuweze kulipa hii *shopping* yako”. Dem si amem*trust* wamekuwa wakiongea *for like two months*...

“(The con man said to a target girl) ‘Could you assist me by allowing me to use your phone to *call* one man who will send me money, then we can pay for your *shopping* expenses.’ The girl *trusted* him (because) they had been communicating *for like two months*...”

This statement, recorded in Nairobi, highlights English words are italicized<sup>1</sup> while the remaining part is in Swahili. This example illustrates the practice of integrating diverse linguistic resources within a single utterance. This kind of speech is frequently observed in everyday conversation in Nairobi. In this article, “everyday” refers to a context devoid of social pressure to use single language exclusively, wherein conversational participants share several repertoires. Unlike formal contexts such as a presidential address, individuals pay less attention to their language choice in everyday communication among friends or family, resulting in more fluid practices that draw on diverse linguistic resources similar to (1).

*Translanguaging* serves as a framework to capture the practice of using various linguistic resources dynamically. Translanguaging denotes “the deployment of a speaker’s full linguistic repertoire without regard for watchful adherence to the socially and politically defined boundaries of named (usually national and state) languages” (Otheguy et al., 2015). Otheguy et al.(2015) began by arguing that we cannot determine boundaries between “(named) languages” purely based on linguistic features such as lexicon or structure; rather, they are social constructs that are determined arbitrarily. Following this, they argue that such socially labelled “languages” differ from an *idiolect*, which refers to a speaker’s own linguistic system, including lexical and grammatical features that emerge in interaction with other speakers

(Otheguy et al., 2015). Namely, from the perspective of multilinguals who possess diverse repertoires, their own meaning-making system is not divided along socially determined boundaries; rather, it is composed of all linguistic resources they have inclusively. Building on this premise, Otheguy et al.(2015) claim that translanguaging refers to the practice of making meaning by utilizing the full range of linguistic resources without adhering to boundaries.

Translanguaging, initially a pedagogical approach in bilingual education, has been further developed by multiple scholars as a framework to comprehend multilingual speakers' language practice (e.g., García & Li, 2014; Otheguy et al., 2015). Moreover, the study of translanguaging has advanced toward the multimodal conceptualization of human language practices, including all semiotic signs, such as writing, gestures, and pictures (Li Wei, 2018). In parallel, translanguaging has been employed to investigate everyday language practices in multilingual contexts globally, including Africa, Asia and Oceania (Li Wei, 2011; Räisänen, 2018; Vaughan, 2018). These studies focus on the dynamic language practices of individual (multilingual) speakers that transcend socially determined boundaries and creatively utilize their diverse linguistic resources.

Translanguaging can also be used to elucidate the language practices in Nairobi. Githiora (2018) argues that the language practices across Kenya can be characterized as translanguaging. Additionally, Gibson et al. (2024) assert that most Kenyan people regularly “use Swahili, another Kenyan language, and English on a regular basis in a broad range of domains in a fluid manner, often without clear boundaries between discrete codes in ways that have been described more widely as translanguaging (Canagarajah, 2011; García & Li, 2014; Williams, 1994)”. However, the studies do not provide clear explanations, supported by concrete examples, of what kinds of practices in Nairobi or Kenya, as a whole, constitute translanguaging.

Therefore, this article aims to delineate the aspects of language practices in Nairobi that can be considered translanguaging, by presenting data from naturally occurring speech gathered in the “Eastlands” area of Nairobi. In the analysis, translanguaging is defined as “the practice of employing full linguistic resources to make meanings, by transcending the socially determined boundaries of named languages.”

In addition, this article addresses its social contribution. In multilingual contexts, including Nairobi, a disparity frequently exists between the educational language policy and everyday language practice. This article posits that translanguaging can capture such a reality by articulating everyday practices of people in Nairobi.

## 2. Data overview

This study's data comprises naturally occurring conversations among 26 individuals from Umoja and Kariobangi districts, located in the eastern region of Nairobi city called "Eastlands." Tables 1 and 2 present their detailed breakdown. Language names reported as "language(s) I can speak" were Swahili, English, Sheng<sup>2</sup>, Luo, Kikuyu, Kamba, Luhya and others<sup>3</sup>, in order of frequency.

| age   | number |
|-------|--------|
| 20s   | 15     |
| 30s   | 3      |
| 40s   | 6      |
| 50s   | 2      |
| total | 26     |

Table 1:  
Age distribution of  
participants

| gender | number |
|--------|--------|
| female | 13     |
| male   | 13     |
| total  | 26     |

Table 2:  
Gender distribution  
of participants

This study examines everyday language practice in which the speakers do not pay much attention to their language choice. To minimize their sense of "being monitored," recording sessions were held outside one participant's residence or at a church they frequently attend for praying. Furthermore, participants were requested to invite their own friends, resulting in conversation groups consisting of two to six people who are close friends or acquaintances. Each session lasts 20 to 60 minutes, resulting in approximately five hours of recorded material and its transcription.

## 3. Analysis

This chapter examines everyday language practices in Nairobi through the lens of translanguaging. Section 3.1. illustrates that speakers in Nairobi often do not pay attention to the socially determined boundaries of languages in everyday conversation. Section 3.2. further exemplifies their vibrant meaning-making practices through the employment of their full linguistic resources.

### 3.1. Practices that overlook the boundaries

This section emphasizes that they do not strictly conform to the boundaries of the named languages. In the conversations in Nairobi, speakers often render them irrelevant to the act of communication. Let us examine the exemplary instances below.

(2)

(3)

changed twice within a short period; however, there was no indication of any communication disruption, such as inquiries regarding the meaning of *pride* or hesitation following speaker B's utterance using *pride*.

The examples above illustrate the practices they use to utilize their repertoire without paying attention to the socially determined boundaries of named languages. In the area, speakers have both “Swahili” and “English” words as their linguistic resources at the same entry, and there are situations/norms that allow them to choose them without any difference in meaning.

### 3.2. Practices to create original expression by integrating resources

This section emphasizes the practices through which speakers create their own expressions by integrating their diverse linguistic resources. According to Otheguy et al. (2015), a person's unique language system, or idiolect, comprises a collection of lexical and structural features that are acquired through interaction with others. Multilinguals construct it in a way that intertwines various named languages, rendering the system incapable of being entirely separated based on the language name. In the following parts, this analysis will examine how speakers in Nairobi interweave multiple named languages into a cohesive system of their own.

Firstly, it will examine an example that indicates the integrated part of their idiolect, focusing on structures or grammars from several named languages. (4) shows the fusion of Swahili and English structure within the speaker's own system.

(4)

- a. A-me-toka            kwa    background simple.  
 SM3SG-PRF-come    from    background    simple  
 “She came from a simple background (a poor family).”

- b. Wa-na-imb-a        genres different.  
 SM3PL-PRF-sing    genres    different  
 “They sing different genres.”

- c. U-me-on-a            hiyo        ni        con        ingine    calculated!  
 SM2SG-PRF-see-FV    that        COP    con        another    calculated  
 “You see, that is another calculated conning!”

In Swahili, a noun is typically followed by modifier, whereas in English, a modifier precedes the noun. Considering the underlined part in (4a), the modifier *simple* and the noun *background* are both English words, but their arrangement follows Swahili syntax. If the

Swahili and English systems were entirely distinct in the speaker's idiolect, those two words would be processed only within the English system, which would result in a *simple background*. However, the speaker produced the expression following Swahili syntax without hesitation. Similarly, in (4b), the English words *genres* and *different* follow Swahili syntax in the same way as (4a). In (4c), a more complex integration can be observed. The speaker interweaves English words *con* and *calculated*, with a Swahili modifier *ingine* "another" under Swahili syntactic structure, resulting in *con ingine calculated*. These examples indicate a fusion or interwoven element within the speaker's idiolect. It is also important to note that the phrase *simple background* in (4a) carries a local meaning of "a poor background/family". This illustrates how they have incorporated these words as available resources for meaning-making, and have developed the conventionalized meaning through their use, rather than simply "borrowing" the English words as they are.

The next aspect will present examples that illustrate the speaker's creativity stemming from the integrated part of their system. In (5), the speaker creates his own expression (which is comprehensible to others) by integrating resources from Swahili and English. He is discussing decorated buses called "matatu" operating in Nairobi city.

(5)

|                |              |                       |
|----------------|--------------|-----------------------|
| I-li-kuw-a     | i-na-kaa     | <u>orange-orange.</u> |
| SM9-PAST-be-FV | SM9-PRS-stay | orange-like           |

"That (bus) was partly orange/orange-like color."

The matatu bus referenced was basically orange, though not entirely, as its sides were embellished with diverse and colorful graffiti. To convey the meaning "partly orange/orange-like," he fused the Swahili repetition system and the word *orange* to create the expression *orange-orange*. In Swahili, repetition of adjectives, verbs and nouns adds various meanings, such as plurality, emphasis, or reduction to the original meaning (Ashton, 1947). In this utterance, the speaker utilized the function "to reduce the strength of the word." This function, for instance, is utilized for the expression (6) below:

(6)

|         |                  |                  |                                                |
|---------|------------------|------------------|------------------------------------------------|
| Kiwanja | ki-li-kuw-a      | maji-maji.       | (Ashton, 1947: 316, Glosses are by the author) |
| ground  | SM7SG-PAST-be-FV | wet (maji=water) |                                                |

"The ground was wet."

(6) expresses the state of a sports ground that is not entirely soaked, but wet to some extent, by repeating *maji* "water" to create the impression of the adjective "wet." In this example, the meaning of *maji* "water" is attenuated through repetition, yielding the meaning "wet". Similarly, the speaker in (5) depicted the way orange color was partially visible or invisible

Besides the case of (5), there is also the practice of creatively expressing nuance by merging lexical items from other named languages with the affixes of the Bantu languages, to which Swahili belongs. In (7a,b), the speakers employ the prefix *ka-*, which is frequently utilized in colloquial Swahili or other Bantu languages, as a resource. The prefix *ka-* serves a function known as “diminution,” imparting a nuance of “small” to a noun. For example, the Swahili word *mtoto* “child”, which comprises prefix *m-* (class 1<sup>4</sup> prefix) and noun stem *-toto*, can be changed to *katoto*, which means “small child,” by altering the prefix to *ka-*. The speakers in (7a,b) create the new expression by using this prefix with English words:

“Why should I go alone and sit like a first grade student of secondary (sitting alone and lonely)?”

"He said that, well, he had searched for a young and cute side chick."

As demonstrated in the section 3.2., practices that generate new and unique expression by utilizing and interweaving available linguistic resources indicate the fused part within each speaker's idiolect.

The utterances shown in chapter 3 exemplify the practice of utilizing full linguistic resources to make meanings, transcending the socially determined boundaries of named languages: translanguaging. These instances illustrate that speakers often neglect the label of named languages in their everyday language practices in Nairobi. Furthermore, they can formulate

expressions that most effectively communicate their intentions and are appropriate for the context by fully leveraging their individual idiolects.

However, we must acknowledge that they cannot engage in those fluid, creative practices anytime and in any context. For example, during a group session in which I (a speaker whose Swahili is not perfectly fluent) participated, one participant addressed me predominantly in English. This indicates that they cannot or will not engage in translanguaging when they do not possess shared repertoires with their interlocutors. In addition, it is evident that a social norm exists to utilize a single named language exclusively in contexts such as official government statements or in schools. Similar to other registers within a single named language, the practice of translanguaging is also influenced by social conditions, as well as by boundaries and hierarchies of languages that indeed exist in the society. We must recognize that their everyday life is inseparable from the prevailing reality or society.

Still, the mode of communication observed in chapter 3 constitutes a significant aspect of people's everyday lives in Nairobi, serving as the most effective means for individuals to articulate their thoughts without restrictions on their linguistic resources. Given that the expressions in section 3.2. cannot be generated from a completely divided idiolect, the speakers can make meanings more broadly and more diversely by integrating their entire repertoires rather than relying on a restricted subset. This kind of practice cannot be adequately captured through code-by-code analysis, which has been commonly adopted in studies of language in Nairobi/Kenya. Thus, translanguaging can serve as a framework for articulating essential practices that constitute the source of their vibrant meaning-making in everyday life.

## **5. Social contribution of translanguaging**

I have demonstrated that translanguaging practices are observable in everyday situations. This chapter will address the social contribution to this endeavor.

As previously mentioned, translanguaging is a term originating from the study of bilingual education. Thus, numerous evaluations and implementations of translanguaging have been undertaken in this domain. This paper focuses on the educational practice of translanguaging in Kenya. Otundo (2023) conducted a questionnaire survey among teacher trainees at a Kenyan university regarding the perceptions of translanguaging during classroom communication. Translanguaging in school denotes the purposeful incorporation of all students' linguistic and cultural resources into instruction (Lubliner & Grisham, 2017). In Kenya, the language of instruction transitions to English after the fourth grade of elementary education (Sheikh et al.,

2023). Translanguaging in this context refers to an instructor employing a fluid and creative approach to explain the contents of a lecture.

The survey revealed that respondents who are both students and lecturers positively perceive the translanguaging approach to instruction in terms of aspects such as attention retention, closeness to instructor, and overall class engagement (Otundo, 2023). For example, 87.5% indicated their agreement (i.e., “agree” or “strongly agree”) with the statement “the instructor is trying to make me understand better when they translanguage.” In addition, the statement that respondents are “able to understand difficult idea/concept when the instructor translanguages” was agreed by over 70% of respondents (Otundo, 2023).

However, the respondents exhibited reluctance to employ translanguaging in written assignments and examinations (Otundo, 2023). This result indicates a gap between translanguaging way, or everyday language practices, and institutional contexts such as written assignments and examinations. Henceforth, we must contemplate methods to enhance the educational system to one that takes everyday language practices into account. This article aims to highlight the social significance of studies that elucidate the everyday language practices of multilingual individuals to further this social agenda.

## **6. Conclusion**

First, this paper aims to articulate the translanguaging practice in everyday situations in Nairobi, supported by actual data collected in that region. Consequently, it is evident that the socially designated labels of languages lack substantial significance in communication, and that the speakers generate diverse and unique expressions by integrating their entire linguistic repertoires. This outcome may also enhance translanguaging theory, which often prioritizes conceptual and ideological discourse while offering fewer concrete examples.

Second, this paper aims to indicate the social significance of articulating such everyday translanguaging. As demonstrated in Chapter 5, translanguaging has already been acknowledged in the field of education. However, despite the positive perception of translanguaging approach in terms of attention-gaining, relationships with instructor, and comprehension of students, there is hesitation toward employing translanguaging in written tasks and examinations. This result indicates a disparity between everyday language practices and the institutional aspects of education. Understanding and articulating their mode of day-to-day speech from their perspective can help bridge this gap.

However, this article’s analysis did not encompass the aspect of multimodality, which incorporates semiotic signs beyond spoken language, as posited by Li Wei (2018). This constitutes an essential agenda for future research.

### Abbreviations

|      |             |      |            |
|------|-------------|------|------------|
| SG   | singular    | PAST | past       |
| PL   | plural      | INF  | infinitive |
| PASS | passive     | COP  | copula     |
| FV   | final vowel | PRF  | perfect    |
| PRS  | present     | FOC  | focus      |
| SBJV | subjunctive |      |            |

### Declaration of Generative AI and AI-assisted Technologies in the Writing Process

ChatGPT was used for proofreading and checking for typographical and grammatical errors. The author takes full responsibility for the content.

### Footnotes

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<sup>1</sup> Hereafter, English words are italicized and written in English orthography for the readers who are not familiar with the way of speaking in Nairobi. However, the author does not consider there to be clear boundaries between languages when speakers are communicating.

<sup>2</sup> Sheng is a mode of speech occasionally known as “Urban Youth Language,” which is spoken in urban areas, such as Nairobi. The features of Sheng include a frequent coinage of new words and manipulation or alternation of word meanings. Although Sheng is not officially recognized as a language in Kenya, it is listed up because participants identified it alongside other languages.

<sup>3</sup> “Others” refers to languages that was listed twice or fewer times.

<sup>4</sup> In Bantu languages, which include Swahili, have a classification system called “Noun class”. All nouns belongs to somewhere in this system according to its prefix. As explained in page 6, *m-* is a prefix of class 1, and *ka-* is of class 12.

## References

- Ashton, E. O. (1947). *Swahili grammar: Including intonation* (Repr). Longman.
- Canagarajah, S. (2011). Translanguaging in the Classroom: Emerging Issues for Research and Pedagogy. *Applied Linguistics Review*, 2, 1–28. <https://doi.org/10.1515/9783110239331.1>
- Dwivedi, A. V. (2014). Linguistic realities in Kenya: A preliminary survey. *Ghana Journal of Linguistics*, 3(2), 27–34. <https://doi.org/10.4314/gjl.v3i2.2>
- García, O., & Li, W. (2014). *Translanguaging: Language, bilingualism and education*. Palgrave Macmillan.
- Gibson, H., Githiora, C., Kanana Erastus, F., & Marten, L. (2024). Morphosyntactic retention and innovation in Sheng, a youth language or stylect of Kenya. *Studies in Language*, 48(4), 909–950. <https://doi.org/10.1075/sl.22017.gib>
- Githiora, C. (2018). *Sheng: Rise of a Kenyan Swahili vernacular*. James Currey.
- Li Wei. (2011). Moment Analysis and translanguaging space: Discursive construction of identities by multilingual Chinese youth in Britain. *Journal of Pragmatics*, 43(5), 1222–1235. <https://doi.org/10.1016/j.pragma.2010.07.035>
- Li Wei. (2018). Translanguaging as a Practical Theory of Language. *Applied Linguistics*, 39(1), 9–30. <https://doi.org/10.1093/applin/amx039>
- Lubliner, S., & Grisham, D. L. (2017). *Translanguaging: The Key to Comprehension for Spanish-Speaking Students and Their Peers*. Bloomsbury Publishing PLC.
- Otheguy, R., García, O., & Reid, W. (2015). Clarifying translanguaging and deconstructing named languages: A perspective from linguistics. *Applied Linguistics Review*, 6(3), 281–307. <https://doi.org/10.1515/applirev-2015-0014>
- Otundo, B. K. (2023). Communicating in multilingual learning ecologies: Students' perceptions of translanguaging in lecture rooms in Kenya. *Journal of Linguistics, Literary and Communication Studies*, 2(2), 24–34. <https://doi.org/10.58721/jllcs.v2i2.378>

- Räsänen, T. (2018). Translingual Practices in Global Business. A Longitudinal Study of a Professional Communicative Repertoire. In G. Mazzaferro (Ed.), *Translanguaging as everyday practice* (pp. 149–174). Springer.
- Sheikh, F., Rich, M., & Galvão, W. (2023). Language of Instruction and Education Policies in Kenya. *Reconsidering Development*, 7(1).  
<https://pubs.lib.umn.edu/index.php/reconsidering/article/view/4569>
- Vaughan, J. (2018). Translanguaging and Hybrid Spaces: Boundaries and beyond in North Central Arnhem Land. In G. Mazzaferro (Ed.), *Translanguaging as everyday practice* (pp. 125–148). Springer.
- Williams, C. (1994). *Arfarniad o ddulliau dysgu ac addysgu yng nghyd-destun addysg uwchradd ddwyieithog* [Ph.D. dissertation, University of Wales].  
<https://research.bangor.ac.uk/en/studentTheses/arfarniad-o-ddulliau-dysgu-ac-addysgu-yng-nghyd-destun-addysg-uwcr/>

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## *Sociality in Classical Chinese Poetry*

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Official Forum Proceedings

### **Abstract**

This article takes as its point of departure the *Great Preface* of the *Mao Shi*, which outlines the overarching principles of the *Shijing*, the earliest extant poetry anthology in China, and examines how the notion that poetry allegorically represents society was inherited and transformed in later poetic traditions. Chapter 2 refers to both the text of the *Great Preface* of the *Mao Shi* and the commentary by Kong Yingda, confirming that poetry composed by the people was understood to reflect the goodness or badness of politics in its own time, and that poetry was interpreted as mirroring political conditions and broader social trends. Chapter 3 investigates how poetic terms and motifs found in the *Shijing* were employed in later poetry. It points out, for example, that in cases such as “wolves and tigers”, terms or motifs that originally appeared merely as elements surrounding evil figures came, in later usage, to function as allegorical expressions directly representing such figures themselves. It also highlights cases such as “bamboo”, in which the same motif is used allegorically across periods while signifying entirely different states or conditions. It has often been assumed that the language of the *Shijing* can be interpreted wholesale in terms of allegory. However, rather than treating the allegorical vocabulary of the *Shijing* and that of later periods as forming an undifferentiated continuum, it is necessary to examine the characteristics and transformations of individual terms with greater precision. This article represents one attempt to clarify that point.

Keywords: Chinese poetry, *Shijing*, the “Great Preface” of the *Mao Shi*, the allegorical nature of poetry, poetic diction

## 1. Introduction

The *Shijing* (Book of Songs 詩經) is the oldest anthology of poetry in China and one of the *Five Classics* 五經, alongside the *Shujing* (Book of Documents 書經), *Yijing* (Book of Changes 易經), *Chunqiu* (Spring and Autumn Annals 春秋), and *Liji* (Book of Rites 禮記).

Although traditionally attributed to Confucius (Kong Zi 孔子), its compiler remains unknown.

The anthology contains 305 poems composed from the early Western Zhou 西周 period (around the 11th century BCE) through the Eastern Zhou 東周 and Spring and Autumn 春秋 periods (around the 7th century BCE), most of which are anonymous.

In the early Han 漢 period, three schools of interpretation—*Qi Shi* 齊詩, *Lu Shi* 魯詩, and *Han Shi* 韓詩—collectively known as the "Three Schools of the *Shi*" (*Sanjia Shi* 三家詩), emerged to study the *Shijing*. In addition to these, the *Mao Shi* 毛詩 version, compiled by Mao Heng 毛亨 and Mao Chang 毛萇, later became dominant. Among these four traditions, only the *Mao Shi* has survived in its entirety; therefore, the *Shijing* today is often referred to as the *Mao Shi*.

A distinctive feature of the *Mao Shi* is that each poem is preceded by a preface. The long preface attached to the first poem “*Guanju*” 關雎 is known as the “Great Preface” (*Daxu* 大序), which outlines the fundamental philosophy of the entire *Shijing*. According to the *Daxu*, poetry reflects politics and social customs, serving as a mirror of the world. This conception of poetry profoundly influenced later Chinese views of literature and its social role.

This article explores the relationship between Chinese classical poetry and society, starting from the *Daxu* of the *Mao Shi*, and examines how the allegorical nature of poetry was inherited in later poetry.

## 2. How the “Great Preface” Explains Poetry

How is poetry explained in the “Great Preface” of the *Mao Shi*? To examine this question, I will focus on the following passage<sup>1</sup>:

治世之音、安(1)以樂(2)、其政和(3)。

(The style of such pieces in an age of good order is quiet, going on to be joyful; —the government is then a harmony.)

乱世之音、怨(4)以怒(5)、其政乖(6)。

(Their style in an age of disorder is resentful, going on to the expression of anger; —the government is then a discord.)

亡国之音、哀(7)以思(8)、其民困(9)。

(Their style, when a State is going to ruin, is mournful, with the expression of [retrospective] thought; —the people are then in distress.)

故正得失、動天地、感鬼神、莫近於詩。

(Therefore, correctly to set forth the successes and failures [of government], to move Heaven and Earth, and to excite spiritual Beings to action, there is no readier instrument than poetry.)

Regarding this passage, the commentary *Mao Shi zhenyi* 毛詩正義 by the early-Tang literati Kong Yingda 孔穎達 (574–648) states that “Poetry expresses the thoughts of the people, and music sings the poetry of the people; therefore, the goodness or badness of the politics of an age is manifested in musical pieces”<sup>2</sup>, thereby indicating that the goodness or badness of politics in a given age is reflected in the poetry of the people.

Moreover, in explaining the previously cited passage of the Great Preface, Kong Yingda adduces concrete examples from within the *Shijing*: the corresponding passages from the *zhenyi* for items (1) – (9) in the above-cited section of the Great Preface are as follows<sup>3</sup>.

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<sup>1</sup> Legge, 1960, p.34

<sup>2</sup> The text of *Mao Shi zhenyi* is based on Ruan Yuan (1989, p. 564). The English translation was prepared with reference to Okamura (1986, p. 128).

<sup>3</sup> The text of *Mao Shi zhenyi* is based on Ruan Yuan (1989, p. 564). The English translation was prepared with reference to Okamura (1986, p. 127,128) and Legge (1960).

(1) 良耜云、百室盈止、婦子寧止、安之極也。

(That *Liang si* states “Those hundred houses being full, The wives and children have a feeling of repose”<sup>4</sup>, indicates the utmost state of peacefulness.)

(2) 湛露云、厭厭夜飲、不醉無歸、樂之極也。

(That *Zhan lu* states “Happily and long into the night we drink; —Till all are drunk, there is no retiring”<sup>5</sup>, indicates an extreme state of enjoyment.)

(3) 天保云、民之質矣、日用飲食、是其政和也。

(That *Tian bao* states “The people are simple and honest, Daily enjoying their meat and drink”<sup>6</sup>, refers to the actual condition in which political governance is well ordered.)

(4) 蓼莪云、民莫不穀、我獨何害、怨之至也。

(That *Liao e* states “People all are happy; —Why am I alone thus miserable? ”<sup>7</sup>, indicates an extreme degree of resentment.)

(5) 巷伯云、取彼譖人、投畀豺虎、怒之甚也。

(That *Xiang bo* states “I would take those slanderers, and throw them to wolves and tigers”<sup>8</sup>, indicates an extremely intense expression of anger.)

(6) 十月云、徹我牆屋、田卒汙萊、是其政乖也。

(That *Shiyue* states “He has removed our walls and roofs, And our fields are all either a marsh or a moor”<sup>9</sup>, indicates the concrete reality of a disordered political condition.)

(7) 苕之華云、知我如此、不如無生、哀之甚也。

(That *Tiao zhi hua* states “If I had known it would be thus with me, I had better not have been born”<sup>10</sup>, refers to an extremely intense expression of sorrow.)

(8) 大東云、瞻言顧之、潸焉出涕、思之篤也。

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<sup>4</sup> Legge, 1960, p.605

<sup>5</sup> Legge, 1960, p.276

<sup>6</sup> Legge, 1960, p.257

<sup>7</sup> Legge, 1960, p.352

<sup>8</sup> Legge, 1960, p.348

<sup>9</sup> Legge, 1960, p.323

<sup>10</sup> Legge, 1960, p.423

(That *Da dong* states “When I look back and think of it, My tears run down in streams”<sup>11</sup>, refers to an intense and earnest depth of feeling.)

(9) 正月云、民今之無祿、天夭是殛、是其民困也。

(That *Zheng yue* states “But the people now have no maintenance. For Heaven is Pounding them with its calamities”<sup>12</sup>, refers to the actual condition in which the people are suffering.)

With the exception of *Liang si* 良耜, all works listed above are classified under the *Xiaoya* 小雅. According to the “Great Preface” to the *Mao Shi*, poetry can be broadly classified into six categories<sup>13</sup>, and the *Xiaoya* corresponds to the *Ya* among these six classes 六義—the *Feng* 風, the *Fu* 賦, the *Bi* 比, the *Xing* 興, the *Ya* 雅, and the *Song* 頌<sup>14</sup>. Moreover, regarding the *Ya*, the Great Preface states “*Ya* means correct. They tell the causes why royal government decays or flourishes. In government there are great matters and small, and hence there are the small *Ya* and the great *Ya*”<sup>15</sup>, indicating that the *Ya* is treated as a political designation. From this, it can be said that Kong Yingda, having understood the *Xiaoya* poems of the *Shijing* within a political context, reinforces the previously cited passage from the “Great Preface” of the *Mao Shi* through concrete examples, thereby elucidating the social nature of poetry as something that reflects political conditions and social trends.

### 3. Poetry and Society in Later Periods

As has already been confirmed through the *Great Preface* of the *Mao Shi* and concrete examples from within the *Shijing*, poetry has been understood as possessing the capacity to reflect social conditions. The idea that poetry mirrors political circumstances and social trends, and can thus serve as a reflection of society, continued to be inherited in later periods.

For example, in the history of Chinese literature, the well-known Tang-dynasty poets Du Fu 杜甫 (712–770) and Bai Juyi 白居易 (772–846) composed poems that gave voice to the dissatisfaction of the people in response to corrupt social conditions. Such poems are known as *New Yuefu* 新樂府. Although *New Yuefu* gradually declined, the notion that poetry responds to social and political conditions and possesses an allegorical nature became a fundamental principle of Chinese classical poetry.

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<sup>11</sup> Legge, 1960, p.353

<sup>12</sup> Legge, 1960, p.320

<sup>13</sup> Ruan Yuan, 1989, p. 565

<sup>14</sup> Ruan Yuan, 1989, p. 568

<sup>15</sup> Legge, 1960, p.36

To say that poetry has the capacity of reflecting social conditions also implies, conversely, that poets are able to express the state of society through their own poetry and to convey their views to those in power through poetic expression. This aspect as well was inherited by later poets. Here, I would like to examine how poetic terms found in the *Shijing* were employed in later poetry.

### 3.1. "wolves and tigers" 「豺虎」

The earliest example of the term “wolves and tigers” can be found in “*Xiang bo*” 巷伯, a poem included in the *Xiaoya* 小雅 section of the *Shijing*. The relevant passage is as follows.

彼譖人者、誰適與謀。取彼譖人、投畀豺虎。豺虎不食、投畀有北。有北不受、投畀有昊。

(Those slanderers! Who devised their schemes for them? I would take those slanderers, And throw them to wolves and tigers. If these refused to devour them, I would cast them into the north. If the north refused to receive them, I would throw them into the hands of great [Heaven] .)<sup>16</sup>

*Xiang bo* is one of the ten poems that constitute the *Jie Nanshan zhi shi* 節南山之什, all of which are said to be “sharp satirical songs composed by scholar-officials who, living in a time of disorder, grieve over and resent the state of the world.”<sup>17</sup> The *Poem Preface* (*xiaoxu* 小序) attached to this poem states, “*Xiang bo* satirizes King You. A eunuch, injured by slander, therefore composed this poem”<sup>18</sup>, while the *Shi ji zhuan* 詩集傳 records, “At the time, there was a person who, having encountered slander and been subjected to castration, became a *xiangbo* and composed this poem”<sup>19</sup>. Although the objects of interpretation differ, both commentaries agree that the poem expresses anger at having suffered from slander.

In this poem, “wolves and tigers” is depicted as a ferocious wild beast to which evildoers should be fed, and in Kong Yingda’s *zhenyi* it is explained as “That wolves and tigers devour humans, and that the cold regions freeze things, are not actions carried out with discrimination. Therefore, to say that they do not devour or accept them indicates that the degree of evil is exceedingly severe”<sup>20</sup>. In other words, although “wolves and tigers” originally refers to a fierce beast that devours humans without distinguishing between good and evil, it is used here to

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<sup>16</sup> Legge, 1960, p.348

<sup>17</sup> Mekada, 1991, p. 99

<sup>18</sup> The text of *xiaoxu* is based on Ruan Yuan (1989, p. 978).

<sup>19</sup> The text of the *Shi ji zhuan* is based on *Shi ji zhuan* (compiled by Zhu Xi; ed. Zhao Changzheng, 2017), p.224.

<sup>20</sup> The text of *Mao Shi zhenyi* is based on Ruan Yuan (1989, p. 979).

express the extreme hatred toward slanderers—that is, evildoers—by suggesting that they are so detestable that even such “wolves and tigers” would refuse to consume them.

This poetic expression, “wolves and tigers,” can also be found in later works. As relatively early examples of its usage, I would like to cite the following poems<sup>21</sup>.

"Two Poems on the Seven Sorrows 七哀詩二首" No. 2 by Wang Zhongxuan 王仲宣  
西京亂無象 The western capital Chang'an is thrown into chaos and disorder  
豺虎方遘患 Wolves and tigers—evil men—lie in wait, poised to unleash disaster

"Two Poems on the Seven Sorrows 七哀詩二首" No. 1 by Zhang Zai 張載  
季世喪亂起 At the end of the Later Han, the realm fell into turmoil  
賊盜如豺虎 Rebels and bandits raged like wolves and tigers

Both of these poems are included in the “Aishang” 哀傷 section of volume 23 of the *Wen xuan* 文選, and they depict a world in turmoil at the end of the Later Han 後漢, in which vicious individuals run rampant. In the annotation by Li Shan 李善 (?–690) attached to Wang Zhongxuan’s poem cited above, a passage from the “Xu zhuan” 叙伝, the lower part of 70 of the *Han shu* 漢書—“Seizing control of states and contending for power, they in turn become wolves and tigers”—is quoted. Considering that this phrase is used together with the character “disorder” 亂, which indicates social disorder, it can be said that “wolves and tigers” here functions as a metaphor for fierce and wicked individuals. By contrast, in the earlier case of “*Xiang bo*” from the *Shijing*, “wolves and tigers” were employed merely as representative images of ferocious animals, with moral evil attributed solely to the slanderers themselves. In these later examples, however, “wolves and tigers” has itself become a poetic expression endowed with allegorical significance, a development that is particularly noteworthy.

Moreover, when one surveys other occurrences of the term and motif “wolves and tigers,” it becomes apparent that they are relatively often used together with words such as “disorder” and “warfare” 兵, suggesting that they function within a broader context of social turmoil. This tendency can also be observed in the following poem by Du Fu<sup>22</sup>.

"On Departing Langzhou 閬州" by Du Fu  
前有毒蛇後猛虎

<sup>21</sup> The Chinese text follows Liu Yuejin (Ed.) and Xu Hua (Rev.), *Wenxuan jiu zhu jicun*, p. 4340-4348. The English translation was prepared with reference to Uchida Izunosuke and Ami Yuji, *Shinshaku Kanbun Taikei*, vol. 14, p. 227-233.

<sup>22</sup> For the cited text and the English translation, I consulted Shimoda and Matsubara (Eds.), *Du Fu quan shi yizhu*, vol. 2, p. 684. The Japanese translation of the relevant poem is by Kato Satoshi.

(Before me lie venomous snakes, behind me prowl fierce tigers.)

溪行盡日無村塢

(After a whole day moving through mountain streams, no village where people dwell comes into sight.)

江風蕭蕭雲拂地

(Cold and desolate is the wind that crosses the river, clouds hang low, sweeping close to the earth.)

山木慘慘天欲雨

(The mountain woods grow dim; rain seems ready to fall.)

女病妻憂歸意急

(With my daughter ill and my wife weighed down by worry, my heart urges me to hasten back.)

秋花錦石誰能數

(How can I pause to count autumn flowers or patterned stones on the road home?)

別家三月一書來

(Three months have passed since I left my home—at last, a single letter has come from my family.)

避地何時免愁苦

(When, at last, will I escape the suffering of this life in flight?)

In this poem, the expression “wolves and tigers” does not appear; however, the “fierce tiger” 猛虎 in the first line likewise denotes a ferocious beast, and in this respect the usage can be regarded as comparable. When we consult the *Commentaries of the Nine Schools* (Jiujia zhu 九家注) regarding this line in Du Fu’s poem, it states: “At that time, bandits were rampant throughout the land, official labor obligations and levies were heavy, and the people could not live in peace”<sup>23</sup>. In other words, the depiction in the opening line of being surrounded before and behind by ferocious beasts is interpreted as an allegorical expression that intimates a situation in which evildoers were rampant and the people was unable to live in security<sup>24</sup>.

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<sup>23</sup> For a discussion of this point, see Shimoda and Matsubara’s commentary, *Du Fu quan shi yizhu* (vol. 2, p. 685). The relevant annotation can be found in *Jiujia zhu* (vol.9), included in the *Wenyuan Pavilion Siku Quanshu* edition.

<sup>24</sup> Incidentally, in “Twenty-one Poems on the *Li Ling lu bie* 李陵錄別詩二十一首”, poem no. 9—generally regarded as a work from the period after the Eastern Han—there also appears the line, “豺狼鳴後園、虎豹步前庭” (“Wolves howl in the rear garden; tigers and leopards pace the front courtyard”)[Lu, 1983, p. 339]. In depicting a situation in which one is surrounded on all sides by ferocious beasts such as jackals and tigers amid an age of warfare and displacement, this poem shares a clear affinity with the Du Fu poem discussed above.

Moreover, as a work that takes into account the first line of the Du Fu poem cited above, one may also point to the following poem by Wang Yuyang 王漁洋(1634–1711) of the late Ming 明–early Qing 清 period<sup>25</sup>.

"A Short Poem on Arriving at Huangba 黃壩 Post Station at Night" by Wang Yuyang

氏道森沉十日雨

(The Di Road is thick with trees and dim with shade, for ten long days the rain has continued to fall.)

石林冥冥斷行旅

(Steep rocks crowd together and rise in jagged ranks, the darkness all around makes passage hard.)

洪濤殷地四山動

(Raging currents thunder against the ground, the surrounding mountains quake on every side,)

百折盤渦噤難語

(layer upon layer of swirling eddies twist, leaving the mouth involuntarily agape.)

前有蝮蛇後豺虎

(Before me are venomous serpents, behind me wolves and tigers,)

紅鶴哀號奮毛羽

(ibises cry mournfully, their feathers trembling.)

吾生胡為狎此曹

(Why did I ever draw myself so close to such danger,)

命輕如毛爭一縷

(when life is as light as a single thread?)

妻孥飄泊寄京國

(My wife and child wander, lodging in the capital,)

欲歸不歸在何所

(Longing to return, yet unable to do so—where does this journey lead?)

鄉關迴首四千里

(Turning back toward my native land, I see it lies four thousand away,)

縱有苦辛誰告汝

(Even if there is suffering and hardship, who will ever tell you of it?)

This poem was composed by Wang Yuyang at Huangba Post Station, in what is now Hanzhong 漢中, Shaanxi 陝西 Province, when he was traveling to Sichuan 四川 to take the provincial examination in the eleventh year of the Kangxi 康熙 reign. It depicts the harshness of

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<sup>25</sup> The Chinese text follows *Yuyang jinghua lu jishi* (ed. Li Yufu, Mou Tong, and Li Maosu), p. 821.

nighttime travel in the Shu 蜀 region, separation from family and hometown, and the melancholy of journeying. In Hui Dong 惠棟 (1697–1758)’s annotation to the fifth line, the first line of the Du Fu poem cited above is quoted; in light of this, the phrase “wolves and tigers” here may therefore be interpreted as carrying an allegorical meaning rather than functioning solely as a description of the landscape.

Thus, as shown above, at the stage of the *Xiangbo* poem in the *Shijing*, the poetic term and motif “wolves and tigers” are employed to depict ferocious beasts appropriate to the setting surrounding evildoers, and at that point the term itself does not yet possess an allegorical meaning. In later periods, however, the poetic term and motif “wolves and tigers” come to be used as elements that themselves carry allegorical significance.

### 3.2. "bamboo" 「竹」

Next, this article turns to an examination of the usage of the term and motif “bamboo.” It first considers the poem “*Sigan* 斯干” from the *Xiaoya* section of the *Shijing*<sup>26</sup>.

秩秩斯干、幽幽南山。如竹苞矣、如松茂矣。兄及弟矣、式相好矣、無相猶矣。

(By the graceful sweep of these banks, With the southern hill, so calm in the distance, [Has the palace arisen] , firm as the roots of a clump of bamboos, [With its roof] like the luxuriant head of a pine tree. May the brothers [here] Be loving among themselves, And have no schemings against one another!)

The poem is accompanied by The *Poem Preface* (*xiaoxu*), which states that “King Xuan 宣王 built a new palace”<sup>27</sup>, while the *Shi ji zhuan* explains that “a palace was constructed and completed, and a banquet was held to consecrate it; therefore, the event was sung of”<sup>28</sup>. Although the two commentaries differ as to whether the subject is explicitly identified as King Xuan, the poem is generally interpreted as a song of blessing celebrating the completion of a new residence<sup>29</sup>.

In the poem “*Si gan*”, Zheng Xuan 鄭玄(127–200)’s commentary states that “The abundance and prosperity of the people at that time are described as being like bamboo shoots growing successively from the roots, and their fine and admirable condition is expressed as being like pines and cypresses growing freely and luxuriantly”<sup>30</sup>. According to this interpretation,

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<sup>26</sup> Legge, 1960, p.303–304

<sup>27</sup> The text of *xiaoxu* is based on Ruan Yuan (1989, p. 933).

<sup>28</sup> The text of the *Shi ji zhuan* is based on *Shi ji zhuan* (compiled by Zhu Xi; ed. Zhao Changzheng, 2017), p.195.

<sup>29</sup> Mekada, 1991, p. 93

<sup>30</sup> The text of Zheng Xuan 鄭玄(127–200)’s commentary is based on Ruan Yuan (1989, p. 934).

“bamboo” signifies a populous citizenry—that is, a state in a favorable and well-ordered condition.

In considering this interpretation of “bamboo,” I will examine the following poem by Du Fu<sup>31</sup>.

"Five Poems Written on the Way to the Thatched Cottage in Chengdu 成都, First Sent to Lord Yan Zheng 嚴鄭公" No.4 by Du Fu.

常苦沙崩損藥欄

(At the thatched hall, I have long suffered as sandy embankments collapse and the fences of the herb garden fall into disrepair.)

也從江檻落風湍

(And the balustrade facing the river is left as it is, though fierce, wind-driven waves strike against it.)

新松恨不高千尺

(The pines may be growing, yet sadly they will never reach a thousand.)

惡竹應須斬萬竿

(The evil bamboo has grown too thick—surely ten thousand stalks must be cut away.)

生理祇憑黃閣老

(With no choice, I must depend on a minister of the Huang Pavilion for my livelihood.)

衰顏欲付紫金丹

(And entrust this withered face to the elixir of immortality, the Purple-Gold Pill.)

三年奔走空皮骨

(After three years of flight, I return in vain, reduced to skin and bone.)

信有人間行路難

(Indeed, to live out one's life in this world is truly difficult.)

With regard to the third and fourth lines of this poem, the Qing-dynasty literati Shen Deqian 沈德潛(1673–1769) writes in *Dushi pingchao* 杜詩評鈔 that “there is an implicit intention to

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<sup>31</sup> For the cited text and the English translation, I consulted Shimoda and Matsubara (Eds.), *Du Fu quan shi yizhu*, vol. 2, p. 776. The Japanese translation of the relevant Du Fu poem is by Koike Ichiro.

support the worthy and restrain the corrupt”<sup>32</sup>. Here, as in the *Shijing* poem “Sigan”, “bamboo” is used in parallel with pine, but it is not simply bamboo; rather, it is described as “evil bamboo.” This conveys a situation in which the proliferation of wicked people obstructs the “pine,” that is, upright and decent individuals. In other words, whereas in the *Shijing* poem “Sigan” bamboo was interpreted as representing a favorable condition of the state—namely, the prosperity of the people—Du Fu employs “bamboo” to signify the spread of corrupt individuals. In classical Chinese poetry, examples in which bamboo—an image that generally carries positive connotations—is described explicitly as “evil bamboo” appear, as far as I am aware, to be no earlier than the Du Fu poem discussed above.

Thus, there are also cases in which poetic words or motifs that, at the stage of the *Shijing*, represented favorable conditions of society are employed by later poets as terms possessing an allegorical function to express negative or unfavorable conditions.

#### 4. Conclusion

In the foregoing, starting from the principle articulated in the “Great Preface” of the *Mao Shi*—namely, that poetry reflects the conditions of society and politics—I have examined how this characteristic was transmitted to later poetry. There are cases, such as that of *wolves and tigers*, in which words or motifs that initially referred merely to elements surrounding evildoers came, in later usage, to be employed as allegorical terms directly representing evildoers themselves; and there are also cases, such as that of *bamboo*, in which the same motif is used allegorically while signifying entirely different conditions. While it is only natural that poetic diction already imbued with allegorical meaning should be inherited as such, it is particularly noteworthy that terms which originally lacked allegorical force in themselves later came to acquire allegorical significance, or that the situations they imply came to differ entirely. Perhaps because the influence of the “Great Preface” of the *Mao Shi* has been so strong, the language of the *Shijing* has traditionally tended to be interpreted wholesale in terms of allegory, and individual lexical usages have not always been examined with sufficient care. Rather than loosely treating the vocabulary of poems that express allegory in the *Shijing* as continuously equivalent to that of later periods, it is necessary to attend carefully to the specific character of individual words. This article represents one attempt to clarify that point.

Now, just as the *New Yuefu* gradually declined because of its overtly political assertions, the tendency to read excessive political meaning into poetry also became a target of criticism. However, what deserves attention here is the mode of Chinese classical poetry in which poems

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<sup>32</sup> The relevant passage can be found in *Dushi pingchao*, vol.4.

are born out of people's lived activities within society, reflect social and political conditions, and in turn help to shape society itself. Even in considering the "meanings beyond the words" that appear in Shen Deqian's critical remarks discussed in this study, reading poems with the allegorical nature of poetry in mind can be seen as a useful approach. In particular, when interpreting works produced in periods in which authors were likely constrained—by historical or political circumstances—from stating their views explicitly, attempting to grasp such "meanings beyond the words" by taking into account the hermeneutical framework of the *poetry prefaces (shixu)*, which themselves sought to uncover implicit meanings, may provide valuable assistance in understanding these works.

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### **Declaration of Generative AI and AI-assisted Technologies in the Writing Process**

In this paper, generative AI and AI-assisted technologies (ChatGPT, version 5.2) were used to assist with translation from Japanese and Chinese into English.

## References

- Legge, J. (1960). *The Chinese classics* (Vol. 4): *The She King, or The Book of Poetry*. Hong Kong University Press.
- Liu, Y., & Xu, H. (2017). *Wenxuan jiuzhu jicun* [Collected old annotations of Wenxuan]. Fenghuang chubanshe.
- Lu, Q. (Ed.). (1983). *Xian-Qin Han Wei Jin Nanbeichao shi* [Poetry of the Pre-Qin, Han, Wei, Jin, and Northern and Southern Dynasties]. Zhonghua Shuju.
- Maeno, N. (Ed.). (1975). *Chūgoku bungakushi* [History of Chinese literature]. University of Tokyo Press.
- Matsubara, A., Sato, K., & Kojima, K. (2009). *Kyōyō no tame no Chūgoku koten bungakushi* [A history of classical Chinese literature for general education]. Kenbun Shuppan.
- Mokada, M. (1991). *Shikyō* [Shijing / Classic of Poetry]. Kōdansha.
- Okamura, S. (1986). *Maoshi zhengyi yakuchū* [Mao Shi zhengyi: Translation and notes]. Chūgoku Shoten.
- Ruan, Y. (Ed.). (1989). *Shisan jing zhushu fu jiaokan ji* (Vol. 2) [Collated Notes on the Commentaries and Subcommentaries to the Thirteen Classics]. Zhongwen Chubanshe.
- Shen, D. (1897). *Du shi pingchao* [Critical Annotations on Du Fu's Poetry] (Vol. 4). Wenqiutang.
- Shimote, M., & Matsubara, A. (Eds.). (2016). *Dufu zenshi yakuchū* (Vol. 2) [Du Fu: Complete poems, translation and annotations]. Kōdansha.
- Uchida, S., & Ami, Y. (1963). *Monzen shihen jō* [Wenxuan: Poetry section, volume 1] (Shinshaku kanbun taikai, Vol. 14). Meiji Shoin.
- Wang, S. (1999). *Yuyang jinghua lu jishi* [Annotated edition of Yuyang jinghua lu] (Y. Li, T. Mou, & M. Li, Eds.). Shanghai Guji chubanshe.

Zhu, X. (Comp.). (2017). *Shi ji zhuan* [Collected Commentaries on the Book of Songs]  
(Zhao, C., Ed.). Zhonghua Shuju. (Zhongguo gudian wenxue jiben congshu)

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## *Protection of the Frisian ethnic group in Schleswig after 1945*

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### **Abstract**

The German state of Schleswig-Holstein, located on the Danish border, is known for its active protection of national minorities. Within this region, the Frisian ethnic group, which lacks its kin-state, has developed differently from the Danish minority as the dominant of minority in Schleswig. This paper re-examines the model of national minority protection by focusing on the political development of the Frisian ethnic group, whereas previous studies have analysed primarily through linguistic and cultural perspectives.

Although Frisian politicians played a major role in the South Schleswig Voters' Association, a political party for the Danish minority established after WWII, the protection and the legal recognition of the Frisian ethnic group was not explicitly stated until the 1990 amendment to the Constitution of the State of Schleswig-Holstein and the 2004 Frisian Law. It lagged significantly behind the model of Danish minority protection. The results reveal that the Frisian ethnic group without a kin-state was politically marginalised compared to the Danish minority. Until the 1990s, when the trend toward national minority protection at the European level emerged, the absence of a kin-state and internal conflicts within the Frisian ethnic group significantly influenced their political development.

Keywords: National minorities, Frisian ethnic group, Schleswig-Holstein, South Schleswig Voters' Association

## Introduction

This paper examines the political establishment and development of the North Frisians and the Frisian ethnic group in the German state of Schleswig-Holstein. According to the Landtag of Schleswig-Holstein, approximately 50,000 residents identify as North Frisians, 8,000 of whom actively use the Frisian language.<sup>1</sup> The Danish minority living in the state possesses a kin-state (*Mutterstaat*), the Kingdom of Denmark, a nation-state dominated by their own ethnicity. Since the 1950s, when they gained protection at both the national and regional levels, the Danish minority has often been cited as a model for minority protection in Europe. In contrast, the North Frisians lacked political support from a kin-state, which led to a delay in their protection as an ethnic minority at the national level. However, the current high level of protection for the Frisian ethnic group makes them a potential model for minorities without a kin-state.

A distinct feature of the Frisian ethnic group is its designation. While the Federal Republic of Germany recognises several national minorities under the Framework Convention for the Protection of the National Minorities (FCNM) of the Council of Europe, the Frisians are the only group referred to as an ‘ethnic group’ (*Volksgruppe*). This distinction stems from the 19th-century Frisian Movement (*friesische Bewegung*) and the internal conflicts regarding identity formation. Furthermore, the post-WWII political activities of the Danish minority, specifically the New Denmark Movement (*neudänische Bewegung*) and the resulting political party, the South Schleswig Voters’ Association (SSW), significantly influenced the eventual political formation of the Frisian ethnic group.

Research in Japan on the formation of the Frisian ethnic group is less comprehensive than that on the Danish minority in Schleswig. Soichiro Komine analyses the development of the Danish minority in Schleswig-Holstein based on legal texts, but offers limited coverage of the Frisians.<sup>2</sup> Makoto Shimizu discusses the Frisian movement, but focuses primarily on linguistic history, without detailing the subsequent political conflicts.<sup>3</sup> Shun Fujita notes this gap, yet his analysis is limited to language education and Frisian associations, lacking a specific political analysis.<sup>4</sup> Internationally, scholars of the Danish minority such as Martin Klatt and Jørgen Kühl have researched the SSW, but their coverage of the North Frisians is generally limited to historical overviews.<sup>5</sup>

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<sup>1</sup> Landtag of Schleswig-Holstein. *The Frisian ethnic group in Schleswig-Holstein*. <https://www.landtag.ltsh.de/parlament/friesen/>

<sup>2</sup> See Komine (2007)

<sup>3</sup> See Shimizu (2004)

<sup>4</sup> See Fujita (2017)

<sup>5</sup> See Klatt & Kühl (2015)

In general, the above previous studies have not analysed the formation of the Frisian ethnic group from the perspective of the political history at the regional level. This paper examines the political development of the 'National Frisians' (*nationale Friesen*) and the Frisian ethnic group in Schleswig-Holstein. It focuses on two major political dimensions overlooked in previous studies: the SSW as a minority political party, and the minority policies of the Council of Europe. The paper clarifies the process leading to the establishment of the designation 'Frisian ethnic group' and its subsequent protection policies. Specifically, it examines two points: First, it analyses the reasons for the delayed protection of Frisians compared to the Danish minority, focusing on their political development through the SSW. Second, it illuminates the formation of the Frisian ethnic group as a 'Belated National Minority' and examines its potential as a model for the protection of national minorities without a kin-state.

This paper first addresses the internal conflicts within the North Frisian community and their participation in the New Denmark Movement, followed by an overview of the development of the SSW. Secondly, it discusses the protection of the Frisian ethnic group at the regional level since the 1980s, alongside the development of minority protection policies at the European level since the 1990s and the corresponding federal policies of Germany. Finally, it concludes with a summary.

## **1. North Frisians and the SSW**

The Frisians are an ethnic group that historically inhabited a vast coastal region extending from present-day Germany to the Netherlands. Their language, Frisian, constitutes the Anglo-Frisian language group alongside English. Today, their settlement areas are limited, with the majority being West Frisians residing in the province of Friesland in the northern Netherlands. Due to geographical separation, these Frisian groups had limited interaction for a long period; however, exchanges increased with the rise of nationalism in the 19th century.

Nevertheless, the North Frisians residing in the state of Schleswig-Holstein faced significant internal challenges. This was primarily the conflict between the majority, who asserted they were merely a 'tribe' (*Stamm*) within the German nation, and the minority 'National Frisians' (*nationale Friesen*), who perceived themselves as a distinct 'ethnicity' (*Volk*).<sup>6</sup> The Frisian Movements exemplified by the establishment of the "North Frisian Association for Local History and Love of the Homeland" (*Nordfriesischer Verein für Heimatkunde und Heimatliebe*) in 1902. However, these efforts were led by the German-oriented North Frisian majority.

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<sup>6</sup> See Fujita (2017) p.201.

In opposition to this association, the National Frisians established the 'Frisian-Schleswig Association' (*Friesisch-Schleswigscher Verein*) in 1923. The National Frisians strove to strengthen cooperative relations with the Frisian association organised by the Danish minority residing in Schleswig. Furthermore, Johannes Oldsen, the chairman of the Frisian-Schleswig Association, was elected to the South Tondern municipal council in 1925. He later cast the sole vote against the *Gleichschaltung* by the Nazis, demonstrating a distinct policy as a National Frisian.

In contrast, the majority reaffirmed the German orientation of the North Frisians in the *Bohmstedter Richtlinie* of 1926 and distanced themselves from the position of being a national minority. This stance remained unchanged under the Nazi regime; in 1935, they renamed their organization the 'Homeland Union of Nordfriesland' (*Heimatbund Nordfriesland*), demonstrating an accommodating stance toward the regime. The fact that the minority National Frisians strengthened ties outside Germany while the majority strengthened ties with Nazi Germany, indicates that the internal division among North Frisians was already profound prior to WWII.

With the end of WWII in Europe and Germany's defeat, a massive influx of expellees from the eastern territories resulted in them comprising nearly half of Schleswig-Holstein's population. Faced with the crisis of the disappearance of the region's unique multicultural fabric, composed of German, Danish, and Frisian residents, a segment of the native population initiated the New Denmark Movement. This movement aimed for the separation of South Schleswig from Germany and the removal of the expellees. Within this context, Oldsen believed that Frisian culture and ethnicity could only survive under Danish democracy. Consequently, he sent a letter to the Danish Foreign Minister, John Christmas Møller, requesting the annexation of Nordfriesland to Denmark.<sup>7</sup>

Following demands by the South Schleswig Association (SSF) for the protection of rights for the Danish minority and North Frisians from the Schleswig-Holstein state government, a conference was held in 1949 in Kiel. Regarding the protection of Frisian rights, in the report of the third plenary session, under Item 5 "Clauses for the protection of Frisians and the Frisian language", the SSF demanded recognition of the interests of Danish-oriented Frisians, and the state government acknowledged this.<sup>8</sup> Article 4 of the Kiel Declaration, issued by the state government in September of the same year, also stipulated that "The principles set forth here have corresponding validity for the Frisian population in Schleswig-Holstein". Thus, it efforts that the attempts of the National Frisians within the New Denmark Movement had succeeded.

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<sup>7</sup> See Klatt & Kühl (2015) p.91.

<sup>8</sup> See Komine (2007) pp.169-170.

However, the National Frisians failed to receive such protection at either the national or regional level during the 1950s. Although the German-Danish border was established by the 1920 plebiscite, German minorities lived north of the border and Danish minorities south of it, with both voicing opposition to its result. Since the Danish minority demanded border changes within the New Denmark Movement, settling the border issue through improved relations with Denmark was an urgent priority for the West German government.

Consequently, the Bonn-Copenhagen Declarations of 1955 were issued as mutual declarations between the German and Danish governments. In the Bonn Declaration, the German government confirmed the protection of rights for the Danish minority within the country, as well as the guarantee that the SSW would be exempt from the 5% hurdle in state and federal parliamentary elections. However, the Danish-oriented Frisians were excluded from this declaration, and the Kiel Declaration effectively lost its significance. In response, opposition arose not only from the National Frisians but also from the Danish minority,<sup>9</sup> yet the federal government did not change its stance.

The Bonn-Copenhagen Declarations serve as a prime example of reciprocal rights protection between two related countries for minorities possessing a kin-state. Therefore, as noted in the introduction, they are often cited as a model case for minority protection in Europe. However, the fact that the Frisians were excluded from the declarations resulted in a delay in their subsequent protection.

Here, the focus now turns our attention back to the politics of Schleswig-Holstein. Although the SSW won six seats in the state parliamentary election of 1947, immediately following its formation, its representation gradually declined to four seats in 1950 and zero in 1954. As a result of the exemption from the 5% hurdle granted by the Bonn-Copenhagen Declarations of 1955, the party regained two seats in the 1958 election. However, for the 34 years from 1962 to 1996, the SSW entered a prolonged lean period, holding only a single seat in the state parliament.

Amidst these circumstances, Berthold Bahnsen, a Frisian, distinguished himself as the sole SSW member of the state parliament. He first became a member of the state parliament in 1947 and was sent to the Federal Convention (*Bundesversammlung*) as a state parliament representative in 1949. From 1962, as a 'One-Man Faction' (Ein-Mann-Fraktion) and the party's sole representative, he promoted financial assistance for national minorities.<sup>10</sup>

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<sup>9</sup> See Kühl (2011) p.209.

<sup>10</sup> See Klatt & Kühl (2015) p.26.

Furthermore, the party platform was revised in 1966, explicitly stating that the SSW was the political party representing the National Frisians.

After Bahnsen's sudden death in 1971, Karl Otto Meyer took over the role of the 'One-Man Faction' until 1996. Meyer, a member of the Danish minority, dedicated himself to rebuilding the SSW. One example of this was the revision of the party platform in 1981. The previous platform had limited the scope of the party's activities to the Danish minority and National Frisians, stating: "The safeguarding of the interests of the Danish and National Frisian South Schleswigers is guaranteed only in a living democracy based on understanding and tolerance".<sup>11</sup> In contrast, the revised platform expanded its scope, stating: "Only in a living democracy, in mutual respect and tolerance, and with the will to achieve mutual understanding, is the peaceful coexistence between majorities and minorities guaranteed".<sup>12</sup> Through this change, the party aimed to capture a broad segment of the left-wing vote. Nevertheless, Meyer also implemented policies for the National Frisians. In 1987, the situation of the North Frisians was placed on the agenda of the state parliament for the first time. The following year saw the establishment of the 'Committee for Questions regarding the Frisian Population' (*Gremium für Fragen der friesischen Bevölkerung*) to discuss the maintenance and promotion of Frisian culture, language, and education, thereby accelerating Frisian protection at the state level.

The previous section examined the formation and development of the National Frisians with a focus on the SSW. The National Frisians have advocated for the protection of their rights by collaborating within the political framework of the Danish minority and the SSW. However, in contrast to the Danish minority, which became the subject of national-level protection as early as 1955, protection for Frisians did not progress even at the regional government level until the 1980s. This delay can be attributed to two main factors. The first is the presence or absence of a kin-state. In this regard, the Danish minority achieved success within post-war Germany's foreign policy due to the backing of the Danish government, whereas the Frisians were excluded from protection at the government level. The second factor is that identity conflicts arose among the North Frisians themselves, preventing the implementation of a unified minority policy.

## **2. the Frisian Ethnic Group and the Frisian Law**

The following section analyses, from the perspective of political history, how the North Frisians came to be designated as the 'Frisian ethnic group'. As noted in the previous section, from the late 1980s, the SSW, under Meyer's leadership, accelerated efforts to protect the

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<sup>11</sup> See Kühl (2015) p.98.

<sup>12</sup> See Kühl (2015) p.100.

Frisians. In this context, the most distinctive feature of the minority protection model in Schleswig is the amendment of the Constitution of the State of Schleswig-Holstein in 1990.

When deliberations on the new State Constitution began in 1989, a minority protection clause covering both the Danish minority and Frisians was debated on Meyer's proposal.<sup>13</sup> Arising from this debate, the question arose of whether to consider North Frisians as a 'national minority'. While the National Frisians identified themselves as a national minority, the German-oriented North Frisians viewed Frisians merely as a German tribe and did not consider themselves a national minority. In this respect, the designation 'national minority' was not acceptable to the North Frisians as a whole.

The designation proposed in this context was 'ethnic group'. Regarding this term, while Austria defines it through its Ethnic Group Act (*Volksgruppengesetz*),<sup>14</sup> neither Germany nor the state of Schleswig-Holstein provides a definition. This approach of avoiding conflict by maintaining a passive stance and allowing room for interpretation is also observed in the Bonn-Copenhagen Declarations and in the application of the FCNM, discussed later. Consequently, it represented an attempt to include North Frisians in the minority protection clause without using the term 'national minority'.

The minority protection clause was realised in Article 5 (currently Article 6) of the Schleswig-Holstein State Constitution, titled 'National Minorities and Ethnic Groups', amended on 13 June 1990. Paragraph 1 states: "Adherence to a national minority is free; it does not exempt one from the general civic duty". Paragraph 2 states: "The cultural autonomy and political participation of national minorities and ethnic groups are protected by the State, municipalities, and associations of municipalities. The Danish national minority and the Frisian ethnic group are entitled to protection and promotion". Thus, under the name 'Frisian ethnic group', North Frisians became eligible for protection similar to that of the Danish minority.

However, the issue here lies in Paragraph 1. That describes the 'principle of self-determination' (*Bekennnisprinzip*), which stipulates that the determination of belonging to a national minority is made subjectively by individual judgment rather than objectively. However, its scope is limited to 'national minorities'. Since the term 'national minority' is used in Article 5 as a concept distinct from 'ethnic group', it can be interpreted that the Frisian ethnic group is excluded from the scope of Paragraph 1. In this respect, it can be said that the protection of rights for the Frisian ethnic group is not complete. Nevertheless, it is certain that this State

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<sup>13</sup> See Harm (2015) p.8.

<sup>14</sup> Article 1, Section 2 of the Ethnic Group Act "Ethnic groups within the meaning of this Federal Act are groups of Austrian citizens with a non-German mother tongue and their own ethnic character (*Volkstum*), who are resident and at home in parts of the federal territory".

Constitution amendment served as a catalyst for advancing the protection of the Frisian ethnic group. Protection at the state level has since progressed, exemplified by the inclusion of Frisians in the 12th Minority Report issued by the state in 1992.

In the Federal Republic of Germany, protection for Frisians did not commence until the 1990s. In contrast, in the German Democratic Republic, the Sorbian people had already acquired the status of a recognised minority. Thus, unlike the Sorbian people, with whom they share the characteristics of lacking a kin-state and inhabiting a specific settlement area, the Frisian ethnic group can be perceived as a ‘belated minority’ (*verspätete Minderheit*) whose protection was delayed.

In the European context, the protection of national minorities was delayed. Although it became temporarily active after WWI, individualistic solutions were adopted after WWII, and collective rights protection for national minorities was not implemented. The European Convention on Human Rights (ECHR), entered in force in 1953, is a prime example of this. Although Article 14 mentions national minorities, it strictly prohibits discrimination against individuals, not against groups. During the drafting stage, the application of protection to minority groups was proposed,<sup>15</sup> but the final text limited the prohibition to discrimination based on association with a national minority.

Following discussions on minority issues in the Council of Europe in 1990, the same year the Schleswig-Holstein State Constitution was amended, the European Charter for Regional or Minority Languages (ECRML) was adopted in 1992. Consequently, protection expanded, with the North Frisian language being recognised as a minority language. Subsequently, the FCNM was adopted by the Council of Europe in 1995. This convention is a flexible treaty that does not define ‘national minority’; instead, Article 4 obliges contracting states to guarantee protection, while Article 3 explicitly states adherence to the ‘principle of self-determination’. It has been pointed out that this approach mirrors the Bonn-Copenhagen Declarations.<sup>16</sup>

In 1997, Germany ratified the convention and designated Frisians as subjects of the minority protection stipulated by the convention. In its declaration of ratification, the German government pointed out that the convention does not define ‘national minority’ and noted that the scope of application is left to the judgement of each country. It then stated that the only national minorities within the country were the Danish minority and the Sorbian people holding German citizenship, but that the convention would also apply to Frisians as an ‘ethnic group’

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<sup>15</sup> See Robertson et al. (1975) p.64.

<sup>16</sup> See Kühl (2021) p.177.

and to the Sinti and Roma. In other words, the German government treats the Frisian ethnic group as a de facto national minority.

As a matter of fact, the Federal Ministry of the Interior and Community treats the Frisian ethnic group and the Sinti and Roma as national minorities legally recognised by the German Bundestag and the Bundesrat.<sup>17</sup> Regarding this recognition criteria for national minorities, it is understood that the German government takes the position that among North Frisians, only the National Frisians are a national minority, while those claiming to be a 'German tribe' are not. This classification follows the principle of self-determination, where belonging to a national minority is determined subjectively. In other words, the principle that was not recognised for the Frisian ethnic group in the amendment of the Schleswig-Holstein State Constitution, was effectively recognised here.

Following the ratification of FCNM, minority protection at the national level accelerated. In 2004, the Minority Council (*Minderheitenrat*), consisting of the four minority groups, the Danish minority, the Sorbian people, the Frisian ethnic group, and the Sinti and Roma, was established in Berlin. Following demands for the establishment of a permanent representative for the Frisian ethnic group in the Bundestag or the Federal Government, the Consultative Committee for Questions regarding the Frisian Ethnic Group (*Beratungsausschuss für Fragen der friesischen Volksgruppe*) was established within the Federal Ministry of the Interior in 2005.<sup>18</sup> Similar consultative committees exist not only for the Frisian ethnic group but also for the Danish minority, the Sorbian people, the Sinti and Roma, and the Low German speakers, aiming for the broad protection of minorities within the country. Thus, as a result of the progress in minority protection in Europe, protection of the Frisian ethnic group at the national level by the German government was secured. In other words, it can be stated that they have established a status as a de facto national minority within Germany.

As confirmed in the previous section, the protection of the Frisian ethnic group at the national level progressed as a result of the advancement of minority protection in Europe. However, what of the situation at the regional level? This section focuses on the 'Frisian Law' (*Friesisch-Gesetz*) of 2004.

In the case of the Sorbian people, who share several commonalities with the Frisian ethnic group, the state of Brandenburg enacted a law guaranteeing their own rights protection in 1994, followed by the state of Saxony in 1999, collectively known as 'Sorbian Laws' (*Sorben-*

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<sup>17</sup> <https://www.bmi.bund.de/DE/themen/heimat-integration/gesellschaftlicher-zusammenhalt/minderheiten/minderheiten-in-deutschland/minderheiten-in-deutschland-node.html>

<sup>18</sup> See Kühl (2015) p.94.

*Gesetze*). However, no legislation specific to the Frisians existed in Schleswig-Holstein. In light of this situation, Lars Harms, a Frisian who had served as a member of the state parliament for the SSW since 2000, submitted a draft bill modelled on the Sorbian Law to the parliament in 2004, which was enacted within the same year. Formally titled the ‘Law on the Promotion of Frisian in the Public Area’ (*Gesetz zur Förderung des Friesischen im öffentlichen Raum*), this law aims to promote the language and culture of the Frisian ethnic group. Its preamble states that the law is enacted:

“In recognition the will of the Frisians to preserve their language and thus their identity for the future; being conscious that adherence to the Frisian ethnic group is free; taking into account the fact that the Frisians have no kin-state outside the borders of the Federal Republic of Germany that feels committed to them and cares for the preservation of their language; being conscious that the protection and promotion of the Frisian language lie in the interest of the Land Schleswig-Holstein; and taking into account the FCNM by the Council of Europe and the ECRML ... the Parliament of the State of Schleswig-Holstein enacts the following law”.<sup>19</sup>

In other words, the law establishes that the ‘principle of self-determination’ for the Frisians, previously absent from the State Constitution, is explicitly stated for the first time at regional level.

Of particular note here is the expression ‘kin-state’ (*Mutterstaat*). While this term, frequently used in this paper, is employed in the Frisian Law, its origins lie in the aforementioned Sorbian Laws. Indeed, the preambles of the respective laws share significant similarities, as the Frisian Law explicitly references the Sorbian Law of the State of Saxony. Consequently, at the regional level, protection for the Frisians is heavily influenced by the precedents set for the Danish and Sorbian national minorities, and thus cannot be described as entirely unique.

Following the state election of 2012, the SSW formed a coalition government known as the ‘Coastal Coalition’ (*Küstenkoalition*) with the Social Democratic Party and Alliance 90/The Greens. Harms, who was elected as chairman of the SSW parliamentary group, pledged to improve opportunities for Frisian language education in kindergartens and schools in the district of Nordfriesland and Heligoland.<sup>20</sup> Consequently, the amendment to the State Constitution in 2014 enshrined the protection and promotion of the provision of education in Frisian and Low German in public schools in Article 12. Furthermore, the SSW fulfilled its responsibilities as a party for minorities, for instance by ensuring the addition of the Sinti and Roma to the minority provisions, which were relocated to Article 6. In 2016, the Frisian Law

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<sup>19</sup> The preamble of the Law on the Promotion of Frisian in the Public Area.

<sup>20</sup> See Kühl (2015) p.94.

was amended, resulting in an expansion of the public spheres where the Frisian language could be used.

However, the Coastal Coalition was dissolved following the results of the 2017 state election. In 2020, the ‘Law on the Establishment of a Foundation for the Frisian Ethnic Group in the State of Schleswig-Holstein’ (*Gesetz zur Errichtung einer „Stiftung für die friesische Volksgruppe im Lande Schleswig-Holstein“*) was passed by the state parliament, leading to the establishment of the Frisian Foundation (*Friesenstiftung*) in Kiel, aimed at protecting language and culture. In 2021, the SSW won a seat in the federal election for the first time since 1949, and as of 2025, it remains a party represented in national politics. Thus, even after the formal recognition of the Frisian ethnic group, the SSW continues to commit itself to the protection of the rights of the Frisians, not only the Danish minority. As confirmed above, the SSW advanced further cultural protection and promotion at the regional level even after the protection of the Frisian ethnic group had been codified at the national level.

## **Conclusion**

The preceding analysis has elucidated the political development and establishment of the Frisian ethnic group in Schleswig-Holstein. In what follows, this paper will summarise the findings based on the two key issues raised in the Introduction.

First, regarding the factors contributing to the delay in the protection of the Frisian ethnic group compared to the Danish minority, two main points can be identified: the absence of a kin-state and internal conflict. National minorities in the traditional sense, such as the Danish minority, possess a nation-state dominated by their own ethnic group. Backed by this strong support, they achieved rights protection in the 1950s. In contrast, the Frisians without a kin-state were not subject to protection at the national level. Furthermore, identity within the North Frisians was bifurcated between the National Frisians, who sought recognition as a national minority, and the majority, who viewed themselves merely as a German tribe. Consequently, they were unable to advocate for collective rights protection as a unified North Frisian group. As a result, the Frisian ethnic group was marginalised in Schleswig, becoming a ‘belated minority’ whose protection was deferred until the 1990s.

Regarding the second point, the potential of this case serving as a protection model for minorities without a kin-state, a cautious evaluation is required. While the necessity of dual protection at both the national level and the regional level can be posited, national-level protection in Germany is situated within the supranational context of Europe, meaning its reproducibility in other regions is by no means high. Moreover, state-level protection was

modelled on the precedent of the Sorbian people; thus, the Frisian case does not constitute a unique model. Therefore, its potential as a standalone model for protecting stateless minorities is considered low.

However, significance can be found in the process revealed in this paper: achieving rights protection through cooperation with other minorities, and the implementation of measures allowing for interpretative flexibility through the designation ‘ethnic group’, which differs from the traditional ‘national minority’ concept. Possessing a political party in the form of the SSW alongside the Danish minority is considered useful for amplifying the voices of minorities, who often tend to be politically isolated. Furthermore, unlike the traditional term ‘national minority’, the concept of ‘ethnic group’ can include within its scope those who do not self-identify as a national minority. Thus, it is adaptable to broader rights protection and may contribute to resolving issues in other regions facing similar identity conflicts.

### **Declaration of Generative AI and AI-assisted Technologies in the Writing Process**

AI-Assisted Technologies were used in the translating process from Japanese and German into English. The original text in Japanese was written without AI assistance.

## References

- Fujita, S. (2017). Historical Problems Concerning the Identities of the Minorities in Schleswig-Holstein, Germany: The Danish as a "nationale Minderheit" and the North Frisians as a "Volksgruppe". *Bulletin of the Graduate School of Education and Human Development. Educational sciences*, 64 (2), 195-205. Nagoya: Nagoya University Graduate School of Education and Human Development.
- Harm, L. (2015). *Die Bonn-Kopenhagener Erklärungen und die Friesen: Unerwähnt. Unerhört?*. Kiel.
- Klatt, M. & Kühl, J. (2015). *SSW. Die politische Geschichte der dänischen Minderheit 1945-2015*. Flensburg: Studiefdelingen ved Dansk Centralbibliothek for Sydslesvig.
- Komine, S. (2007). *Die >>Dänen<< in Deutschland: Jens Nydahl (1883-1967) und das Schulrecht für die dänische Minderheit in Schleswig-Holstein während der Nachkriegszeit*. Tokyo: Gakubunsha.
- Kühl, J. (2011). *Zwischen Grenzkonflikt und Grenzfrieden*. Flensburg: Studiefdelingen ved Dansk Centralbibliothek for Sydslesvig.
- Kühl, J. (2021). Die Bonn-Kopenhagener Erklärungen von 1955 in europäischer Perspektive. In *Krig og fred – Krieg und Frieden. Wegmarken der deutsch-dänischen Geschichte 1848 bis 1955* (pp.177-190). Potsdam.
- Robertson, A. H. et al. (1975). *Collected Edition of the "Travaux Préparatoires" of the European Convention on Human Rights vol. 1*. The Hague: Martinus Nijhoff Publishers.
- Shimizu, M. (2004). Furijia-Jin to Furijia-Go ni Tsuite. *Jahresbericht des Germanistischen Seminars der Hokkaido Universität*, 31, 82-98. Sapporo: Hokkaido University.



***Empowering Elderly Language Services with Artificial Intelligence: Research on  
Theoretical Construction and Practical Paths***

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**Abstract**

China has entered a new era characterized by the deep integration of artificial intelligence and population aging. As of 2024, the population aged 60 and above has exceeded 300 million, with internet penetration reaching 78.0%. However, 62.0% of non-internet users are elderly individuals. The intertwined digital divide and language barriers have become core bottlenecks constraining the social integration of elderly groups. Language, as the most important communication tool and information carrier for humanity, serves as a crucial bridge for elderly people to connect with the world and integrate into society. Faced with the physiological degradation of elderly language abilities and the rapid development of artificial intelligence technology, constructing an AI-enabled elderly language service system has become a critical issue in the national strategy for actively responding to population aging.

Based on the technological transformation background of the AI era, this study systematically analyzes the theoretical foundations and practical needs of elderly language services, constructs a "technology-data-service" three-dimensional empowerment framework, and proposes a precision model and construction path for AI-enabled elderly language services. The findings reveal: First, elderly language services possess multiple attributes including language welfare, language rights, and social assistance, requiring a content system constructed from three dimensions: supporting elderly care, ensuring medical access, and promoting social participation. Second, AI technologies provide novel solutions for elderly language services. Third, text analysis of 144 elderly-related policies indicates insufficient support from China's policy system for AI-enabled elderly language services, with problems including missing specialized planning and weak standard constraints. Fourth, empirical studies using government portals and mobile applications as cases demonstrate that current aging-friendly

transformations face "superficial" and "homogenized" dilemmas. Fifth, a precision model for AI-enabled elderly language services is constructed, comprising three types of subjects, two major elements, and four-stage management processes, with systematic construction proposals from five dimensions: institution, resources, products, technology, and ecology.

This study represents the first systematic exploration of the theoretical framework and practical paths for AI-enabled elderly language services, offering important reference value for promoting intelligent upgrading of elderly language services and facilitating digital integration of elderly groups.

Keywords: artificial intelligence; elderly language services; digital divide; information accessibility; precision services

## Introduction

Population aging represents a major trend in human social development during the 21st century. Since entering an aging society in 2000, China has witnessed continuous growth in both the scale and proportion of its elderly population. By the end of 2024, the national population aged 60 and above reached 310.31 million, exceeding 300 million for the first time, accounting for 22.0% of the total population; those aged 65 and above numbered 220.23 million, representing 15.6%, indicating entry into a deeply aging society. This demographic transformation exhibits notable characteristics including large numbers, rapid growth, significant regional disparities, and aging before affluence, posing severe challenges to high-quality economic and social development.

Meanwhile, new-generation information technologies represented by artificial intelligence have developed rapidly, profoundly reshaping social production and lifestyles. In the first half of 2024, the 54th Statistical Report on Internet Development in China released by the China Internet Network Information Center (CNNIC) showed that China's internet user base approached 1.1 billion, with internet penetration reaching 78.0%. However, individuals aged 60 and above account for 62.0% of non-internet users. Most elderly people struggle to directly access online information due to low technology acceptance and high operational complexity, facing risks of "digital incapacity" forming a "digital divide" and even becoming "digital refugees."

Language is humanity's most important information carrier and communication tool. Due to physiological aging or pathological decline, elderly groups commonly face issues such as language organ degeneration, weakened cognitive functions, and psychological state changes, manifesting as vague language expression, delayed information reception, and word retrieval difficulties. In the AI era, these language barriers overlap with digital technology usage obstacles, making elderly groups a typical "dual-vulnerable group of language and technology." How to empower elderly language services through AI technology, help elderly people overcome language barriers and digital divides, protect their language rights, and promote social integration has become an important issue in the national strategy for actively responding to population aging.

This study focuses on the development of elderly language services in the AI era, following the logic of "posing questions—analyzing questions—solving questions."

Research contents include: (1) systematic analysis of theoretical foundations and practical needs for AI-enabled elderly language services; (2) using policy tool analysis to parse language service needs implied in 144 elderly-related policies since 2000; (3) evaluating the current

application of AI technology in elderly language services using government portals and mobile applications as cases; (4) constructing a precision model for AI-enabled elderly language services; (5) proposing systematic construction paths.

Research methods include: (1) text analysis for systematic collection and content analysis of elderly-related policies; (2) case analysis for examining aging-friendly transformation practices of typical internet applications; (3) systematic analysis for constructing theoretical frameworks and construction dimensions.

## **I. Theoretical Foundations and Practical Needs of AI-Enabled Elderly Language Services**

Elderly language services constitute an important branch of language service research. Academia has provided rich interpretations of its connotation from different perspectives:

First, the language welfare perspective. Elderly language services represent the realization form of elderly language welfare, including four aspects: language learning, language assistance, language rehabilitation, and language comfort, encompassing both free services funded by government and low-cost public welfare services. Second, the language rights perspective. Elderly language services are professional services provided to elderly groups using all language derivatives including language, language knowledge, language technology, and language products, ensuring elderly people's freedom and rights to choose and use different types of languages and language derivatives. Third, the language life perspective. Elderly language services are targeted services provided based on elderly people's physiological, cognitive, psychological, and linguistic characteristics, satisfying elderly language life needs. Fourth, the social practice perspective. Elderly language services encompass all behaviors and practices that address various physiological, psychological, and social problems of elderly groups and the aging process through language and language-related derivatives.

Synthesizing the above perspectives, this study defines elderly language services as: various professional services provided to elderly people based on their physiological, cognitive, psychological, and linguistic characteristics, using all language derivatives including language, language knowledge, language technology, and language products, to satisfy multi-level language needs of different types of elderly people and ensure barrier-free daily life and information communication.

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AI-enabled elderly language services emphasize intelligent transformation of language interaction systems through AI technology on this basis, to meet special needs arising from elderly people's physiological function decline, cognitive function differences, and technology usage habits, help them overcome language barriers and digital divides, improve quality of life, and ensure equal rights to participate in digital society.

This study focuses on the development of elderly language services in the AI era, following the logic of "posing questions—analyzing questions—solving questions".

Research contents include: First, systematic analysis of theoretical foundations and practical needs for AI-enabled elderly language services; Second, using policy tool analysis to parse language service needs implied in 144 elderly-related policies since 2000; Third, evaluating the current application of AI technology in elderly language services using government portals and mobile applications as cases; Forth, constructing a precision model for AI-enabled elderly language services; Fifth, proposing systematic construction paths.

Research methods include: First, text analysis for systematic collection and content analysis of elderly-related policies; Second, case analysis for examining aging-friendly transformation

practices of typical internet applications; Third, systematic analysis for constructing theoretical frameworks and construction dimensions.

This study collected and organized 144 normative elderly-related policies promulgated by China's central government and its constituent departments between 2000 and 2024 from the Pkulaw database and official government websites, using keywords such as "elderly," "pension," "aging," "silver hair," "aging-friendly," and "accessibility." Using Rothwell and Zegveld's three-category policy tool classification, policies were divided into supply-oriented, demand-oriented, and environment-oriented types to analyze implied needs for AI-enabled language services.

Among the 144 policies, 118 were pension policies and 26 were accessibility policies. By tool type, there were 75 supply-oriented policies (64 pension, 11 accessibility), 46 demand-oriented policies (38 pension, 8 accessibility), and 75 environment-oriented policies (57 pension, 18 accessibility).

Supply-oriented policies strengthen service capacity through direct resource investment, with language service needs mainly manifested in: 1. Language Services in Facility Construction Accessibility renovations of elderly care facilities require equipping intelligent speech broadcasters, large-font high-contrast signage, and access control systems with dialect voice feedback. Smart elderly care platform construction needs to develop aging-friendly voice interaction interfaces supporting multilingual services. 2. Language Services in Talent Cultivation. Elderly care service talent cultivation needs to incorporate teaching content such as dialect communication skills, hearing barrier communication strategies, and language cognitive barrier response, with language ability included in professional assessment standards. Elderly psychological care projects require enhancing service personnel's language comfort capabilities. 3. Language Services in Technical Support Application of information platforms and smart elderly care technologies requires adapting to elderly people's language cognitive characteristics, adopting simple and intuitive interface designs and easy-to-understand language expressions, supporting multilingual services including Mandarin and dialects, and developing functions such as voice alarm and intelligent voice interaction.

Policy publicity needs to convey core information through simplified terminology and dialect explanations, provide dialect communication training for grassroots handling personnel, establish elderly consultation service hotlines, and provide assistive services such as hearing aids and sign language interpretation for special elderly people. Elderly education needs to incorporate language teaching content such as Mandarin popularization and dialect protection; medical institutions need to provide simple oral explanations, large-font medical records, and

language comfort services; internet application aging-friendly transformations require optimizing interface interaction, content reading, operation prompts, and voice assistance functions. Door-to-door services require dialect communication training, service standard documents need to be compiled in simple language with case illustrations to assist understanding; public transportation needs to provide dialect voice broadcasting and large-font signage; elderly education courses need to develop dialect-dubbed videos and multilingual teaching materials.

## **II. Practical Investigation of AI-Enabled Elderly Language Services**

This study examined the first batch of 31 provincial-level government portals and 41 mobile applications required by the Ministry of Industry and Information Technology to undergo aging-friendly transformation, evaluating the current application of AI technology in elderly language services from three dimensions: perceptibility, comprehensibility, and operability.

Text enlargement functions have been basically popularized, but with limited intelligence. Speech service functions are unevenly developed: voice search is only equipped on Shanghai and Beijing government portals (6.45%); voice screen reading functions cover 16 portals (51.61%), supporting refined settings such as automatic broadcasting, selected reading, and speed adjustment; customer service functions cover 16 portals (51.61%), basically in intelligent Q&A form, with some supporting Mandarin voice input.

Picture-text combination functions are implemented on 13 portals, reducing comprehension difficulty through elderly-friendly background images and section indicator icons. Information processing functions are implemented on 13 portals, improving information acquisition efficiency through establishing special service sections for elderly people, streamlining page information, and simplifying section naming.

Advertising and induced button cleaning has been basically completed, but operational simplification services are positively correlated with comprehensibility service optimization, with problems of excessive simplification leading to insufficient service effectiveness.

Text enlargement functions are fully popularized, with some enterprises developing independent aging-friendly APP versions. Voice search functions cover 20 APPs (48.78%), with some providing keyword search examples and operation step prompts. Voice screen reading functions are only equipped on 5 APPs (12.20%), mainly telecommunications APPs. Customer service functions cover 31 APPs (75.61%), with "one-click direct call to customer

service" becoming a highlight, and some APPs implementing three customer service methods: telephone, online, and video (including sign language).

### **III. Main Conclusions from Practical Investigation**

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Picture-text combination functions are implemented in nearly half of APPs, optimizing visual experience through elderly-friendly background images and section indicator icons. Information processing functions are prominent, with more than half of APPs completing elderly information integration and simplified language expression, such as the Bank of China APP integrating high-frequency services to the homepage, naming categories with single characters such as "medical," "food," "housing," and "transportation," and integrating quality resources such as "Bank of China Elderly University."

78.05% of APPs improve operational convenience by filtering redundant information, retaining core functions, and simplifying interaction processes. For example, the Ele.me APP aging-friendly mode only retains three core functions: ordering food, shopping at supermarkets, and buying medicine, with only three controls at the bottom: homepage, orders, and personal center. Incomplete aging-friendly transformation, with three APPs including Toutiao, Youku, and Sogou not completing transformation; "superficial" AI application, mostly limited to basic voice interaction, lacking deep personalized services; excessive simplification of aging-friendly mode, failing to consider differentiated needs of elderly people of different ages, education levels, and urban-rural backgrounds, limiting usage experience for some elderly people.

First, basic aging-friendly transformation has achieved remarkable results, but deep AI application is insufficient. Basic functions such as text enlargement, voice broadcasting, and one-click customer service are widely popularized, but core AI technologies such as dialect recognition, emotion computing, intelligent recommendation, and multi-turn dialogue have limited application, with service intelligence levels needing improvement.

Second, service homogenization is serious, with precision and personalization lacking. Most products make simple adjustments according to general design specifications, failing to fully consider differentiated needs within elderly groups, and "one-size-fits-all" simplification strategies are difficult to meet diverse needs.

Third, technology and humanities integration is insufficient, with emotional warmth missing. Over-reliance on technology implementation neglects the emotional comfort function of language services, with insufficient attention to humanistic dimensions such as cultural semantics of dialects and emotional resonance in interaction.

## **V. Construction of Precision Model for AI-Enabled Elderly Language Services**

Based on the above analysis, this study constructs a precision model for AI-enabled elderly language services, comprising three types of constituent subjects, two supporting elements, and four-stage management processes.

Significant internal differences exist within elderly groups, requiring establishment of hierarchical classification demand identification mechanisms. By language ability dimension: normal aging type, mild attrition type, moderate barrier type, and severe aphasia type. By technology usage dimension: digital fear type, and digital proficient type. By service scenario dimension: home living type, institutional pension type, and social participation type. By cultural characteristic dimension: dialect-dependent type, Mandarin-dominant type, and bilingual mixed type. Differentiated AI language service solutions are configured for different types of groups.

Government guides third-party institutions to conduct standardized evaluations, establishing multi-dimensional indicator systems covering functional adaptability, technical inclusiveness, cultural appropriateness, and social effectiveness. Evaluation results are incorporated into enterprise credit evaluation assessments, driving service improvement through effectiveness evaluation, achieving win-win of efficiency and fairness.

Government leads inclusive services, using language data as planning orientation, big data technology as management tools, and cross-departmental collaboration as decision-making guarantee, protecting elderly language rights. Enterprises promote technological innovation, identifying long-tail needs through market mechanisms, bridging availability and accessibility gaps through technology iteration, and solving single-subject limitations through cross-boundary resource integration. Communities fill the "last mile" gap, undertaking demand collection response and resource adaptation transformation functions. Families provide personalized support, undertaking basic language communication and emotional companionship functions.

Construct elderly language data resource libraries, including language use and language ability data, which involves systematically collecting Mandarin, dialect, and foreign language use abilities and learning years to master language attrition phenomena; language demand data, which identifies language barriers and service needs in daily communication through active investigation and passive capture; language characteristic data, which integrates gerontolinguistics research results to establish multi-dimensional characteristic libraries covering phonetics, vocabulary, syntax, semantics, and pragmatics; and corpus data, which constructs text and speech corpora to support AI model training.

Research and develop core technologies adapted to elderly language characteristics, including speech interaction technology—encompassing speech amplification, speech conversion, speech recognition, speech synthesis, and dialect recognition; multimodal interaction technology, which integrates multi-channel information such as voice, expression, and gesture; natural language processing technology, which achieves semantic understanding, context awareness, emotion computing, and intelligent recommendation; and machine translation and transcription technology, which supports automatic conversion between dialects and Mandarin, as well as between spoken and written language.

The Four-Stage Management Processes include Demand Management: From Identification to Prediction, which identifies language needs through passive data capture (intelligent device behavior analysis) and active data production (visual demand labeling), achieves demand stratification through "grouping by similarity" (scenario classification) and "classifying by people" (group clustering), and achieves forward demand governance through dynamic monitoring, long-term prediction, and advance deployment.

Supply Design: From Configuration to Adaptation, which breaks through traditional static allocation models to achieve spatial resource adaptation (dynamic deployment in high-demand scenarios), group resource matching (deep learning recommendation systems), and human-

machine collaborative configuration (intelligent processing of routine needs, manual handling of complex needs), while emphasizing multi-method satisfaction (technology adaptation and manual service connection), multi-scenario coverage (medical, government affairs, community, culture, etc.), and multi-stakeholder collaboration (government, enterprise, community, family linkage).

Supply-Demand Matching: From Technology to Humanities, which avoids technology-dominated "pseudo-precision" and "superficial understanding" by establishing cultural semantic libraries through collecting local multimodal data and embedding them in dialect recognition technology, judges deep needs through micro-expression recognition and voice emotion analysis, and achieves a leap from "technically audible" to "psychologically understandable" by explaining professional terminology with dialect idioms and using dialects for emotional comfort.

Effectiveness Evaluation: From Assessment to Improvement, which establishes multi-dimensional evaluation indicator systems—such as decomposing language emotion transmission effectiveness into communication normativity (speed and tone detection), empathy ability assessment (situation simulation testing), and basic dialect expression (recognition accuracy testing)—incorporates evaluation results into industry-level assessments, invites linguistics experts to participate in standard revision, and forms "assessment—feedback—optimization" closed-loop mechanisms. Construct a multi-stakeholder collaboration pattern of "government + enterprise + community + family." Incorporate evaluation results into industry level assessments, invite linguistics experts to participate in standard revision, forming "assessment—feedback—optimization" closed-loop mechanisms.

## **VI. Construction Dimensions of AI-Enabled Elderly Language Services**

Based on a whole-society participation perspective, this study proposes construction paths for AI-enabled elderly language services from five dimensions: institution, resources, products, technology, and ecology.

### **1. Improving Policies and Regulations**

Conduct national elderly language use surveys, establish dynamically updated elderly language databases, providing scientific basis for policy formulation; incorporate elderly language services as an independent dimension in elderly care service evaluation, increasing specialized policy and regulation protection; increase special financial investment, supporting language rehabilitation equipment R&D, dialect culture database construction, and gerontolinguistics interdisciplinary discipline construction; on the basis of improving basic communication

accessibility, promote the active aging strategy from "being cared for" to "being useful" through developing elderly language education courses, developing dialect culture inheritance projects, and promoting intelligent technology aging-friendly transformation.

## 2. Strengthening Standards and Norms

Formulate specialized service standards for common elderly language pathological problems such as cognitive barriers, aphasia, and articulation disorders; conduct assessment work and establish intervention mechanisms for elderly language ability decline; clarify responsibilities of medical institutions and elderly community centers in such services, forming quantifiable assessment indicators; formulate specialized norms for language comfort in end-of-life care and emergencies. Upgrade core provisions of information accessibility standards to mandatory national standards, promote formation of unified cross-domain frameworks, and formulate AI application ethics norms and data security standards.

## 3. Language Service Talent Library

Construct research teams (gerontolinguistics research, textbook compilation, technology R&D, interdisciplinary research talents) and service teams (professional practitioners and social service personnel). Promote industry-research integration between language application research and language service enterprises, promoting professional and vocational cultivation of language application talents; emphasize interdisciplinary linguistics talent cultivation, covering pathological, psychological, and social dimensions; establish mature and efficient volunteer team cultivation systems, strengthening emergency language service volunteer team construction.

## 4. Language Data Resource Library

Systematically collect language use and language ability data, with key coverage of rural areas; combine active collection and passive capture to obtain language demand data; integrate research results to establish language characteristic data; construct text and speech corpora. Utilize natural language processing, machine learning and other technologies to improve data collection and analysis efficiency, exploring construction of hierarchically open elderly language data resource platforms.

## 5. Language Culture Resource Library

Excavate and organize elderly commonly used corpora of various local dialects and ethnic languages, constructing translation corpora classified by life scenarios, medical scenarios, and emergency scenarios; collect elderly oral histories, dialect folk songs, local operas and other cultural resources; construct elderly-friendly language landscape resources, including standardized signage design and emotional space creation.

Product Dimension includes: Develop aging-friendly dictionaries, dialect-Mandarin comparison manuals, professional terminology picture-text comparison cards, etc.; research and develop sensory assistive devices such as intelligent hearing aids, voice amplifiers, and AR subtitle glasses; construct voice interaction platforms, intelligent translation systems, and multilingual customer service systems. Produce audio books (dialect storytelling, folk tales, etc.), large-font printed materials, and voice-synchronized readers; develop vivid and interesting language learning materials (life-oriented English textbooks, dialect scenario play scripts, etc.); compile professional terminology manuals with simplified language. Develop language art products such as dialect folk songs and ethnic language songs, opera lyrics and local dramas, quyi and performing arts; create calligraphy and text art works; convert through technology empowerment into converged media products, serving special elderly groups such as those living alone, suffering from depression, and Alzheimer's disease. Research and develop visual assistance products (multi-function handwriting input, AR subtitle glasses, etc.), auditory enhancement products (intelligent voice assistants, dialect recognition input systems, etc.), and language translation products (pocket translators, instant translation software, etc.); develop products with different carriers and manifestation forms (converged media forms, web versions, WeChat versions, short video versions, etc.).

This framework addresses elderly language needs through three interconnected dimensions: Product, Technology, and Ecology. Product Dimension focuses on developing practical tools (e.g., aging-friendly dictionaries, dialect-Mandarin manuals, sensory assistive devices like AR subtitle glasses) and content (e.g., dialect audio books, simplified terminology guides, language learning materials). It also includes cultural products (dialect folk songs, opera adaptations) and multi-carrier solutions (converged media, web/WeChat/short video versions) to serve diverse elderly groups, including those with Alzheimer's or living alone.

Technology Dimension emphasizes accessibility and interaction: interface optimization (large fonts, high contrast), speech recognition/conversion (dialect/ethnic language support), voice assistants, and companion interaction. It integrates diagnostic tools (language screening via speech analysis) and scenario simulation for immersive training, combining local cultural characteristics with aging-friendly tech.

Ecology Dimension prioritizes inclusive design (large line spacing, semantic simplification, icon support) and respectful language norms (avoiding "old/weak" labels, using positive terms like "seniors"). It fosters intergenerational communication (family dialect learning, community exchanges), public multilingual services, and digital tools to bridge generational language gaps, while promoting language civilization across families, communities, and media.

Technology Dimension includes: Provide interface optimization technology (large fonts, high contrast, simplified layout, etc.); provide speech recognition and speech-to-text technology, supporting dialect and ethnic language recognition and conversion; provide voice assistants and auxiliary memory tools, helping record important information and boosting confidence in using digital devices. Provide speech recognition and feedback technology, giving immediate feedback on language usage and helping correct errors; provide companion language interaction technology, improving memory, comprehension, and language organization abilities through multi-turn dialogue repeated stimulation. Provide intelligent language screening and diagnosis technology, analyzing speech rate, pauses, vocabulary volume and other characteristics through machine learning to detect abnormalities as early as possible; provide scenario dialogue simulation technology, simulating life scenarios for immersive dialogue training, improving vocabulary volume, expression fluency, and semantic comprehension. Include speech enhancement and conversion, accessibility interaction, multimodal information conversion, machine translation, and other technologies; develop aging-friendly language technologies combining specific application scenarios and local cultural characteristics.

Ecological Dimension includes: Reflect elderly-friendliness in information function by setting large line spacing, bold large fonts, high contrast color schemes, and illuminated signage; reasonably arrange information layout, adopt hierarchical progressive style, avoid complex sentences, emphasize semantic simplification, and cooperate with icons to strengthen understanding. Reflect elderly-friendliness in symbolic function through naming strategies to create respectful and inclusive social atmospheres, avoiding labeling expressions such as "old, weak, sick, and disabled," and adopting positive appellations such as "seniors" and "silver-haired." Elderly people themselves actively avoid language violence, control emotional fluctuations, respect diverse values, and set examples of language civilization for younger generations; service personnel follow language civilization norms, improving professional competence through standardized training, with key attention to communication needs of special elderly groups such as relocated, depressed, and empty-nest elderly; online media strengthen language civilization responsibilities, eliminating negative reporting methods, breaking stereotypes, and focusing on presenting positive role narratives of elderly people. In family domains, encourage younger generations to learn basic dialect expressions and understand elderly language habits; in community domains, organize intergenerational language exchange activities, promoting benign interaction between dialect inheritance and Mandarin popularization; in public domains, establish multilingual service windows, respecting elderly people's language choice rights; in digital domains, develop

intergenerational communication auxiliary tools, helping elderly people understand internet neologisms and younger people understand dialectal old expressions.

## **Conclusion**

AI-enabled elderly language services constitute an important component of the national strategy for actively responding to population aging, and also represent a frontier topic in language service research in the digital era. This study systematically analyzed the theoretical foundations, policy needs, and practical status of AI-enabled elderly language services, constructed a precision model of "three types of subjects, two major elements, and four stages," and proposed construction paths from five dimensions: institution, resources, products, technology, and ecology. By integrating interdisciplinary insights from linguistics, gerontology, and artificial intelligence, the research aims to bridge the digital divide faced by older adults, enhance their access to inclusive and personalized language support, and provide actionable guidance for policymakers, tech developers, and service providers to advance equitable and sustainable elderly care solutions in the digital age.

The study found that China's elderly language service construction has achieved remarkable progress, with basic aging-friendly transformation widely popularized, but deep application of AI technology remains insufficient, with problems including missing specialized planning, weak standard constraints, serious service homogenization, and insufficient technology-humanities integration. Future efforts should focus on: first, strengthening top-level design, formulating specialized planning for AI-enabled elderly language services; second, deepening technology application, promoting innovative application of core technologies such as speech recognition, natural language processing, and multimodal interaction in elderly language services; third, strengthening standard leadership, establishing standard and norm systems covering full processes and full scenarios; fourth, promoting ecological co-construction, forming good patterns of government, enterprise, community, family, and academia collaborative advancement.

This study is only a preliminary exploration. The theoretical deepening, technological innovation, and practical optimization of AI-enabled elderly language services require joint participation of more researchers and practitioners, to build intelligent language service systems with warmth, precision, and depth for 300 million elderly people, assisting in realizing the beautiful vision of supporting elderly care, ensuring medical access, and promoting social participation.

## References

- Bak, T. (2014). Does bilingualism influence cognitive aging. *Annals of Neurology*, 75, 959-963.
- Burke, D., & Mackay, D. (1997). Memory, language, and ageing. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 352, 1845-1856.
- Chen, L., & Chen, K. (2024). Research on the connotation, extension and development trend of elderly language services in China. *Language Policy and Planning Research*, 2, 83-94.
- Deng, K., & Wang, H. (2022). Precision language services for information accessibility. *Chinese Language Strategy*, 9, 62-72.
- Gu, Y. (2019). The genesis of gerontolinguistics. *Language Strategy Research*, 4, 12-33.
- Huang, L. (2022). *Introduction to aging and gerontolinguistics*. Shanghai: Shanghai Foreign Language Education Press.
- Li, Y. (2017). The impact of language technology on language life and social development. *Social Sciences in China*, 02, 145-158.
- Li, Y. (2020). The data era and language industry. *Journal of Shandong Normal University (Social Sciences Edition)*, 65, 87-98.
- Liu, C., & Zhang, S. (2023). Research status and prospects of elderly language and language life. *Modern Chinese*, 10, 4-14.
- Rothwell, R., & Zegveld, W. (1988). *An assessment of government innovation policies*. London: Palgrave Macmillan.
- Shafte, M, & Tyler, L. (2014). Language in the aging brain: The network dynamics of cognitive decline and preservation. *Science*, 346, 583-587.
- Shen, Q., & Li, X. (2023). Research on elderly language services from the perspective of language rights. *Journal of Kunming University* , 45, 10-18.

Teng, Y. (2022). On the construction of elderly language welfare system. *Language Strategy Research*, 7, 78-87.

Wang, H. (2018). *Language service research*. Guangzhou: Guangdong Higher Education Press.

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*The Potential Contribution of Interactional Sociolinguistics  
to the Integration of Society and Knowledge:  
A Case Study of Interdisciplinary Interaction on the Use of Generative AI*

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**Abstract**

This study examines how sociolinguistics can contribute to “the integration of society and knowledge” through conversations among graduate students from different academic fields. It focuses on how these students negotiate and accommodate their norms and awareness regarding the use of generative AI. Modern society has become increasingly complex due to rapid technological innovation, economic expansion, and globalization. Consequently, individuals are required to collaborate across various communities, both domestically and internationally. In academic contexts, for example, joint research between the humanities and the sciences is essential for addressing such complex issues. Interactional sociolinguistics (IS) provides a useful framework for analyzing these interdisciplinary interactions. IS investigates language use through detailed analysis of conversational cues and social contexts. Drawing on IS methods, this presentation analyzes an interview between two graduate students—one from the humanities and the other from engineering science—about the use of generative AI. The data were recorded via Zoom and transcribed in detail, including relevant nonverbal behaviors. The analysis reveals that both students shared similar perceptions of challenges concerning the reliability and accuracy of generative AI, regardless of whether they used it. Through collaboration and the sharing of experiences, the participants reconstructed their normative awareness in interdisciplinary communication. This study outlines a form of interdisciplinary interaction that sociolinguistics can illuminate in an increasingly integrated society.

Keywords: interactional sociolinguistics, interdisciplinary interaction, generative AI

## **1. Introduction**

Modern society has become increasingly complex, driven by rapid technological innovation, economic expansion, and globalization. Currently, generative AI technologies, such as ChatGPT and Gemini, have gained widespread popularity and are utilized globally. Consequently, individuals are required to collaborate across diverse communities at domestic, international, and hybrid levels. In academic contexts, interdisciplinary research, such as collaboration between the humanities and the sciences, is essential for addressing these multifaceted issues. Researchers engaged in such joint endeavors are expected to cooperate closely with their colleagues. In this context, interdisciplinary communication plays a pivotal role, facilitating the integration of society and knowledge. Interactional Sociolinguistics (IS) provides a robust framework for analyzing such interdisciplinary communication. Therefore, this study examines how IS contributes to "the integration of society and knowledge" by analyzing conversations among graduate students from disparate academic fields. Furthermore, through discourse analysis, this research elucidates the nuances of communication between individuals with different areas of expertise. Specifically, it focuses on how these students negotiate and accommodate their norms and perceptions regarding the use of generative AI.

## **2. Literature Review: interactional sociolinguistics**

Gumperz (2015) defines Interactional Sociolinguistics (IS) as a framework designed "to interpret what participants intend to convey in everyday communicative practice" (p. 309). IS incorporates a broad range of qualitative microanalyses of recorded, naturally occurring interactions, conducted with meticulous attention to the social context in which the exchange occurs (Gordon & Tannen, 2021, p. 181). Specifically, IS investigates language use through the detailed analysis of conversational cues and social contexts, including background knowledge, conventions, and norms (Gordon & Tannen, 2021; Gumperz, 1982; Iwata et al., 2022). Consequently, this framework can be effectively applied to generate insights into interdisciplinary communication by establishing links between these diverse contexts.

## **3. Data and Methodology**

The data for this research were collected through semi-structured interviews designed to illustrate interdisciplinary communication. The central theme of these interviews was the recent and rapid advancement of generative AI. Given that graduate students utilize generative AI in both their academic research and daily lives, examining how students from diverse academic divisions discuss its application allows for an observation of how their respective expertise shapes shared or divergent perspectives and norms regarding the technology.

In September 2024, participants were recruited on the condition that they would be recorded while discussing generative AI and related technologies; subsequently, interviews were conducted via Zoom. Referring to Amano et al. (2020), The participants consisted of six master's students and two doctoral students. Prior to the interviews, they were provided with a document summarizing key information concerning generative AI. Each session involved a recorded conversation among two participants and one researcher. As indicated in Table 1, relevant excerpts were selected for analysis from four sessions, totaling 218 minutes and 13 seconds.

| Date<br>(2024)  | Group | Name | Academic<br>year | Major                                           | Recorded<br>time | Note                             |
|-----------------|-------|------|------------------|-------------------------------------------------|------------------|----------------------------------|
| September<br>19 | 1     | 1A   | M2               | Humanities, Division of<br>Language and Culture | 0:57:37          | First<br>meeting<br>conversation |
|                 |       | 1B   | M1               | Humanities, Division of<br>Humanities           |                  |                                  |
| September<br>19 | 2     | 2C   | D1               | Humanities, Division of<br>Language and Culture | 0:57:31          | Friend<br>conversation           |
|                 |       | 2D   | D1               | Medicine, Division of<br>Health Sciences        |                  |                                  |
| September<br>26 | 3     | 3E   | M2               | Humanities, Division of<br>Humanities           | 0:50:45          | Friend<br>conversation           |
|                 |       | 3F   | M2               | Engineering Sciences                            |                  |                                  |
| September<br>26 | 4     | 4G   | M2               | Humanities, Division of<br>Humanities           | 0:53:20          | First<br>meeting<br>conversation |
|                 |       | 4H   | M2               | Engineering Sciences                            |                  |                                  |

Table 1: participant information

T Group 4 was selected for the analysis and presentation of results. The participants in this dataset included 4G, a student from the humanities; 4H, a student from the engineering sciences; and IR, the interviewer. The interviews were conducted in Japanese, and the resulting transcriptions were subsequently translated by the author. Regarding the methodology, this research employs discourse analysis to examine the data.

## 4. Results

The following excerpts illustrate the participants' usage of generative AI and their associated norms. In Excerpt 1, 4H took his turn to describe the specific generative AI tools he had utilized.

```
001.      4H: Well, maybe I start again?
002.      IR: ((nod)) Thank you very much.
003.      4H: Um, as I mentioned earlier,
004.          >just to give a specific<
005.          name, there is a generative AI called ChatGPT,
006.      IR:  ((nod))
007.      4G:  ((nod))
008.      4H: and also a (          tool).
009.          (0.5)
0010.     IR: A cloud tool.
0011.     4H: Yes. There is that AI, and also-
0012.          this is something Google recently released
0013.          something called NotebookLM.
0014.     IR: Hmm
0015.          (0.5)
0016.     4G:  ((nod))
0017.     4H: I use it.
0018.     IR: I see.
0019.     4H: I have used it before.
0020.     IR: okay.
0021.     4H: And basically,
0022.          (1.0)
0023.     4H: I use it to help me read academic papers.
0024.          I'm not very good at English, so
0025.     4G:  ((nod))
0026.          (1.5)
0027.     4H: I have it translate the English into
0028.          something more natural, and help me understand
0029.          what it's saying.
0030.          (1.0)
0031.     4H: I use it quite often for that.
```

### Excerpt 1: 4H's experience

4H had extensive experience utilizing generative AI, including tools such as ChatGPT and NotebookLM (lines 1–17). From line 21, 4H further explained his application of generative AI, stating that he "basically" (line 21) used these tools to facilitate reading academic papers written in English (line 23). He attributed this usage to the fact that he was "not good at English" (line 24). 4H frequently employed generative AI to assist in his understanding and translation of English texts. Conversely, following the conclusion of 4H's turn, 4G initiated her turn in Excerpt 2 and described having no experience with generative AI.

0034. 4G: Yes. Well, to state the conclusion first, I have  
0035. absolutely never used anything like that [myself,  
0036. IR: [Mm-hm.  
0037. 4G: I've never actually used ChatGPT myself,  
0038. but I have seen other people  
0039. (0.5)  
0040. 4G: using it,  
0041. IR: ((nod))  
0042. 4H: so I kind of understand how it works.  
0043. (.)  
0044. IR: Mm.  
0045. 4G: But I couldn't really imagine in what  
0046. situations you would actually use it, so hearing the  
0047. discussion just now made me think,  
0048. Oh, so that's when you would use it, or,  
0049. Oh, so that's how the accuracy varies,  
0050. 4G: .hh >like< there are tools that are specialized  
0051. for certain things,  
0052. I see—that's what I learned  
0053. from the discussion just now, .hh and that's about  
0054. the level of resolution I have on it.  
0055. IR: @@  
0056. 4G: And, well, regarding what kinds of uses  
0057. I've seen around me:  
0058. .hh for example, when we were doing a reading group,  
0059. IR: ((nod))  
0060. 4G: if someone wondered what a certain term meant,  
0061. (.)  
0062. 4G: we could look it up on Wikipedia, but  
0063. sometimes we ask ChatGPT to summarize it,  
0064. like Oh, so that's what it is, .hh  
0065. using it <kind of like a small dictionary> .h  
0066. or::: (.) alternatively, having it translates  
0067. materials to some extent;  
0068. IR: Mm.  
0069. 4G: .hh (0.4) or conversely, giving ChatGPT  
0070. lots of materials.  
0071. hh that could serve as a sort of database,  
0072. issuing instructions and having it create documents,  
0073. then going back and forth and revising them—  
0074. I've seen people use it that way too. That example  
0075. is more like for <work-related> documents rather  
0076. than for research, but I have seen that.  
0077. IR: Hm. I see. So rather than using it yourself,  
0078. you see people around you using it—  
0079. 4G: Yes, that's right. My impression is that people  
0080. around me use it sometimes.

Few lines were omitted.

0083. 4G: Uh::m. Right, when you get down to the fine details,  
0084. there will unavoidably be issues with accuracy.  
0085. So at that point >probably<  
0086. IR: ((nods))  
0087. 4G: people around me tend to think that checking  
0088. the detailed literature  
0089. themselves is::: more accurate.

## Excerpt 2: 4G's talk

4G mentioned that she had "never used anything" (line 34) like ChatGPT or NotebookLM, tools that 4H utilized in his daily life. Consequently, rather than providing examples of personal usage, she alluded to how "other people" (line 38) utilized ChatGPT. This utterance is interpreted as demonstrating an understanding of usage contexts and tools facilitated by 4H's preceding description of generative AI. Furthermore, in line 45, 4G noted that she had become aware of the diverse types of generative AI through 4H's previous turn. Subsequently, 4G described how individuals in her social circle utilized these tools as a "kind of small dictionary" (lines 62–67) for translation and document creation. Although 4G acknowledged the utility of generative AI as demonstrated by those around her, she expressed concerns regarding its

"accuracy" (line 84). Following 4G's turn, as shown in Excerpt 3, 4H also addressed the issue of accuracy. He explained that he had frequently used "DeepL," a translation service; however, due to the limitations imposed on free users, he began utilizing ChatGPT to translate academic papers. Excerpt 3 begins following this exchange.

```

00122.   IR:   And then, as you kept looking for tools with
00123.         better accuracy,
00124.         (0.6)
00125.   IR:   now[-
00126.   4H:   [Yes, well, somehow, (0.3)
00127.         to be honest,
00128.         (0.5)
00129.   4H:   even with what I'm using now,
00130.         (0.3)
00131.   4H:   I can't
00132.         (0.4)
00133.   4H:   fully trust it [exactly-
00134.   IR:         @@
00135.   4H:   So, for example, having it translates English,
00136.         (0.7)
00137.   IR:   Mm.
00138.   4H:   and then, (0.6) regarding the theme or the
00139.         content of the research-
00140.         regarding the ideas or logic in the paper- (1.0)
00141.         I think things through again myself.
00142.         (0.7)
00143.   IR:   Mm-hm, mm-hm.
00144.         (1.1)
00145.   4H:   So, well, yes, quite often,
00146.         (1.2)
00147.   4H:   uh-
00148.         (0.9)
00149.   4H:   the accuracy isn't very good, but, well,
00150.         (0.8)
00151.   4H:   it handles things roughly-
00152.         (0.6)
00153.   4H:   roughly enough that it helps me save time,
00154.         so I use it for that.
00155.   4G:   ((nods))
00156.         (1.1)
00157.   IR:   I see.

```

### Excerpt 3: 4H's use of AI and its accuracy

While 4G lacked the motivation to download generative AI applications, 4H utilized these tools in his daily life. However, 4H maintained that generative AI cannot be fully trusted (lines 131–133). Illustrating this point with the example of AI-assisted translation from line 135, he concluded that although the accuracy was "not good" (line 149), the technology helped him "save time" (line 153). This utterance suggests that 4H recognizes the potential for inaccuracy in generative AI output; nevertheless, he prioritizes its utility for time management. Following this statement, he further described his utilization of generative AI, noting that he also employed ChatGPT for programming. In summary, both participants expressed concerns regarding the accuracy of generative AI output, irrespective of their level of familiarity with such tools.

## **5. Discussion**

This research observed that both participants remained skeptical regarding the reliability of generative AI. Regardless of their prior experience, they shared the norm that the accuracy and trustworthiness of such technology are problematic. Throughout the interview, this normative awareness was co-constructed and reproduced within their interaction. This norm appears to be a fundamental principle that should be upheld when utilizing generative AI, irrespective of one's academic field. The fact that this seemingly "primary" norm was confirmed during an initial meeting suggests that such confirmation may function as a communicative strategy for navigating disciplinary boundaries.

## **6. Conclusion**

Interactional Sociolinguistics (IS) analyzes communication by drawing on multiple contextual cues, thereby facilitating a deeper understanding of interdisciplinary communication. In this sense, IS serves as a valuable framework for the integration of society and knowledge. This research provides a case study that reveals a fragment of interdisciplinary interaction; however, several limitations must be acknowledged. First, the participants were recruited from a single university. Second, the scope of the dataset is limited. Finally, the present study focuses exclusively on instances of smooth and successful communication. Therefore, more fine-grained analyses of detailed transcripts are required to understand how communication among graduate students unfolds and to analyze instances where interactions do not proceed smoothly. Furthermore, future research should incorporate comparisons with interactions among graduate students within the same academic division to further delineate the distinctive characteristics of interdisciplinary communication.

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## References

- Amano, M., Kataoka, Y., & Kawamoto, S. (2020). Communications among Researchers in Interdisciplinary Research Projects— Analysis of Factors Required for Project Maintenance by Interview Surveys—. *Japanese Journal for Science, Technology & Society*, 29, 51-68.
- Gordon, C., & Tannen, D. (2015). Interactional sociolinguistics: Foundations, developments, and applications to language, gender, and sexuality. In J. Angouri & J. Baxter (Eds.), *The Routledge handbook of language, gender, and sexuality* (pp. 181-196). Routledge.
- Gumperz, J. J. (1982). *Discourse strategies*. Cambridge University Press.
- Gumperz, J. J. (2015). Interactional sociolinguistics: a personal perspective. In Tannen, D. Hamilton, H. E., & Schiffrin, D. (Eds.), *The handbook of discourse analysis* (pp.309-323). Wiley Blackwell.
- Iwata, Y., Shigemitsu, Y., & Murata, Y. G. (2022). *A Comprehensive Introduction to Sociolinguistics: From Fundamentals to Discourse Analysis*. Hitsuji shobo.

***Technology in Umwelt Theory:  
The Extension of Functional Circles***

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**Abstract**

This study re-examines the relationship between humans and technology by focusing on the concept of the "*Umwelt*" (environment) proposed by Jakob von Uexküll (1864–1944)—the unique world experienced by every living organism. In today's digital era, sophisticated information network and autonomous systems have changed the nature of "knowledge." It is no longer just something stored in the human mind but has become an active network that shapes our daily reality and how the world appears to us. This shift forces us to rethink where the human ends and technology begins.

To understand this connection, this paper analyzes "technique" in *Umwelt* theory in three stages. First, it explores how nature itself behaves as a principle, building the physical bodies of living things according to an internal *plan*. Second, it shows that an organism's world is not just a passive reflection of its surroundings; instead, it is a meaningful "work" created through the constant loop of sensing and acting. Third, the paper explains how human-made tools and machines serve as extensions of our own bodies, expanding our ability to perceive and interact with the world.

By linking these stages, the research demonstrates that technology is not merely an external tool we use. Rather, it is deeply integrated into our physical and mental processes. The paper concludes that as technology becomes more advanced, it actively reorganizes our relationship with our environment, constantly transforming what it means to be a human *subject* in a technological world.

Keywords: Umwelt, environment, technology, subjectivity, cognition

## Introduction

"*Knowledge*" is not something that remains limited to information possessed personally by individual humans; rather, it is a network-like system produced within social contexts and shared or transmitted through media. Since ancient times, books and letters have been responsible for the preservation and transmission of *knowledge* beyond the individual, but contemporary technology does not stop at being a mere auxiliary tool for such externalization of *knowledge*. Today's sophisticated information network environment possesses autonomous algorithms that automatically collect, analyze, predict, and systematize information. Generative artificial intelligence, which has proliferated explosively in recent years, responds to users' questions, provides counsel, and proposes solutions as if it "*knows*" various things. This reorganization of *knowledge* by technology calls into question the boundary between humans and technology: where does the *subjectivity* of "*knowing*" reside, and how does the technology that constitutes *knowledge* prescribe the *appearance* of the world? The purpose of this paper is to examine a new framework for reconceiving the linkage between humans, the environment, and the *technique* that mediates between them, in order to understand this recursive relationship where technology—as one *appearance* of *knowledge*—simultaneously prescribes the very nature of *knowledge*. To this end, this paper reconsiders the relationship between technology and humans by focusing on the concept of "*Umwelt*" (environment/self-world) proposed by the early 20th-century biologist Jakob von Uexküll (1864–1944).

Uexküll sought to describe the functional world that animals construct as cognitive *subjects*<sup>1</sup>—that is, the *Umwelt*—by analyzing the structure and functions of animal bodily organs. He treated living beings not as mere machines, that is, not as objective objects of observation within the human cognitive world, but as subjects that open up their own domains of action within the physical world. Only in this way, Uexküll argued, is it possible to connect the dynamic interactions between an organism and its environment with the functioning of bodily organs, and thereby to take the life process as a whole as the proper object of biological inquiry. According to Uexküll, organisms are not mere objects that react passively to stimuli from the external world. Rather, through their bodily structures and the "*functional cycle*" (*Funktionskreis*)—a circular coupling of perception and action—organisms constitute an *Umwelt* as a domain of action. Insofar as living beings actively construct the world in which they live, they are *subjects*.

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<sup>1</sup> The term "subject" is consistently used for the German *Subjekt*. This choice prioritizes the epistemological tradition—where the subject is the locus of the world's *appearance*—over the concept of "agency," which emphasizes active, intentional behavior.

Christopher Loughnane (2025) adds *technique* as “the third component” within Uexküll’s cyclical relationship of *body-Umwelt*, and proposes “a triadic Umwelt model in which technics, alongside body and environment, forms a foundational element of human evolution and perceptual experience” [Loughnane (2025): 1]. Loughnane’s aim, in contemporary society where advanced digital technologies that take over and automate human tasks are ubiquitous, is to provide conceptual tools and ethical guidelines for better understanding cultural transformation accompanying human evolution and technological progress by describing the human perceptual and experiential worlds within the triadic framework of *body-technique-Umwelt*.

While Loughnane’s attempt is extremely important for understanding the profound influence *technique* exerts on the formation of the *Umwelt*, remains insufficient. This is because Loughnane goes no further than grasping *technique* as a tool as an extension of the body or as an externalized intermediary. While such an understanding of *technique* does not necessarily fall outside the framework of *Umwelt* theory, it is extremely limited. This nature of *technique* as both an environment and an extension of the body does not simply derive from the fact that *technique* is a mediator between the body and the environment, but from the fact that *technique* in *Umwelt* theory is, in the first place, the principle of an organism’s body formation and, at the same time, the principle of *Umwelt* formation that prescribes the mode of appearance of the world to the organism.

In this paper, I will understand *technique* in *Umwelt* theory by dividing it into three phases and analyze the positioning of each in their respective sections. The three phases are: namely, “Naturtechnik” (Section 1), which functionally organizes the body itself; the formative and artistic *techné* (Section 2), in the sense of living within a work created by the organism itself; and *technique* as a tool or machine that extends the *Funktionskreis* as an extension of physical organs (Section 3). The various forms of “*technique*” in these three phases are not synonymous, but they are interrelated at a fundamental level. They are concepts that capture the processes through which the relationship between the body and the *Umwelt* is generated, maintained, and transformed at different levels, and the term *technique* is used to demonstrate that continuity.

While taking Loughnane’s triadic model as an important reference point, this paper does not subscribe to an understanding that fixes *technique* as a “third component.” Rather, by grasping *technique* in multiple phases, I will reconceptualize the multilayered and fluid role of “*technique*” as something that is simultaneously the body and the *Umwelt* for the *subject*. In this way, I will clarify that *technique* is something that moves transversally across both the phases of the body (internal) and the *Umwelt* (external), and demonstrate that the boundary

between the two (the outline of the *subject*), which has traditionally been regarded as fixed, is constantly redrawn along with the operation of *technique*.

## Section 1: "Naturtechnik" as the Principle of Body Formation

### 1-1 *Technische Biologie*

Generally, Technik refers to specific techniques or skills for creating and organizing things in some way, and its system is called technology. As evident from the examples of tools, machines, and digital infrastructure, what is at issue in Loughnane (2025) is Technologie positioned within the scope of this modern meaning. In contrast, it must be noted that in Umwelt theory, the concept of "Technik" primarily appears not as an artifact created and utilized by humans, but as an immanent formative principle that constitutes the organism's body itself. In his book *Umwelt und Innenwelt der Tiere*<sup>2</sup>, Uexküll called the study of body formation in living organisms "technical biology" (Technische Biologie). This concept is clearly contrasted with what Uexküll himself designated as "mechanistic biology."

In mechanistic biology, the organism's body is presupposed as a pre-given apparatus, and its operation is explained as a causal chain of external stimuli and internal reactions. In contrast, Uexküll's interest is directed toward the principle of how such reactive apparatuses come into being—that is, how organs themselves are formed and functionally organized. The *Funktionskreis*, a central concept in *Umwelt* theory, should likewise not be understood as a self-contained mechanism built into a pre-established body. According to Uexküll, the protoplasm of the living organism is "active throughout life, restructuring and forming pathways" and the *Funktionskreis* itself is not a fixed structure but is in the midst of becoming [Uexküll (1921): 48].

In this regard, Uexküll found the specific task of biology to be the investigation of the functions of completed physical organs in conjunction with the principles by which such organs are formed. As Yoshihiko Maeno (1957–), the Japanese translator of *Umwelt und Innenwelt der Tiere*, points out, the term "technisch" used here should not be understood in the sense of "technical" as it is used in today's everyday language [Maeno (2012): 363–364]. Rather, it should be understood in its original sense derived from the Greek *techné*—that is, as *technique as a principle of creation*; in other words, as an immanent formative principle that makes latent forms hidden in nature *appear*. This autonomous principle of body formation is precisely what

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<sup>2</sup> von Uexküll (1921). Originally published in 1909; this paper cites the 1921 revised second edition (Zweite vermehrte und verbesserte Auflage). All page references are to this edition.

distinguishes the living organism from a mere object that moves according to physical laws of causality. Uexküll sought to find, behind the diverse functional structures appearing in the bodies of individual organisms—which he called the *Bauplan*—a higher-order principle of self-organization that cannot be reduced to chance or external constraints<sup>3</sup>.

## 1-2 The Concept of "Naturtechnik"

In his later work, *The Theory of Meaning (Bedeutungslehre, 1940)*, Uexküll came to grasp this principle of body formation as a contrapuntal morphogenesis by nature and termed it "Naturtechnik" (nature's technique). *Naturtechnik* does not refer to human intentional productive activities, but rather to the process in which nature itself elaborately organizes the correspondence between the organism's body and the external world. According to Uexküll, by possessing physical organs that correspond to objects in the external world, living organisms are mutually linked with the external world—including other organisms—and as a result, an organic system of meaning is formed. The *Umwelt* emerges as a result of such contrapuntal composition by *Naturtechnik*.

The "contrapuntal" relationship here is a metaphor referring to a state in which the organism's bodily structure and the properties of the environment are semantically aligned in advance, much as independent melodies harmonize with each other in music. For instance, Uexküll cites the relationship between a spider's web and a fly's body as an example. A spider is able to construct a web with the mesh size and strength sufficient to withstand the physical dimensions of a fly and the impact of its collision because, even before the spider physically encounters the fly, "the spider has already incorporated certain elements of the fly into its structure" [Uexküll (1940): 48]. This means that the *Funktionskreis* of the web-weaving spider and the *Bauplan* that forms the fly's body complement each other like a melody and a counter-melody in music, playing together a single harmony of meaning (a symphony). Nature's counterpoint does not signify a physical causal relationship brought about by the interaction between *subject* and object; rather, it means that the *subject's Funktionskreis* aligns with the properties of the object through the formative principles inherent in each *subject*.

If one were to interpret *Technik* in this sense directly in its modern meaning—as skills or *knowledge* utilized by some *subject*—one would fall into the error of excessively anthropomorphizing "nature" as the user of *technique* and regarding living organisms as its arbitrary creations. However, as stated at the beginning of this section, *Technik* in *Umwelt* theory is an immanent principle within the living organism; it is a

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<sup>3</sup> Uexküll believed that biology at the time was fragmented into physiology and anatomy, each of which was falling into physical and chemical reductionism [Uexküll (1921): 3].

formative principle at a level where the producing *subject* and the produced object are not separated.

The philosopher Martin Heidegger (1889–1976) points out that "the essence of technology is by no means anything technological" (*das Wesen der Technik ganz und gar nichts Technisches*) [Heidegger (2000): 9]. Explanations that define technological matters as "a means to an end" (*ein Mittel für Zwecke*) and as "a human activity" (*ein Tun des Menschen*) merely describe the human relationship to technology [Heidegger (2000): 10]. To clarify the essence of technology itself—rather than a human-centered view—Heidegger traces its etymology back to the definition of the Greek *techné* (τέχνη) and redefined technology as bringing forth (*Entbergen*), allowing that which exists to manifest in its primordial way of being [Heidegger (2000): 38]. *Techné* was understood not as mere instrumental manipulation, but as art—the principle that guides how something ought to be when it is generated and shaped. "*Naturtechnik*," which makes a functionally organized body *appear* out of the chaos of matter, is also *technique* in precisely this sense; it is not something that nature utilizes as a "means," but rather a principle of bringing forth immanent within nature and the various living organisms therein.

As described above, in *Umwelt* theory, *technique* primarily appears as a principle immanent in the very formation of the organism's body. By establishing this first phase, it becomes clear that the formative and artistic *techné*—to be examined in the next section—as well as *technique* as tools and machines, fluctuate between the dual statuses of being an extension of physical organs and being an object within the *Umwelt*.

## Section 2: Technique as the Principle of Umwelt Formation

### 2-1 The Umwelt as a Work

When *technique* is interpreted as bringing forth—that is, as making an invisible order appear—another phase of *technique* in *Umwelt* theory comes into view. While *Naturtechnik* makes the *Bauplan* appear as the physical body of the organism, this planed body, in turn, also makes the organism's *Umwelt* appear.

Living organisms are not beings that merely react passively to stimuli from the external world. Based on their own physical structure, they select only specific stimuli from the vast and constant stream of external inputs that match the organs equipped in their bodies, and convert them into unique bodily signals (nerve impulses composed of a certain rhythm). These impulses act upon the organism's physical organs to induce specific actions, and as these

actions alter the relationship with the external world, they bring about new encounters with subsequent stimuli. Uexküll termed this cyclical process, where perception and action alternate repeatedly, the "*Funktionskreis*." Through the mesh-like combination of multiple *Funktionskreis*, a closed world of meaning surrounding each individual organism—namely, the "*Umwelt*"—is formed. Living organisms live within this *Umwelt*, which is "their own work" (*ihr eigenes Werk*) [Uexküll (1921): 215]. For instance, he describes the *Umwelt* of an amoeba as follows:

This small excerpt of the world is a coherent world in itself, simpler and less contradictory than ours, but just as planned, just as artistic. [Uexküll (1921): 32]

According to Uexküll, the *Umwelt* of an amoeba consists of only three elements: the intensity (strong or weak) of stimuli and the stimulus specific to food. Other more complex factors—such as whether a stimulus is chemical or a physical impact—are not reflected in the amoeba's *Umwelt*. Furthermore, even regarding food stimuli, the specific types of organisms that serve as food are abstracted away. In the *Umwelt* of a terrestrial amoeba, even its own body *appears* merely as an edible object. This is because they do not possess a physical structure that could be harmed by "Autophagie" (autophagy) [Uexküll (1921): 32]. An amoeba possesses an extremely simple body. The amoeba's *Umwelt*—that is, the fragment of the world carved out as meaningful by the amoeba—is therefore extremely simple in this way. This simplicity clarifies the *Umwelt*'s character as a *work*, in the sense that it is created by carving out only what is necessary from the world according to physical organs.

Heidegger pointed out that the essence of technology does not lie in the relationship between means and ends of a human *subject*; likewise, *techné* as the principle of *Umwelt* formation is not a means, and consequently, the *Umwelt* is not an end. Within the bodily process of the organism itself, there is an immanent *techné* that determines the *appearance* of the world.

## 2-2 What is the Subject of the Umwelt?

In this paper, I have thus far interpreted Uexküll's "*Naturtechnik*" using Heidegger's philosophy of technology as a guide. At this point, it must be noted that Uexküll and Heidegger do not share identical positions regarding the definition of the *Umwelt* itself. The *Umwelt* that Heidegger discusses in *Being and Time* refers to the world of "average being-in-the-world" (*durchschnittliches In-der-Welt-sein*) in which humans live their everyday lives [Heidegger (1967): 66]. In this context, things are experienced not as objective beings in themselves, but as things that are used, related to, and possess roles—that is, as *for-the-purpose-of* (*für...*)—

much like how a hammer *appears* as *something for hammering*. Heidegger defines "world" as an ontological horizon where the meaning of Being can be questioned, and he positions the *Umwelt* as the way in which this total structure of meaning called "world" concretely *appears* within human everyday activities. In this sense, it is only the human being—namely, *Dasein* (being-there)—as the one who questions the meaning of Being, that discloses the world. In contrast, animals are completely captured within a constant linkage of perception and effect; they do not recognize the objects of perception or effect as Being itself, nor do they question its meaning. In this sense, animals are considered "*weltarm*" (poor in world) and are fundamentally distinguished from humans, who are "*weltbildend*" (world-forming) [Heidegger (2004): 284]. Conversely, for Uexküll, the human cognitive world is merely one aspect of a complex *Umwelt* created by a living organism with a certain complex physical organ and nervous system. What is crucial is that the *Umwelt* is a *work* composed through the contrapuntal meaning-linkage between the *subject* and the environment. This is common to the *Umwelt* of all living beings—from humans to dogs, ticks, and amoebas—regardless of their complexity or richness of content.

What must be emphasized here is that the "*subjectivity*" here by no means implies *arbitrariness*. As argued in the previous section, what Uexküll termed "*Naturtechnik*" was not a position that regarded living organisms as the arbitrary creations of a producing *subject* standing outside of nature. Rather, it was a concept referring to the fact that the formation and functional organization of the organism's body are ordered according to certain immanent principles.

The *subjectivity* that forms the *Umwelt* is likewise inseparable from this *Naturtechnik*. The *subject* is not a being that freely *plans* a world of meaning; rather, it is a being that organizes the external world as something meaningful in accordance with the *Funktionskreis* prescribed by *Naturtechnik*. In this sense, *subjectivity* should be understood not as the antithesis of *arbitrariness*, but rather as the capacity to undertake the generation of meaning under immanent constraints.

In this paper, the purpose of addressing the second phase of *technique*—that is, the body as *techné*—was to examine the fluctuations of the boundary between the body and the external world. This section has presented a view that grasps the *Umwelt* as a *Werk* (work) created by the *subject*. However, this does not mean that the *Umwelt* is formed arbitrarily or unilaterally by the *subject*. The relationship between the *subject* and the *Umwelt* is entirely different from the relationship between an observer independent of the object and an objective thing fixed outside the *subject*. The *Umwelt* is not an observed world, but a lived world. The *Umwelt* and the *subject* are always in close interaction and are inseparable from one another.

Only by clarifying such a dynamic relationship between the body and the *Umwelt* are we prepared to consider the position of the third phase of *technique*: namely, *technique* as tools and means. In the next section, I will examine how Uexküll positioned the role of *technique* in *Umwelt* theory, based on Ernst Cassirer's (1874–1945) interpretation of the *Umwelt*.

### Section 3: Technique as an Extension of the Body

#### The Extended *Funktionskreis*

The linkage of perception and effect known as the *Funktionskreis*, possessed by each living organism, makes the world *appear* as the *Umwelt* of that specific organism. Citing this concept of the *Funktionskreis*, Cassirer claimed that “B[b]etween the receptor system and the effector system, which are to be found in all animal species, we find in man a third link which we may describe as the symbolic system” [Cassirer (1944): 42–43]. Cassirer grasped various cultural forms, ranging from language, art, religion, culture, and science to *technique*, as symbolic forms. He found the qualitative specificity of humans compared to other organisms as “*animal symbolicum*”, whose relationship with nature is mediated by these symbolic forms [Loughnane (2025): 8].

In this paper, I characterize the third phase of *technique* as something that exists outside the body and mediates between humans and the environment (such as language, *knowledge*, skills, tools, and culture). Uexküll himself did not systematically discuss *technique* in this sense. However, his fragmentary remark that machines are nothing more than “extensions of human organs” [Uexküll (1920): 157] provides an important clue for reconsidering the positioning of external tools used by humans in their actions within the framework of *Umwelt* theory. Uexküll, asserting that machines do not possess an *Umwelt*, states: “the external world of our machines, which are nothing but extensions of our human organs (*Fortsetzungen unserer menschlichen Organe*), is therefore never anything other than a part of the human world” [Uexküll (1920): 157]. Machines are *planned* by humans to be functional for human action. The *Bauplan* of a machine belongs to humans, and it only *appears* through human assembly and operation. Here, the term *Bauplan* (plan of organization), similar to “*Naturtechnik*,” refers to an immanent principle that controls the formation of the biological body. In the formation of a machine's “body,” “*Naturtechnik*”—which enables a contrapuntal relationship with the external world according to an internal order—is not at work. Therefore, a machine itself does not possess an *Umwelt* as its own unique relationship with the external world. For example, a steam locomotive drastically extends human mobility, but such a *plan* is not functional *for the*

*machine*. Thus, it is said that because they lack an internal principle of *plan* and a closed *Funktionskreis*, machines are merely extensions of human physical organs.

Although not directly linked to Uexküll's own words quoted above, Loughnane introduces the notion of *technique* as an "extension of organs" from Kapp's theory of organ projection. Kapp "pioneered the organ-projection idea in the philosophy of technology which portrays tools as projections of the human body" [Loughnane (2025): 6], presenting a co-evolutionary relationship between the body and technological objects. Technological artifacts that mediate between the body and the environment are formed by human hands, while simultaneously transforming human modes of action, perception, and thought. Through such close interaction, *technique* is essentially and inseparably tied to the human body.

Although no evidence has been found that Uexküll directly referenced Kapp's argument, they both coincide in that they grasped *technique* not as a foreign object external to the body, but as a continuum of the body that extends physical functions and expands the domains of perception and effect. However, while Kapp emphasized the unconscious externalization of physical structures and the co-evolutionary relationship between humans and *technique* arising from the transformation of human action, Uexküll positioned the machine strictly as a non-autonomous appendage lacking an immanent **Bauplan** and subordinated to the human *Funktionskreis*.

### 3-2 Function and Plan

In *Umwelt* theory, the reason such non-autonomous machines can serve as extensions of physical organs is that Uexküll grasps living organisms as "functional units" (*funktionelle Einheiten*) [Uexküll (1921): 116]. The key point here is that the extension of function does not merely mean a spatial extension of physical organs, but rather a reorganization of the entire *Funktionskreis* consisting of the linkage of perception and effect. Therefore, for a machine to function as an extension of a physical organ means that the machine is incorporated as part of the organism's *Funktionskreis* and constitutes the very conditions of action. In this sense, although the emphasis of the justification differs from Kapp's case, in *Umwelt* theory as well, *technique* is not an external object unilaterally used by a human *subject*. Rather, from the standpoint of *Umwelt* theory—which defines the living organism as a functional unit—it suggests the possibility that the totality of the *Funktionskreis*, including technological artifacts, appears as a single *subject*, rather than the human conscious self or a body independent of the environment.

Of course, this interpretation—that the totality of the *Funktionskreis* including technological artifacts can be understood as a single *subject*—is not one that Uexküll himself explicitly presented. What he sought to emphasize through the expression "extensions of human organs"

was simply that living organisms and machines are clearly distinguished by whether or not they possess an immanent *plan* of body formation (*Bauplan*). In this paper, in order to actively re-examine the relationship between *technique* and humans within the framework of *Umwelt* theory, I would like to summarize the relationship between the human body and technological artifacts as follows, based on the perspectives of function and *plan* examined since Section 1.

First, as individual living organisms, humans are functional units possessing an immanent principle of *plan* (namely, "*Naturtechnik*"). Second, however, humans can expand their own possibilities of perception and action by *planning* machines, tools, and institutions. In this sense, the possibility of interpreting the human body as extended by *technique*, or a composite *subject* of humans and technological artifacts, is suggested. *Technique* possesses a dual nature: it is an object to be *planned* and an object of action, while simultaneously serving as the bodily condition that makes action possible. In each respective action, humans reorganize the relationship between body, environment, and *technique*.

As seen in Section 2, through this contrapuntal relationship with the external world, the living organism incorporates stimuli from the outside into a unique linkage of perception and effect. Through this linkage of perception and effect (*Funktionskreis*), the *Umwelt* is formed as a world of unique relationships between the organism and the external world. In this way, determining the *appearance* of the world to the *subject* constitutes the second phase of *technique*: *techné* as art.

In Section 3, based on the "technicality of the body" and the "work-character of the *Umwelt*" established in the previous two sections, I positioned the machine as a technological artifact as an "extension of organs." In particular, by contrasting Kapp's theory of organ projection with Uexküll's view of machines, I demonstrated that in *Umwelt* theory, the machine extends the *subject's Funktionskreis* and reorganizes the entire mode of perception and effect. In the third phase, *technique* is an extension of physical organs in the sense that it is planned by humans and fulfills human functions; simultaneously, it is *techné* involved in the formation of the human *Umwelt*.

## Conclusion

In this paper, I have categorized "*technique*" in *Umwelt* theory into three phases and interconnected them from the perspectives of *plan* and function, clarifying that the

body, *technique*, and the environment form a multilayered and dynamic relationship within human action.

In Section 1, I confirmed that in *Umwelt* theory, *technique* is first and foremost themed not as artifacts such as tools, *knowledge*, institutions, or culture, but as "*Naturtechnik*" (nature's technique)—the internal principle of the formation of the biological body—and I termed this the first phase of *technique*. "*Naturtechnik*" integrates the organism's physical organs into the whole of its bodily functions, while simultaneously constructing a contrapuntal relationship between the physical organs and objects in the external world.

By delineating the connection between these three phases, it is possible to link the understanding of *technique* as a "third constituent" proposed by Loughnane (2025) with the more fundamental role of *technique* in *Umwelt* theory. *Technique* is not an additional mediating term placed between the body and the *Umwelt*. Rather, *technique* is the principle of body formation and the very principle of *Umwelt* construction itself. By technically organizing the circuit of the *Funktionskreis* that links the body and the *Umwelt* in action, the way of being of the human as a *subject* of action also continues to transform.

Building upon the considerations in this paper, a future task will be to explore the points of contact with contemporary cognitive theories that fluidize the boundary between the body and *technique*. The concept of "Natural-Born Cyborgs" [Clark (2003)]—which posits that humans inseparably incorporate external technological tools as part of their own bodily and cognitive systems—and Hayles's concept of "Cognitive Assemblages" [Hayles (2016)] between humans and non-human *technique*, are useful for discussing the extension of the *Funktionskreis* by contemporary technology. If one takes a strong interpretation of Uexküll's theory, which links *planning* with *subjectivity*, it could even be said that when automated contemporary digital technology begins to actively *plan* human action, *technique* itself becomes the *subject*, incorporating humans as components of its massive *Funktionskreis* and utilizing them as "extensions of its own organs." Based on these circumstances of contemporary society, discussing what kind of *subjectivity* humans, or human-technological composites, can possess will be an urgent task for the philosophy of contemporary technology.

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The author utilized AI-based language models, specifically ChatGPT and Gemini, to assist with English language editing and grammatical corrections. The final manuscript has been carefully reviewed and verified by the author.

## References

Citations are provided at the end of each quoted or referenced passage in the format [Author (Year of original publication): Page number]. Translations from Japanese and German sources are my own.

Cassirer, E. (1944). *An essay on man: An introduction to a philosophy of human culture*. Yale University Press.

Clark, A. (2003). *Natural-born cyborgs: Minds, technologies, and the future of human intelligence*. Oxford University Press.

Hayles, N. K. (2016). Cognitive assemblages: Technical agency and human interactions. *Critical Inquiry*, 43(1), 32–55. <https://doi.org/10.1086/689565>

Heidegger, M. (1967). *Sein und Zeit*. Max Niemeyer. (Original work published 1927)

Heidegger, M. (2000). Die Frage nach der Technik. In *Vorträge und Aufsätze* (Gesamtausgabe Vol. 7). Vittorio Klostermann.

Heidegger, M. (2004). *Die Grundbegriffe der Metaphysik: Welt – Endlichkeit – Einsamkeit (Freiburger Vorlesung Wintersemester 1929/30)* (Gesamtausgabe Vol. 29/30). Vittorio Klostermann. (Original work published 1929)

Loughnane, C. (2025). The technical milieu and its evolution: Uexküll, Kapp, Cassirer, Simondon. *Humanities and Social Sciences Communications*, 12, Article 1329. <https://doi.org/10.1057/s41599-025-05579-0>

von Uexküll, J. (1920). *Theoretische Biologie*. Verlag von Gebrüder Paetel.

von Uexküll, J. (1921). *Umwelt und Innenwelt der Tiere* (2nd ed.). Julius Springer.

von Uexküll, J. (1940). *Bedeutungslehre*. Barth.

von Uexküll, J. (2012). *Dobutsu no kansekai to naiteki sekai* [Umwelt und Innenwelt der Tiere] (Y. Maeno, Trans.). Kosakusha. (Original work published 1921)

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***Multimodal Narrative of Chinese Stories:  
Taking the International Communication of China Bouquet as an Example***

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**Abstract**

The bilingual Chinese-English publication *China Bouquet* employs multimodal narrative strategies to systematically spread China stories to the international world. This study aims to interpret its multimodal narrative pathways and international communication mechanisms from the dimensions of discourse generation, production coding, and distribution dissemination. Findings indicate that during discourse generation, *China Bouquet* leverages a cultural story prototype repository to construct a multimodal narrative blueprint for Chinese narratives; During production encoding, the publication transforms this blueprint into visualizable, perceptible products through the synergy of narrative media; in the distribution phase, it constructs an international communication system by leveraging cross-media channels and feedback negotiation. *China Bouquet's* multimodal narrative strategy embodies a synergistic support mechanism driven by narrative, collaborative actors, and media technology, offering valuable experience and paradigms for the international communication of Chinese narratives.

Keywords: China Story, China Bouquet, Multimodal narrative, International communication

## Introduction

*China Bouquet* is a bilingual Chinese-English publication (two volumes) released by Sinolingua in 2024. It aims to disseminate Chinese stories and culture to the English-speaking world and, in conjunction with the micro-documentary series of the same name, forge new pathways for cultural communication and exchange between China and the rest of the world. Against the backdrop of accelerating digital media development, the cross-cultural dissemination of Chinese narratives has become a core issue in mutual learning between Chinese and Western civilizations. While existing research focuses on subtitle translation for micro-documentaries (Gao, 2024; Yao, 2024; Zhou, 2024), few studies explore the multimodal narrative strategies employed in *China Bouquet*.

This study employs Gunther Kress & Theo van Leeuwen's multimodal discourse analysis theory, while drawing on Mona Baker's translation narrative theory and Barthes's notion of image-text relations to construct a multimodal narrative model for Chinese stories: "discourse generation—production coding—distribution dissemination." This study focuses on examining how *China Bouquet* employs multimodal narrative strategies to effectively spread China stories, while elucidating the intrinsic mechanisms of multimodal storytelling in China narratives. It aims to provide case references and theoretical insights for the cross-cultural communication practices of China stories.

## I. New Perspectives on Multimodal Narrative

As British social semiotician Gunther Kress and Theo van Leeuwen jointly proposed, the Multimodal Discourse Analysis Framework encompasses four dimensions: discourse, design, production, and distribution. This theory transcends traditional language-centered discourse analysis models, providing theoretical tools for studying how multimodal sign systems collaboratively construct meaning. Specifically: "Discourse" is defined as "socially constructed knowledge about reality (in certain aspects)" (Kress & van Leeuwen, 2001:4), meaning specific discourse choices represent meaning systems within social contexts; "Design" achieves intended communicative effects through the selection and combination of multimodal resources (ibid., 5), such as the pairing of modalities like text, images, and sound and their contribution to meaning construction; the "production" dimension focuses on the materialized presentation of the symbolic system, encompassing forms such as color in images, printed products, and video presentations (ibid., 6) ; while "distribution" denotes "the pragmatic function of facilitating preservation and dissemination" (ibid., 7), concentrating on the media channels, platform strategies, dissemination mechanisms, and reader reception of multimodal texts. Within translation studies, these four dimensions provide theoretical tools for interpreting

the multimodal narratives and dissemination of translations, offering insight into the meaning-constructing functions and underlying mechanisms of symbolic combinations.

Meanwhile, Baker's narrative theory supplements the narrative construction mechanism of cultural symbols from a translation perspective, viewing translation as a socially constructed narrative through characteristics such as particularity, genre, normativity, and accumulation (Baker, 2011: 120), guiding audience comprehension of information. Specifically, participants such as translators and editors employ specific genres to reproduce or subvert particular plot elements of the original work. During translation, they facilitate meaning adaptation by appropriately deviating from or innovating upon original narrative norms, ultimately achieving cross-cultural reproduction of discursive meaning through narrative accumulation. Based on this, this study integrates both approaches to construct a multimodal narrative framework of "discourse generation - production coding - distribution dissemination." It consolidates the "design" and "production" stages into "encoding realization," systematically elucidating the complete chain and mechanisms of meaning construction in the multimodal narrative practices of *China Bouquet*.

In the process of translation and communication abroad, Chinese stories can be defined as "narratives with China as the subject, covering various domains such as politics, economy, culture, society, and ethnicity" (Wu & Mou, 2022:76). Therefore, they can be regarded as public narratives—stories led by the state, media, and institutions and disseminated throughout society (Baker, 2011:49-50), emphasizing how cultural adaptation and meaning transmission of Chinese stories can be achieved through translation and cultural conversion. Within this multimodal narrative framework, Chinese stories generate national discourses—transforming individual memories into collective cultural identities—through the construction of diverse cultural symbols. These discourses undergo production and encoding via multimodal narrative media (e.g., books, micro-documentaries) that carry these symbols. Finally, the cumulative effects and sustained influence of cross—media distribution enable the international dissemination of Chinese stories. Building upon this framework, this paper examines the multimodal narrative construction strategies employed in *China Bouquet*, further elucidating the mechanisms of multimodal storytelling within Chinese narratives. This analysis aims to provide practical insights for enhancing the international dissemination of Chinese stories.

## **II. Discourse Generation: The Construction of Cultural Symbols**

Chinese narratives are composed of diverse cultural symbols that embody specific storylines. This section will analyze the cultural symbol construction strategies employed by *China Bouquet* during the discourse generation phase within a multimodal narrative framework,

examining how it leverages particularity, accumulation, and normativity narrative strategies to generate China's international narrative discourse.

### **(I) Cultural Identity in Particularity Narratives**

Cultural symbols form the core narrative content of Chinese stories, and the selection and structuring of representative cultural symbols are crucial for reaching target audiences. Bruner (1991:6-7) posits that particularity narratives reference specific individuals and events, deriving symbolic meaning from their embedding within universal story frameworks. The reproduction or rewriting of plots often serve as an effective means to evoke audience resonance while advancing specific social or political objectives (Baker, 2011:126-128). The editorial team of *China Bouquet* employs differentiated symbolic representations to construct a distinctive Chinese cultural identity, presenting the nation's historical memory within its narratives to target audiences.

Concrete cultural symbols carry specific value systems and aesthetic concepts in discourse generation, serving as key elements in the construction of multimodal symbol systems. The book selects nineteen cultural symbols—including bronze ware, tea, siheyuan courtyard houses, huangjiu rice wine, chopsticks, and kung fu—to collaboratively narrate Chinese stories, presenting dimensions of Chinese architecture, artifacts, landscapes, and art. Social actions within narrative texts serve significant representational functions (van Leeuwen, 2008:55). By recreating craft scenes and individual stories, the book shapes a Chinese cultural identity centered on skill inheritance, elevating the symbolic dimension of tangible symbols and fostering audience resonance. For instance, the “Mystery of Liangzhu” chapter meaningfully opens with archaeologists discovering the Jade Cong King artifact—its circular interior and square exterior structure echoing the “heaven is round, earth is square” cosmology, while its divine human and animal-face motifs embody concepts of divine-human communication and nature worship, symbolizing ritual systems and the philosophy of unity between heaven and humanity. Chinese cultural identity is thus concretized through the elevated pathway of “artifact-cosmology,” aligning with international audiences’ focus on ecological concerns. *China Bouquet* integrates culturally distinctive symbols like artifacts and architecture into its narrative network, providing international readers an effective cognitive pathway to understand the historical context and spiritual world of Chinese stories.

### **(II) The Cultural Framework of Accumulative Narratives**

The international dissemination of Chinese narratives relies not only on singular narratives to construct cultural identity but also on accumulative narratives to build an overarching cultural

framework. Baker (2011:153-154) defines “accumulation” as “a situation repeatedly influenced by a series of related narratives and the resulting shaping of a culture, tradition, or history.” Through accumulative narratives spanning temporal, spatial, and group dimensions, *China Bouquet* systematically constructs the cultural framework of Chinese narratives, fostering recognition and resonance among international audiences.

On the temporal dimension, the book traces Chinese cultural symbols from the five-thousand-year history of the Liangzhu site, through the three-thousand-year tradition of tea drinking and the millennia-old craftsmanship of Xuan paper, to the six-hundred-year splendor of the Forbidden City and contemporary courtyard life, presenting an evolutionary genealogy of Chinese narratives. Through a narrative strategy linking past and present, *China Bouquet* weaves together a cultural thread spanning millennia, facilitating discourse across eras. In the spatial dimension, cultural hubs like Beijing, Hangzhou, Tianshui, Yixing, and Dunhuang serve as vessels for Chinese narratives, vividly illustrating the flow of regional cultural symbols across cross-cultural communication. Kress and van Leeuwen (2001:32) note that discursive practices possess productive and transformative qualities; the reconfiguration of diverse symbolic resources and modalities generates new meaning structures that support narrative discourse. For instance, the book’s comprehensive presentation of Yixing purple clay teapots—the pinnacle of Chinese tea ware—showcases the entire production process: from mining and grinding to shaping, carving, and firing. This is complemented by the artistic integration of poetry, calligraphy, and painting on the teapot body, with multimodal symbols working in concert to highlight both technical heritage and aesthetic traditions. Through spatial displacement, the locally inherited purple clay teapot culture undergoes transformation and recoding, becoming a coveted object among global tea enthusiasts. From a collective perspective, the multimodal narrative of Chinese stories begins with individual laborers—bronze artisans, Dunhuang researchers, Xuan paper craftsmen—to sketch a macro-level portrait of the Chinese nation’s collective identity. Multiple narratives accumulate through cross-media formats, weaving a rich and enduring cultural tapestry across continuous time and space. This cumulative storytelling strategy not only reveals the historical depth, regional characteristics, and ethnic portraits of Chinese cultural symbols, but also transforms local narratives into vital components of the international discourse system, thereby enhancing the global visibility of Chinese stories.

### **(III) Cultural Negotiation in Normative Narratives**

After cumulative narratives establish the macro framework for multimodal narratives, normative narratives further achieve meaning adaptation through cultural negotiation. Normative narratives refer to a key characteristic of narratives, where adherence to or deviation

from norms “emphasizes the central role narratives play in upholding cultural legitimacy” (Baker, 2011:149). As the international dissemination of Chinese stories varies with cultural contexts and audience expectations, translators and editors often engage in cultural negotiation—either remaining faithful to the original narrative norms or deviating from them to innovate—thereby facilitating the effective circulation of Chinese narratives.

*China Bouquet* adopts a dual narrative perspective encompassing both national narratives and everyday life. It breaks away from the traditional single grand narrative and elite discourse in foreign propaganda, avoiding didacticism and value indoctrination. Instead, it focuses on the life details and craft practices of ordinary people. The book begins with stories of ordinary individuals—paper-making artisans, rice wine brewers, medicinal cuisine chefs, makeup artists—using “small entry points” to showcase the exquisite skills, cultural depth, and spiritual traditions within Chinese narratives, thereby enhancing emotional resonance for English readers. Moreover, the book innovatively incorporates Western concepts into cross-cultural expression. It interprets the ideal pursuit of “a world of universal harmony” through the lens of “utopian” thought and juxtaposes the “Eastern smile” of a young monk statue with the “Western smile” of the Mona Lisa. By integrating multimodal resources of text and images, it demonstrates aesthetic concepts that transcend time, religion, and national borders. Such normative narrative strategies effectively bridge cultural divides between East and West, making Chinese narratives more accessible and relatable on the global stage. Moreover, translation itself serves as a pivotal element in narrative construction. For culturally loaded terms like dynasties, historical periods, locations, and idioms, translators and editors frequently employ footnotes and marginal annotations to assist English readers in navigating cultural barriers. Take the Liangzhu site as an example: the translation includes an interlinear note “about 3,300-2,300 BC” after the place name, translating the abstract Chinese designation into a temporal concept familiar to English readers, thereby reducing cultural comprehension gaps. *China Bouquet* not only employs diverse methods to enrich Chinese narratives but also emphasizes bridging Chinese and Western cultures, enhancing international readers’ understanding of China’s aesthetic systems and value concepts.

In summary, *China Bouquet* constructs a multimodal narrative system for Chinese stories by integrating particularity, accumulation, and normative narratives strategies: particularity narratives clarify cultural identity through concrete symbols; accumulation narratives build cultural frameworks by layering meanings across temporal, spatial, and group dimensions; while normative narratives advance cross-cultural negotiation and meaning adaptation by adhering to or innovating original narrative conventions. The synergistic operation of these narrative strategies facilitates the decoding of Chinese narratives from domestic discourse to cross-cultural contexts.

### III. Encoding Implementation: Synergy of Narrative Media

After completing the symbolic composition of discourse, *China Bouquet* enters the production encoding phase. This involves transforming the discourse design blueprint into a visualizable, perceptible narrative product through the synergy of modalities and media. This encompasses dimensions such as genre-based design, modal strategies, and narrative collaboration, thereby enhancing the cross-cultural communication effectiveness of Chinese stories.

#### (I) Narrative Adaptation Through Genre Design

Driven by digital technology, cross-cultural communication media have evolved from singular textual forms into integrated, multimodal interactions involving images, audio, and video. Diverse symbols serve as vehicles for multimodal storytelling while simultaneously empowering representations of Chinese narratives (Lin, 2022:61). Given the differences between text and images in presenting characters, processes, and scenarios within Chinese narratives (Kress & van Leeuwen, 2021:45), the design of *China Bouquet* employs a multimodal combination of text, images, and hyperlinked videos to encode Chinese stories, thereby enhancing the communicative impact of the narrative discourse.

Roland Barthes proposed three text-image relationships: anchorage, relay, and illustration. Anchorage refers to the selective interpretation of images by text to control the generation of meaning (1977:40). As a vehicle for Chinese stories, each chapter of *China Bouquet* pairs a core image relevant to its theme with bilingual Chinese-English captions to anchor interpretive direction. This approach enhances the credibility and authority of the narratives while reinforcing readers' structural understanding of the chapters. The narrative text recreates scenes of crafting and restoring cultural symbols like architecture, artifacts, and tools, guiding English readers to grasp the underlying Chinese wisdom and cultural depth.

Supported by digital technology, hyperlinks "accelerate the modal transition from traditional to digital narratives," creating interactive spaces between audiences and texts (Hao & Pang, 2025:84). Each chapter of *China Bouquet* concludes with a QR code hyperlink, enabling audiences to scan and access corresponding micro-documentaries. These micro-documentaries employ on-site visits, narratives from inheritors, live footage of craft processes, and close-up shots. Combined with dynamic visuals, background music, bilingual subtitles, and textual commentary, they create concrete, immersive audiovisual narratives that evoke emotional resonance and interactive engagement among readers, compensating for the static limitations of textual descriptions. The intertextual relationship between micro-documentaries and textual

narratives not only expands the book's storytelling boundaries but also propels English readers from passive recipients to active participants in Chinese stories, significantly enhancing the effectiveness of China's international storytelling.

## **(II) Conventions and Transcendence of Modal Strategies**

Building upon its genre-based narrative framework, *China Bouquet* employs synergistic multimodal strategies to regulate and optimize the international dissemination of Chinese stories. Design is “the conscious action taken on visible, recognized, ‘available’ resources within a specific domain to create a blueprint for what is to be produced” (Kress & van Leeuwen, 2001:64). In planning its modal resources—including graphics, layout, and color schemes—*China Bouquet* both adheres to traditional conventions and achieves innovative transcendence.

Symbolic elements play a crucial role in guiding audience attention and emotional engagement, particularly through visual narrative techniques like color, layout, and character scenes (Feng, 2015:26). The micro-documentary employs story-driven cinematography to showcase everyday Chinese life, while the print book narrates through integrated text and images. Together, they establish a multimodal narrative model for China's stories. In typographic design, the gold font for main text headings echoes the book title's aesthetic, while chapter titles in the table of contents employ brush calligraphy—its fluid, vigorous strokes conveying the cultural appreciation of calligraphic art.

Within the layout, iconic cultural motifs like the Mogao Caves, Yungang Grottoes, and carved courtyard houses are integrated into the preface, table of contents, and interior pages, establishing visual cues and narrative anticipation for Chinese stories. Simultaneously, thematic patterns are embedded within each chapter's layout as backgrounds or borders (e.g., the taotie beast-face motif from Liangzhu jade cong), creating associative effects with the narrative content. The nineteen chapter motifs form a visual chain, complemented by artifact graphics, decorative patterns, and strategic white space to assist in encoding the Chinese narrative.

For color design, the book employs ten light-toned primary hues including blue, purple, and orange, with each chapter assigned a fixed color for easy navigation. Red is deliberately avoided to minimize political connotations, accommodating cultural differences between East and West. The design blueprints in the book serve as a visual symbol index, while the production process employs high-precision printing technology to materialize the patterns. QR codes bridge print media and digital platforms, enabling cross-modal communication. The

visual narrative of micro-documentaries complements the printed book, advancing the visualization and multidimensional presentation of Chinese stories.

### **(III) Collaborative Production and Narrative Negotiation**

The cross-cultural dissemination of Chinese narratives is not the export of singular texts but a collaborative narrative coding process involving multiple actors. It requires balancing authentic representations of Chinese local culture with acceptability for overseas audiences. The coding process for *China Bouquet* involves diverse roles—producers, planning editors, chief editors, authors, English translators, English editors, cover designers, and printing supervisors—who collectively weave a cross-media collaborative network spanning from narrative planning to materialized presentation.

Multimodal discourse analysis theory posits that “design” constitutes an active, intentional blueprint construction, while production elucidates the material labor and collaborative processes behind textual realization (Kress & van Leeuwen, 2001:66). During the book’s coding implementation: Producers and planning editors defined the thematic direction and narrative tone of Chinese stories, emphasizing the book’s focus on “uncovering the values, cultural significance, and spiritual qualities of the Chinese people behind each story” (Xu, 2024: Preface 4); The chief editor and authors led the transformation of micro-documentary visual narratives into textual narratives; English translators and editors handled linguistic transcoding, balancing cross-cultural precision with readability; designers embodied Chinese aesthetics through visual symbols; and print supervisors ensured the materialization of design concepts. Each step interlocked, with diverse actors collaborating in the multimodal narrative construction of Chinese stories, collectively enabling their coding realization.

The key to cross-cultural communication lies in effectively interpreting the core of Chinese culture, enabling Chinese stories to truly take root in the English-speaking world. The stories featured in *China Bouquet* span themes like ritual and music systems, belief systems, and skill inheritance. They showcase China’s profound historical depth through ancient artifacts, architecture, and cultural relics. The book employs vivid, nuanced storytelling techniques, using individual life experiences to highlight craftsmanship and patriotic ideals, avoiding rigid cultural exportation. To achieve this balance, the creation team of *China Bouquet* meticulously curated the content of Chinese stories. They fully utilized multimodal resources to present the content in a way that aligns with the cultural background and aesthetic preferences of international readers, enabling the core of Chinese stories to be understood and accepted in foreign lands.

#### **IV. Distributed Dissemination: The Social Circulation and Cultural Impact of Narratives**

Chinese stories undergo encoding through multi-party collaboration before entering the circulation sphere via “distributed dissemination.” Distribution refers to the technical “recoding” of symbolic products and events “for the purposes of recording (e.g., tape recording, digital recording) and/or transmission (e.g., telephone, radio, and television transmission)” (Kress & van Leeuwen, 2001:87). This involves multimodal symbols such as images, text, and video reaching audiences through media channels. Its dissemination effects involve cross-media form conversion, cross-platform resource integration, and coordinated dissemination strategies, collectively driving the multi-layered, comprehensive dissemination of Chinese narratives.

##### **(I) Cumulative Effects of Cross-Media Distribution**

Multimodal symbols—including text, images, and video—are disseminated through diverse media platforms. Each platform reproduces core symbols of Chinese culture, a phenomenon termed “repetitive narration” (Genette, 1990:75). By leveraging complementary media strengths, this approach expands audience reach and reinforces recognition of Chinese narratives. The core challenge of cross-media communication lies in “discovering how different modalities of media interconnect” to collaboratively convey unified meanings (Zhang, 2009: 26). *China Bouquet* employs a cross-media strategy, integrating teaser trailers, previews, micro-documentaries, and print publications to amplify the impact of Chinese narratives.

In 2019, *China Bouquet* micro-documentary was included in the Overseas Film and Television Promotion Project by the Publicity Department of the CPC Central Committee. In 2020, a 29-second teaser debuted at the China Pavilion of the Dubai Expo. In 2022, a fast-paced one-minute teaser launched with Shanghai as its narrative starting point, followed by deployments in core commercial districts of Beijing, Shenzhen, and Wuhan. This fragmented approach to audience engagement rapidly garnered significant attention. Moreover, these teasers and trailers guided audiences to actively explore Chinese narratives on social media and video platforms, creating a dissemination pathway from offline touchpoints to online engagement. This approach provided a communication window for multimodal storytelling about China.

Online platforms also played a pivotal role in disseminating Chinese narratives overseas. Micro-documentaries were released on domestic platforms like China.org.cn, Tencent, Douyin, and iQIYI, as well as international platforms such as YouTube, Facebook, and X (Twitter). Simultaneous screenings on MTR Hong Kong and China Airlines in-flight entertainment systems created an interconnected dissemination framework spanning domestic and

international audiences. Domestic platforms reinforced cultural identity within China, while international platforms reached broader global audiences, enhancing the overseas visibility of Chinese narratives.

Following its 2024 publication by Sinolingua, the print edition of *China Bouquet* was immediately cataloged by the National Library of China. This signifies the book's recognition at the national level for its narrative authority and professionalism in disseminating Chinese stories abroad. The book is also available on major domestic and international e-commerce platforms including Dangdang, JD.com, and Amazon. This facilitates the transition of Chinese narratives from institutional promotion to everyday consumer engagement, allowing them to integrate more naturally into the international discourse.

As analyzed above, the teaser and trailer for *China Bouquet* first captured attention through commercial districts and cultural centers. The micro-documentary then employed 4K resolution to showcase natural and cultural landscapes, evoking emotional resonance among audiences. Finally, the print book deepened the accessibility of Chinese narratives through its meticulous writing. This multi-media approach completes a narrative cycle of sensory engagement—emotional immersion—cultural resonance, with synergistic advantages expanding the dissemination pathways for Chinese narratives.

## **(II) Sustained Impact Through Cross-Media Distribution**

During the cross-media linkage strategy, the delayed diffusion effect of Chinese narratives in international communication continuously deepens target audiences' understanding. "Distribution" signifies both technical preservation and dissemination, while also representing the revitalization of symbolic products through new forms of expression and interactive methods (Kress & van Leeuwen, 2001:93). The international dissemination of *China Bouquet* achieves semantic proliferation of Chinese narratives through multi-level interactions and secondary creations across national, local, and social media platforms.

Authoritative promotion by national media platforms establishes credibility for *China Bouquet*'s cross-cultural narratives, while local media adaptations deepen and localize the dissemination chain. Taking the Yungang Grottoes as an example, following the broadcast of the micro-documentary *New Views of Yungang*, the Datong Evening News simultaneously interpreted the cultural significance of the grottoes in conjunction with the documentary's content (Cui, 2022), forming a bottom-up response to the national narrative. Such local coverage strengthens the connection between national narratives and regional audience

contexts by focusing on local culture, thereby deepening audiences' memory and recognition of cultural symbols.

Furthermore, secondary creation on social media extends the vitality of Chinese stories in the cultural space through cumulative narratives. WeChat public accounts (such as "yijianhuayun") and video websites share language learning materials from printed books and micro-documentaries, provide subtitle translations and analyses, and offer creative editing, giving Chinese stories new narrative perspectives. Public social media, with its openness and accessibility, caters to different audiences and groups. Audiences can interact with individual narrators through likes, favorites, and shares, constructing a shared and open digital cultural field that allows Chinese stories to be reconstructed and re-disseminated. This recoding of Chinese stories, with individual perspectives participating in the national narrative, enriches the meaning of the original narrative, enabling it to flow and engage in dialogue and mutual learning in the digital cyberspace.

### **(III) Dissemination Feedback and Optimization Strategies**

Compared to the vigorous promotional campaigns and vibrant secondary creation atmosphere on domestic media platforms, the reception of *China Bouquet* on overseas platforms remains limited. The micro-documentaries are accessible on VideoChinaTV accounts across Amazon, YouTube, and other international platforms. While "Courtyard of Harmony" has garnered 9,000 views on YouTube, other episodes have only reached a few hundred views each. Although the first two volumes of *China Bouquet* are available on Amazon, Goodreads, and other foreign platforms, no reader reviews have been posted to date. Reader feedback is scarce, and no discussion or interaction ecosystem has formed around Chinese narratives. In the digital age, the "silent data" on overseas platforms and the faint audience response reflect the practical challenges in disseminating Chinese stories internationally.

Root causes include unclear target audience definition, lack of platform operation strategies, and absence of reader co-creation mechanisms—all hindering overseas dissemination. Specifically, while "China Panorama" focuses on Chinese culture, it has not tailored dissemination strategies for overseas sinologists and academic circles, overseas Chinese communities, or general English-speaking readers. Future dissemination of Chinese stories on academic platforms could strengthen historical references by supplementing archaeological document hyperlinks, while social media platforms could highlight the visual wonders of Chinese culture through macro photography. Simultaneously, online platforms should establish related book recommendations or reading channels to enhance overseas visibility. Micro-documentary promotion should maximize reach among VideoChinaTV's existing audience

while strengthening social media traffic diversion mechanisms. Furthermore, we must leverage advantageous nodes for Chinese cultural exports—such as Confucius Institutes, cultural institutions, international book fairs, and academic conferences—to broaden dissemination pathways. Regarding reader feedback, shared cultural spaces within Amazon and YouTube book review communities will stimulate overseas audiences’ engagement, discussions, and derivative works, extending the narrative lifespan of Chinese stories.

In summary, through cross-media circulation, multimodal delayed diffusion, and feedback-optimized coordination, the multimodal narrative of *China Bouquet* constructs a distributed dissemination system. Cross-media platform synergies create pathways guiding audiences from offline engagement to online exploration. National, regional, and social media platforms catalyze the semantic proliferation of Chinese narratives, while practical constraints in overseas dissemination conversely drive the refinement of international communication strategies. The cross-cultural transmission of Chinese narratives must also undergo a transformation from one-way dissemination to two-way interaction, thereby genuinely advancing international communication and mutual cultural exchange.

## **V. The Multimodal Narrative Mechanism in China Bouquet**

As a vital component of national cultural communication, the multimodal narrative practice of *China Bouquet* embodies systematic regulatory strategies for the international dissemination of Chinese stories. This section analyzes the intrinsic mechanisms of multimodal storytelling in Chinese narratives through three dimensions—narrative-driven construction, multi-institutional collaboration, and media technology deployment—using the international dissemination of *China Bouquet* as a starting point.

### **(I) Narrative Drive: From Chinese Stories to Building a Cultural Story Prototype Library**

When promoting Chinese culture abroad, *China Bouquet* draws its fundamental impetus from the national macro-narrative of “Telling Chinese stories well.” It distills a set of “translatable story prototypes” centered on themes like civilization, ecology, and craftsmanship. These prototypes possess strong cross-cultural acceptability, focus on non-political cultural symbols, and fully leverage multimodal expression forms. Regarding the scope of story archetypes, cultural symbols like tea culture and martial arts are deeply rooted in Chinese traditions while also appearing in cultural practices across other nations, providing a natural foundation for cross-cultural resonance. During content selection, *China Bouquet* deliberately avoids political symbols to enhance its appeal in translation contexts, enabling the internationalization of its narrative strategy. The book centers on individual perspectives, daily life, and local cultures, employing a soft narrative tone to minimize the influence of national macro-narratives and

ideology. Furthermore, its multimodal presentation fully demonstrates the driving force of narrative, enabling Chinese stories to be “transferred, transformed, utilized, and reimagined” (Zhong, 2019:126) across diverse modal resources. Within this framework, the textual modality unearths historical contexts and underlying ideologies through storytelling, archival references, and journalistic reporting. The visual modality—integrating photography, murals, models, and ruins—encodes complex cultural elements, amplifying the intuitive expressiveness of cultural imagery. The case of *China Bouquet* demonstrates how multimodal narratives enrich the layered complexity and perceptibility of Chinese stories, expanding the reach and impact of their international dissemination networks.

## **(II) Institutional Collaboration: Co-Construction of Narratives by Diverse Actors**

The multimodal narrative process of *China Bouquet* reveals that the international dissemination of Chinese stories inherently involves systematic practices across discourse generation, production encoding, and distribution dissemination. This encompasses collaboration among multiple institutions and teams, including planning, chief editorship, English translation, layout design, printing supervision, and publishing distribution. Specifically, the micro-documentary received support from the Cultural Communication Center of the China Foreign Languages Publishing Administration, which established its overarching narrative direction and discourse standards. Its production involved collaboration among chief planners, consultants, producers, supervisors, screenwriters, directors, cinematographers, editors, translators, proofreaders, and narrators. The print book was edited by Xu Baicheng, the micro-documentary's chief director, who led the planning, editing, translation, design, and printing of the print narrative. All illustrations were sourced from the micro-documentary, ensuring consistency across media platforms. Published by Sinolingua, the book's richly illustrated format emphasizes conveying the cultural connotations and values underlying Chinese stories. This collaborative model of “state institutions + professional teams” ensures the narrative aligns with national strategic objectives while also catering to the aesthetic preferences and expectations of international audiences.

Beyond the narrative's delivery mediums—micro-documentaries and books—its dissemination channels also reflect multi-stakeholder collaboration, indirectly influencing the survival and dissemination prospects of Chinese stories in the English-speaking world. The print edition of *China Bouquet* is distributed through multiple channels including Amazon, JD.com, and Dangdang.com. Bilingual micro-documentaries leverage online platforms such as Facebook, YouTube, Art China Website, and Tencent Video for international dissemination, fostering synergistic dissemination pathways that integrate online and offline, textual and visual formats. The diverse institutional actors and platform media involved in Chinese

narratives provide robust support throughout their entire lifecycle—from conceptual blueprinting and material production to international circulation—collectively weaving a global distribution network for these stories.

### **(III) Media Technology: Technical Encoding, Modal Coordination, and Platform Adaptation**

As scholars note, “multimodal narrative is not a simple superposition of modalities but emphasizes their synergistic relationships” to enhance audience emotional immersion (Fu, 2025:196). The multimodal narrative practices in *China Bouquet* demonstrate that the international dissemination of Chinese stories relies not only on content creation but also on the collaborative influence of technical encoding, modal coordination, and media platforms.

At the technical encoding level, visual imagery, background music, and subtitle language collectively participate in narrative construction, transforming Chinese stories into transmissible multimodal forms. At the modal orchestration level, static books carry high-density Chinese narratives, while dynamic micro-documentaries serve as cultural triggers. Embedded QR codes within the book serve as link points, enabling modal transitions and active audience participation, thereby expanding multimodal interaction dimensions. For platform adaptation, *China Bouquet* employs a color-printed format featuring Chinese-English bilingual text, rich illustrations, and cultural annotations. It partners with multiple book retailers to facilitate academic dissemination and library circulation. The micro-documentaries, each five minutes long, feature a fast-paced, multi-scene style with high emotional resonance. They are distributed across multiple overseas media platforms, using distinctive Chinese cultural symbols to attract target audiences. This combination of diverse media formats and distribution channels creates a comprehensive communication pathway for Chinese stories to reach international audiences.

Overall, the multimodal narrative case study of *China Bouquet* reveals an international communication system for Chinese stories jointly constructed through narrative drive, institutional collaboration, and media technology dimensions. At the narrative drive level, the editorial team established a systematic repository of cultural story archetypes, providing the content foundation for cross-cultural dissemination of Chinese narratives. Institutional collaboration ensures the authority and consistency of narrative discourse through official guidance, professional production, and market circulation. Media technology, meanwhile, expands presentation methods and boosts dissemination efficiency through technical encoding, modal coordination, and platform adaptation. Collectively, these three dimensions synergize to make China’s international storytelling more precise, efficient, and compelling.

## Conclusion

As a key vehicle for disseminating Chinese narratives globally, *China Bouquet* employs multimodal storytelling to systematically and intuitively present China's cultural symbols, lifestyles, and value systems to the English-speaking world. Throughout the stages of discourse generation, coding implementation, and distribution dissemination, diverse institutions and creative entities collaborate closely in narrative production while fully integrating technical coding, modal coordination, and platform adaptation. Although multimodal narrative strategies effectively reduce cultural barriers, the international dissemination efficacy of Chinese stories remains constrained by platform logic and audience positioning. For future international dissemination pathways of Chinese narratives, audience analysis and precise targeting require further enhancement, while cross-platform collaborative dissemination and impact evaluation mechanisms should be refined. Meanwhile, we must explore transforming data from low-response or silent audiences into more valuable feedback, thereby expanding new possibilities for the global dissemination of Chinese stories.

## References

- Baker, M. (2011). *Fanyi yu chongtu: xushixing chanshi* [Translation and conflict: A narrative account]. Translated by Zhao Wenjing. Beijing: Peking University Press.
- Barthes, R. (1977). Rhetoric of the image. In Barthes, R. & Heath S (Eds.), *Image-Music-Text* (pp. 32-51). London: Fontana.
- Bruner, J. (1991). The narrative construction of reality. *Critical inquiry*, 18(1), 1-21.
- Cui, L.Y. (2022). Zhongying wen duan jilu pian [The bilingual short documentary All-encompassing China focuses on the new landscape of Yungang]. *Datong Evening News*, 2022-11-20. [http://epaper.dtnnews.cn/dtwb/html/2022-11/20/content\\_52\\_175124.htm](http://epaper.dtnnews.cn/dtwb/html/2022-11/20/content_52_175124.htm).
- Feng, D.Z. (2015). Shijue yufa de xin fazhan: jiyu tuhua shu de xushi shijue fenxi kuangjia [New developments in visual grammar: A visual narrative analysis framework based on picture books]. *Foreign Language Education*, 36 (03), 23 -27.
- Fu, Y.Y. (2025). Shuzi shidai chuantong wenhua de duomotai xushi yu kuameijie chuanbo [Multi-modal Narrative and Cross-media Communication of Traditional Culture in Digital Age]. *Jiangxi Social Sciences*, 45(02), 195-205.
- Gao, S. (2024). Zhongying shuangyu jilupian Wanxiangzhongguo de kuawenhua chuanbo celue yanjiu [A Study on the Cross-cultural Communication Strategy of the Bilingual Documentary *China Bouquet*]. *Media*, (13), 54-56.
- Genette, G. (1990). *Xushi huayu xin xushi huayu* [Narrative discourse, new narrative discourse]. Translated by Wang Wenrong. China Social Sciences Press.
- Gunther K. & T. van Leeuwen. (2001). *Multimodal discourse: The modes and media of contemporary communication*. London: Arnold.
- Gunther K. & T. Van Leeuwen. (2021). *Reading images: The grammar of visual design*. London/New York: Routledge.
- Hao, L.T. & Pang, H.M. (2025). Cong chaowenben dao chaojiemian: Zhongguo gushi guoji chuanbo shuzi xushi de duomotai jiangou luoji [From hypertext to hyperinterface:

- multimodal construction logic of Chinese stories international communication digital narrative]. *Editorial Friend*, (08), 82-88.
- Lin, Y.K. (2022). "Jianghao zhongguo gushi" de xushi luoji yu shijian lujing [Narrative logic and practical path of "telling China story well"]. *Media*, (07):59-61.
- Van Leeuwen, T. (2008). *Discourse and practice: New tools for critical discourse analysis*. Oxford: Oxford University Press.
- Wu, Y. & Mu, Y.W. (2022). Zhongguo gushi de duomotai guojia fanyi celue yanjiu [A Study of Multimodal National Translation Strategies for Chinese Stories]. *Foreign Language Education*, 43 (01), 76 -82.
- Xu, B.C. & Yang, H. (2024). *China Bouquet*. Volume 1: Chinese-English. Beijing: Sinolingua.
- Xu, B.C. & Yang, H. (2024). *China Bouquet*. Volume 2: Chinese-English. Beijing: Sinolingua.
- Yao, L. (2024). Gongneng duideng lilun shijiao xia jilupian Wanxiangzhongguo diyiji zimu fanyi jiqiao tanjiu [A Study of Subtitle Translation Techniques in the Documentary *China Bouquet* (Volume 1) from the Perspective of Functional Equivalence Theory]. *Comparative Study of Cultural Innovation*, 8 (36), 31 -35.
- Zhang, D. L. (2009). Duomotai huayu fenxi zonghe lilun kuangjia tansuo [A comprehensive theoretical framework for multimodal discourse analysis]. *Foreign Languages in China*, 6 (01), 24 -30.
- Zhong, Y. Q. (2019). Chaoyue de gushi shijie:wenxue kuameijie xushi de yunxing moshi yu yanjiu jinlu [Beyond the "story world": the operating mode and research approach of literary cross-media narration]. *Literary and Artistic Contention*, (08), 126 -134.
- Zhou You. (2024). Subtitle translation from the perspective of Eco-Translatology: A case study of *China Bouquet*. *Journalism*, 14(5), 317-324.

## *Invitation to Postcolonialism: Cross-Boundaries Approach to the Legacy of Imperialism*

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### **Abstract**

This essay presents a methodological perspective for confronting the legacy of imperialism by examining my own academic and social practice as a Japanese researcher. Postcolonial studies have developed as an academic field that investigates how the history of imperialism and colonialism shapes the contemporary world order. Although colonialism is often treated as a past event, its historical violence continues to be reproduced, solidifying structures of inequality and exclusion.

This essay reframes postcolonial studies as the result of an interplay between research activity and social practices. A case study of my academic and social practices as a Japanese researcher demonstrates that the movement toward decolonization unfolds through crossing disciplinary boundaries as well as national and regional boundaries, and that an intersectional perspective is essential when addressing postcolonial issues.

Drawing on insights from this case, this essay proposes a methodological framework termed the cross-boundaries approach. This approach encompasses three types of boundaries: (1) disciplinary boundary, (2) national and regional boundary, and (3) boundary among social divisions by race, gender, class, etc. Its significance lies not simply in traversing these boundaries, but in the process of continuously reflecting on oneself and reconfiguring research questions through encounters with others. Such a practice marks a starting point for confronting the legacy of imperialism in contemporary society.

Keywords: Postcolonialism, Interdisciplinary research, Intersectionality, Autoethnography

## **1. Invitation to Postcolonialism**

Postcolonial studies have developed as an academic field that examines how the history of imperialism and colonialism shapes the current world order. In contemporary society, where colonialism is often taken as a past event, reexamining how its historical violence and unequal power relations have formed a “system of knowledge” (Said, 1979, p.6) and been incorporated into present social structures remains an important challenge. In particular, for researchers who have adhered to the imperialist/colonizer position, postcolonial studies can be an opportunity to question their own positionality and academic practices.

Against this background, researchers in the Japanese-speaking world, including Kōya Nomura (2012, 2019), Mai Ishihara (2020, Ishihara & Murakami, 2024), and Fukuko Tamashiro (2022), have presented a perspective for interpreting structures of inequality and exclusion in contemporary society while considering the historical continuity of colonialism. They demonstrate the significance of reconsidering the legacy of imperialism, not simply as a historical issue, but as an issue sustained by systems of knowledge and embedded in current academic and social practices. At the same time, their discussions also contain a self-reflective opportunity to reexamine the position from which researchers themselves engage in postcolonial studies.

This essay aims to present a methodological framework for confronting the legacy of imperialism by examining my own academic and social practice as a Japanese researcher. In doing so, it focuses on three types of boundaries: (1) disciplinary boundary, (2) national and regional boundary, and (3) boundary among social divisions by race, gender, class, etc. By presenting a “cross-boundaries approach” that traverses three types of boundaries, this essay reconsiders postcolonial studies as the result of an interplay between research activity and social practice.

## **2. Confronting Undying Colonialism/Activating Postcolonial Studies**

Addressing postcolonial issues involves an attempt to “transform contemporary society, which is built on the history of imperialism, by reexamining that history” (Takayanagi, 2025b, p.164). Michael W. Doyle, an American political scientist, focuses on the relationship between the metropole and its colony and defines empire as “a relationship, formal or informal, in which one state controls the effective political sovereignty of another political society” (Doyle, 1986, p.45). Based on this definition, Doyle considers imperialism as “the process or policy of establishing or maintaining an empire” and argues that it can be implemented “by force, by

political collaboration, by economic, social, or cultural dependence.” In other words, imperialism refers to the theory and practice by which a metropole dominates a distant territory and the indigenous peoples (Said, 1994).

Doyle (1986) argues that there are three steps required to explain the global expansion of empire: First, demonstrating the existence of control over the colony and indigenous peoples; Second, explaining why one state expands its territory and establishes such control; Third, elucidating why indigenous peoples submit or fail to resist effectively. Each step problematizes imperialist attitudes. Therefore, it is indispensable to examine the gestures and policies of people affiliated with the empire—politicians, diplomats, researchers, journalists, travelers, traders, intellectuals, investors, artists, and others—to undertake these tasks (Said, 1994).

In *Culture and Imperialism*, Edward W. Said (1994) builds upon Doyle's arguments to conceptualize “colonialism” as a consequence of imperialism. It is a state in which an empire dominates a colony and deprives the indigenous peoples of their right to self-determination. Said (1994) further notes that even if colonialism has formally ended, imperialism “lingers where it has always been” (p.9), implemented in the cultural sphere through political, economic, and social practices. Formal colonialism has largely ended because many of the colonies have achieved independence. However, this does not mean the end of colonialism itself. As long as imperialism “lingers where it has always been,” colonialism persists. The only difference is that the colonialist project ceases to be implemented in a “formal” manner and is now exercised in an “informal” and more sophisticated manner, and therefore, continues in a way that is difficult to recognize.

Given this situation, the prefix “post” in the term postcolonialism does not imply the end of colonialism (Nomura, 2012; 2019; Ukai, 1998). Colonialism persists. Nevertheless, in our everyday life, it is perceived as if it has already ended and spoken of as if it were a past event. The term “postcolonialism” is used to describe this situation of “undying colonialism—a colonialism that cannot and will not breathe its last breath” (Ukai, 1998, p.42).

Postcolonial studies is an academic practice that critically examines the past and present of imperialism to conceptualize the end of colonialism. And since colonialism is a historical condition created by imperialists and colonizers, it is the gestures and policies of people in these positions that should be problematized first. To contextualize it in terms of the Japanese state, it is the gestures and policies of Japanese people, including myself, that are in question. Nomura (2019) explains the tasks postcolonial studies should undertake as follows.

Postcolonial studies, first and foremost, is an academic practice that problematizes the colonizer. To put it in the context of the Japanese state, it is an academic practice that problematizes the Japanese as the colonizer, thoroughly debunks the political character of the Japanese who let colonialism persist to this day, analyzes and elucidates the mechanisms by which its power operates, and thereby conceptualizes the end of colonialism. In discussions of postcolonialism, the Japanese cannot place themselves in a privileged position that exempts them from being problematized, that is, in a safe position of neutrality or objectivity. (p.31)

Doyle charts a path to problematize the global expansion of imperialism by proposing three tasks. In contrast, Nomura discusses the local context in which the Japanese exercise colonialism upon Okinawans, meticulously analyzes its mechanisms, and charts a path for Japanese people to engage in decolonization<sup>1</sup>. Based on Nomura's discussion, we can add two tasks for postcolonial studies: debunking the political character of the colonizer and analyzing and elucidating the mechanisms by which colonialism operates, thereby conceptualizing its end. These tasks require an understanding of imperialism and colonialism within local and transnational power relations. Therefore, postcolonial studies must consider both local and global contexts.

As outlined above, postcolonial studies not only critically examine the problems generated by imperialists and colonizers but also challenge the gestures and policies of people enjoying such positions. Consequently, even researchers positioned as imperialists or colonizers “cannot place themselves in a privileged position that exempts them from being problematized.” Therefore, when engaging in postcolonial studies, it is essential to reexamine one’s positionality and intellectual practice critically.

Hence, I will examine my academic and social practices as a case study. By analyzing my practices that span both inside and outside the academic world, I will trace my “decolonizing journey” (Mayuzumi, 2011).

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<sup>1</sup> The first chapter of Nomura's (2019) book was translated into English by Annmaria Shimabuku (Nomura 2012, Shimabuku 2012a). Shimabuku(2012b) also reconsidered the issue of the U.S. military bases concentrated in Okinawa in a global context, reframing it as “the product of mutual colonialism by the United States and Japan” (p.131).

### 3. Tracing My Decolonizing Journey

I have engaged in various activities by leveraging my status as a researcher (graduate student), university systems, and social relationships. These activities served as opportunities to test my “zone of interest”<sup>2</sup> and broaden my horizons. This chapter focuses on the period since my enrollment in graduate school in 2022 to analyze my activities both inside and outside the academic world. By tracing the systematic conditions and social relationships within which I have thought and acted, I will explore the possibilities of decolonization.

This endeavor does not signify a complete disengagement from research complicit in colonization. Rather, it is “the beginning of and a pledge for our continuous labor of self-reflective interrogation” (Toyosaki, 2017, p.35). Even before writing this essay, I have repeatedly reflected on myself. Nevertheless, I say it is a “beginning” because now and here I am starting it anew. It is also “a pledge” because “self-reflective interrogation” will not be completed by this essay, but should be continued on different occasions by different people. It starts and restarts; it will never ultimately conclude. Therefore, it is “a pledge” not to end it now and here, but to undertake it again in the future.

Repeatedly asking “what brought me here?” (Garbe, 2024, p.701) in different contexts has allowed me to reflect on my position. Such endeavors enable me not only to “generate important epistemological insights within a particular research field” (Garbe, 2024, p.696) but also to examine the “complicity” (Marcus, 1997) in my academic and social practices.

#### 3-1. University System and My Policy

My academic and social practices cannot be separated from the system of the university with which I am affiliated. The various privileges I have enjoyed as a graduate student have enabled me to access diverse opportunities, choices, and resources<sup>3</sup>. Instead of treating the systematic conditions as invisible premises, I will explicitly examine them as factors that have shaped my positioning as a researcher.

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<sup>2</sup> I borrow the term “zone of interest” from the title of a film directed by Jonathan Glazer, which tells the story of the camp commandant Rudolf Heß and his family, who lived peacefully next door to the Auschwitz concentration camp during World War II.

<sup>3</sup> In *An Invitation: Queering Reproductive Justice*, Candace Bond-Therault (2024) defines “privilege” as “the unencumbered ability to access opportunity, choice, and resources,” and “oppression,” the antithesis to privilege, as that which “hinders one’s ability to exert one’s free will without consequence or criminalization” (p. 17).

The University of Osaka, which I am affiliated with, has established the “Double-Wing Academic Architecture” (DWAA) as its goal for nurturing doctoral professionals (Figure 1). The “Double-Wing” refers to the “Fusion of Knowledge” and the “Integration of Knowledge with Society.” In other words, in addition to “Deepening of Knowledge” conventionally undertaken by graduate education, this system aims to develop the skills to act across disciplinary boundaries as a researcher (“Fusion of Knowledge”) and to cultivate the capability to engage in practical activities addressing societal issues as an intellectual (“Integration of Knowledge with Society”)<sup>4</sup>.

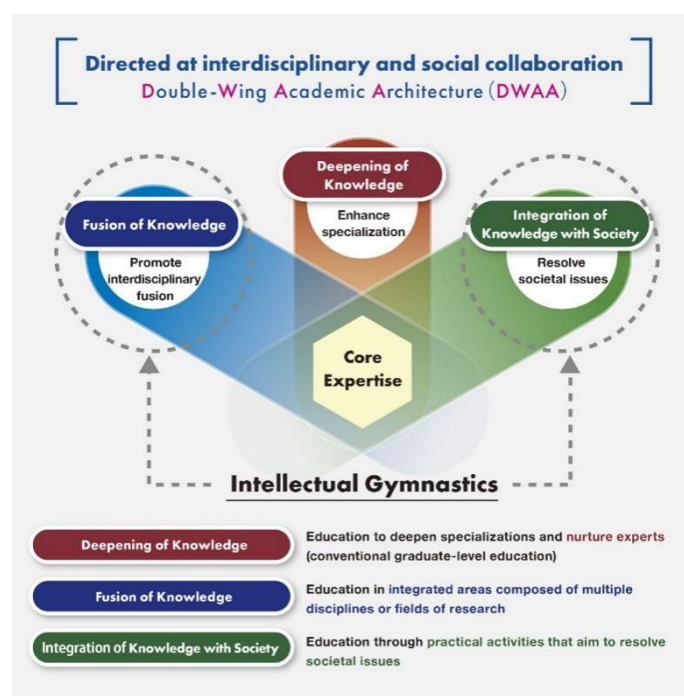


Figure 1: Double-Wing Academic Architecture.

*Note.* Three components of the Double-Wing Academic Architecture conceptualized by the University of Osaka. The University of Osaka, Institute for Transdisciplinary Graduate Degree Programs, n.d., (<https://itgp.osaka-u.ac.jp/en/systems/dwaa/>).

The three principles— “Deepening of Knowledge,” “Fusion of Knowledge,” and “Integration of Knowledge with Society”—exhibit a high degree of affinity with the direction of my academic and social practices. I have researched postcolonial theory through the texts of

<sup>4</sup> For example, the Cross-Boundary Innovation program to which I belong aims to “nurture highly skilled professionals who can conceptualize an ‘ideal form’ confronting the complex and challenging situation in a society and create new values by envisioning an alternative enhancement of knowledge and fusion of knowledge. In essence, it seeks to nurture individuals capable of guiding innovation across various boundaries, ultimately leading to the transformation of social systems”(The University of Osaka Cross-Boundary Innovation Program).

Gayatri C. Spivak<sup>5</sup> focusing on the complexities of oppression caused by race, gender, and class (“Deepening of Knowledge”), engaged in groundwork for postcolonial studies crossing disciplinary boundaries (“Fusion of Knowledge”), and attempted to build infrastructure for tackling ongoing colonialism (“The Integration of Knowledge with Society”). I have at times utilized opportunities and resources provided by the university system to conduct these activities. For example, the Cross-Boundary Innovation Program (hereafter referred to as CBI Program), to which I belong, aims to nurture individuals capable of undertaking practical activities to solve social problems and supports student activities conducted outside the academic world. I was involved in a peacebuilding activity related to the Israeli- Palestinian conflict during my undergraduate years, and I have engaged in activities on that conflict alongside my research after entering graduate school, sometimes utilizing the opportunities and resources provided by this program<sup>6</sup>.

Another example is to be a member of the Next Generation Researcher Development Project that supports interdisciplinary collaborative research projects. I am currently taking advantage of the grant to conduct collaborative research<sup>7</sup>. In this way, part of my activities is made possible by utilizing the opportunities, choices, and resources provided by the university system.

The opportunities and resources provided by the university system have broadened choices for academic and practical activities inside and outside the academic world, while shaping my positioning as a researcher. However, activities within the system also entail constraints. In that case, I have sought opportunities outside of the university<sup>8</sup>.

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<sup>5</sup> Spivak is a postcolonial thinker born in India. In her major work “Can the Subaltern Speak?” (Spivak, 1988), Spivak questions the representation of women of color in academia, which has been dominated by white men, and the power relations that made this possible. Spivak has also suggested alternative directions of academic disciplines, including area studies and comparative literature (Spivak 2003, 2012).

<sup>6</sup> Regarding my activities on the Israeli-Palestinian conflict during my undergraduate years, see Takayanagi (2025c). Additionally, I worked with my colleagues on a group project supported by the CBI Program after entering the graduate school (Fujisaka, 2024, June 25).

<sup>7</sup> As will be discussed later, the collaborative research project I am working on with my colleague aims to trace how the memories of Okinawan and Korean women, forced to be sexual slaves during the Battle of Okinawa, have been recorded and preserved in Okinawan and Korean societies. However, from 2026, the administrative officers of the project decided to regulate opportunities for interdisciplinary collaborative research. The idea of “Fusion of Knowledge” is misdirected by the officers, and the project, designed to encourage collaborative research, deprives researchers of opportunities for “challenging” collaborative research, including ours.

<sup>8</sup> It does not deny the fact that I have been complicit with the university system. The interplay between inside and outside the system matters.

Thus, my research interest has been shaped by the activities inside and outside the university system. It is the interplay of the possibilities opened up by that system and my activities beyond that system that allows me to contemplate. The next section examines the social activities I engaged in outside the academic world and traces the process of my unlearning. Sometimes these activities have been accompanied by tension with systematic conditions and international affairs.

### **3-2. Outside the Academic World: Learning from Activism and Fieldwork**

My academic research is driven by the sense of incomprehension (Iwakan) I have felt through various activities. That sense triggers my thinking and leads me to read the texts of thinkers like Spivak, seeking clues to give words to something underlying the sense of incomprehension<sup>9</sup>.

October 7, 2023, was a significant turning point for me (Takayanagi, 2025a). Hamas crossed the border of the Gaza Strip and attacked Israeli citizens that day, and Israel reacted with a large-scale military operation in the Gaza Strip. I had planned to visit Palestine/Israel from October 12 to November 2 as a part of my project in the CBI Program and participate in a program and an event organized by local NGOs and other organizations. This plan was developed through repeated contact with NGO members, researchers, and my friends. However, in light of the recommendation by the Ministry of Foreign Affairs of Japan, the university policy on visiting abroad, and requests from the staff of the program, I had to abandon this plan.

After that, I was seized by an obsession that I had to do something. I started participating in events such as photo exhibitions and lectures. People I met there told me about information on demonstrations, and I began participating in them. Meeting the members of Maqluba<sup>10</sup> was particularly important for me. Not only did I learn a lot about grassroots solidarity movements from the members, but they also introduced me to activities within the sexual and gender minority community. This provided me with an opportunity to reflect on gender, sexuality, and

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<sup>9</sup> In a different place, I conceptualized this mode of thinking as a part of the project named Eastern metaphysics (Takayanagi, in press a). I also found the significance of this mode of thinking in Spivak's text. (Takayanagi, in press b) In her words, imagination is defined as "thinking absent things" (Spivak, 2012, p.16).

<sup>10</sup> Maqluba is a Japanese civic organization. Its name comes from the Arabic word maqluba, meaning "upside down" or "to turn over." Maqluba is also the name of a traditional Middle Eastern dish in which a pot of rice, vegetables, and meat is cooked together and then flipped upside down onto a plate before serving. By adopting this name, the group expresses its wish to "turn over" or transform the current situation in Palestine—challenging injustice and envisioning a more just and peaceful reality (Paresuchina to tsunagaru Shashinten Project Makuruba, 2024).

the social norms that govern them—issues I had long felt uneasy about but hadn’t had a chance to think about or adequate resources.

Another important opportunity for me was participating in the “Participatory Mini-Project for Queer Palestine Solidarity” hosted by the Kansai Queer Film Festival on February 25, 2024. This event provided me with an opportunity to contemplate how to stand with the Palestinian from a queer perspective. It also brought me a chance to get to know people concerned not only with the Israeli-Palestinian conflict but also with postcolonial issues in the Japanese context.

These activities enabled me to learn about the discrimination based on race, ethnicity, gender, and sexuality, embedded in Japanese society. Consequently, my “zone of interest” expanded to encompass Japanese colonialism (Takayanagi, 2025c). Thus, I planned the project entitled “A Cross-Boundaries Examination of the Current State of Japanese Colonialism: Bridging Disciplinary, Regional, and Societal Boundaries,” supported by the CBI Program. A part of this project was to organize the report session for the Kibotane Youth Tour 2025 Spring, which I participated in during March 2025 (Fujisaka 2025)<sup>11</sup>. Additionally, I conducted fieldwork in Okinawa and Hokkaido to study the history and present state of Japanese colonialism.

Engaging in the solidarity movement with Palestinians and fieldwork in South Korea, Okinawa, and Hokkaido brought me chances to reexamine my thoughts and position while realizing my narrow horizon and accumulating a sense of incomprehension of Japanese history of colonialism. And it is precisely by transforming the sense of incomprehension into questions that my academic practice is driven.

### **3-3. Inside the Academic World: Deepening of Knowledge and Bridging Disciplinary Boundaries**

My activities inside the academic world aim to revitalize postcolonial studies. I have sought to ensure that the findings of my theoretical research are accessible to researchers in other disciplines. Hence, I consider it essential not only to search for the achievements of postcolonial studies developed in various fields but also to learn about the challenges of research practice and the methodologies adopted in each discipline through exchanges with fellow researchers. Of course, it is impossible to be familiar with every academic field. My

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<sup>11</sup> The Kibotane Youth Tour is a study tour organized by Kibo no Tane Kikin (the Seed of Hope Fund), which provides an opportunity for young Japanese to learn about the history of Japan’s colonial rule of the Korean Peninsula and the issue of Japanese military “comfort women.” This report session was voluntarily organized by four participants of the tour from the Kansai area, Japan, including me.

understanding of academic research is heavily shaped by my “zone of interest,” as well as by the environments and social relationships in which I am situated. While remaining mindful of this “complicity,” I examine a case from my own practice.

In the Japanese-speaking world, the texts of Spivak that I specialize in—particularly “Can the Subaltern Speak?”—have been widely read and referenced by researchers across diverse disciplines. When I entered the Graduate School at the University of Osaka, faculty members and graduate students were holding a book club on “Can the Subaltern Speak?”, which I joined partway through<sup>12</sup>. This reading group provided me with an opportunity to revisit Spivak’s text from new perspectives and to meet researchers from different fields.

It was through researchers I met at this reading group that I first encountered a qualitative research method called autoethnography<sup>13</sup>. One person I met there later became an editor of an introductory book on autoethnography published in Japanese and gave me the opportunity to write an entry on “Postcolonial Studies” (Takayanagi, 2025b) for that volume (Tsuchimoto et al., 2025)<sup>14</sup>. This experience also provided me with an opportunity to meet researchers seeking to introduce autoethnography into academia in the Japanese-speaking world and to learn more about this method. Contributing to the introductory book was a valuable experience for me: it enabled me to survey the achievements of postcolonial studies and Indigenous studies that utilize autoethnography in the English-speaking world and to explore the possibilities this research method has opened up within these fields.

In writing an entry on “Postcolonial Studies,” I set three objectives: (1) to organize the essential points of postcolonial studies based on prior research; (2) to introduce to Japanese-language readers the achievements of postcolonial studies and Indigenous studies that utilize autoethnography in the English-speaking world; and (3) to demonstrate the relevance of these research achievements for addressing postcolonial issues in the Japanese context. Because postcolonial studies has not yet been fully institutionalized as an academic field in the Japanese-speaking world, I aimed not simply to introduce research achievements from the English-speaking world, but to render them accessible by situating them within the Japanese context.

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<sup>12</sup> The following are the achievements of this book club (Higaki, 2023; Katsura & Higaki, 2022; Miyamae et al., 2022).

<sup>13</sup> Autoethnography is a qualitative research approach that examines the researcher’s own lived experience in relation to broader cultural, social, and political contexts (Adams et al., 2014).

<sup>14</sup> Before the publication of this book, the only introductory book on autoethnography available in the Japanese language was the Japanese translation of an English book, *Autoethnography: Understanding Qualitative Research* (Adams et al., 2014). Regarding the research trend of autoethnography in Japan, see Tajima & Nakatsubo (2024).

In tackling these tasks, I felt compelled to constantly reexamine my position because as a Japanese positioned on the side of the imperialist/colonizer, writing with reference to *The Autoethnography of Silence* (Ishihara, 2020) and *Okinawa and Sociology of Sexuality* (Tamashiro, 2022)—both of which made critical interventions in postcolonial studies in the Japanese context—always carried the risk of “ideologically consuming” (Ishihara & Murakami, 2024, pp.309-333) them.

Furthermore, I repeatedly considered to whom this text is addressed. Its readers can be Japanese, Ainu, or Okinawan people. They can be Koreans in Japan, foreign nationals, or people of mixed heritage. They may occupy marginalized positions not only in terms of ethnicity or race, but also gender, sexuality, class, or other factors. Writing the entry entitled “Postcolonial Studies” while envisioning such diverse readers was a challenging process, and it was itself a “self-reflective interrogation”.

#### **4. Cross-Boundaries Approach**

The cases show that my academic and social practices unfold as movements that traverse three types of boundaries: (1) disciplinary boundary, (2) national and regional boundary, and (3) boundary among social divisions. The following focuses on these boundaries and conceptualizes the cross-boundaries approach as a methodological framework.

##### **4-1. Crossing the Disciplinary Boundary**

The first boundary is that of academic disciplines. Postcolonial studies developed from the humanities, including literature, history, and anthropology. Today, this field has expanded into social sciences (Go, 2016; Tamashiro, 2022). Thus, postcolonial studies have evolved as an interdisciplinary project that cannot be confined to any single academic discipline. So long as imperialism and colonialism oppress the colonized in various aspects of everyday life, it is impossible to grasp the full picture of the problem from the perspective of a single academic discipline. Therefore, it is essential not only to advance the decolonization of research practices within each discipline but also to undertake the challenges of postcolonial studies proposed by Doyle and Nomura from multiple angles.

At this point, it is crucial to create opportunities for researchers from different fields to collaborate. While I have already examined a case of a book club, another case is the collaborative research project I am currently working on: “The Construction and Inheritance

of Memory Regarding the Japanese Military ‘Comfort Women’: An Analysis of Testimonies from Okinawan and Korean Survivors of the Battle of Okinawa.” This project investigates efforts to preserve the memories of the former “comfort women” who were subjected to systematic sexual violence by the Japanese military during World War II in Okinawa, while focusing on the dual colonialism Japan exercised over the Korean Peninsula and Okinawa.<sup>15</sup> This project has not only provided me with an opportunity to reexamine Japanese modern history in relation to Okinawa and the Korean Peninsula, but also to learn about the accumulation of Okinawan studies and sociological methodology. In this way, collaborative research can serve as an opportunity to expand one’s “zone of interest” and learn from researchers in different fields. Such learning, brought back to their respective fields by each participant even after the research project concludes, will likely become a catalyst for further research in postcolonial studies.

#### **4-2. Crossing National and Regional Boundary**

The second boundary is that of nations and regions. Postcolonial studies developed primarily in the United States (Cusset, 2008, pp.138-145). Since the 1990s, the leading thinkers of postcolonialism, such as Said and Spivak, have been gradually introduced to Japan, providing resources for research challenging Japanese colonialism (e.g. Nomura, 2012; 2019; Ishihara, 2020; Tamashiro, 2022).<sup>16</sup>

Thus, introducing research achievements from other countries and regions can provide an important foundation for conducting postcolonial studies. When I contributed an entry on “Postcolonial Studies” to the introductory book, I aimed not merely to introduce the achievements of postcolonial studies from the English-speaking world but also to demonstrate their relevance for addressing postcolonial issues in the Japanese context. Because discussions developed in different countries and regions cannot be directly applied to Japan, they must be reorganized in light of its specific historical and social context. Such a process of reorganization, in turn, can serve as an important opportunity to further develop postcolonial studies.

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<sup>15</sup> Regarding the Japanese military “comfort women” and the system of military comfort stations, see Yoshimi (2002). Yunshin Hong (2020) particularly investigates the comfort stations set and operated by the Japanese military in Okinawa.

<sup>16</sup> Apart from the trend of postcolonialism, many studies address the issues of Japanese imperialism and colonialism (e.g., Kim & Nakano, 2008; Kim & Onozawa, 2020). *Postcolonialism* (Kang, 2001) and *The Debate over ‘Historical Recognition’* (Takahashi, 2002) present numerous issues that should be addressed in the Japanese context.

When engaging in postcolonial studies, the practice of unlearning is crucial<sup>17</sup>. Fieldwork conducted across various countries and regions, and involvement in activism have all served as experiences that encouraged unlearning for me. Through these experiences, I became aware of my narrow horizon and expanded my “zone of interest.” Particularly, for me, who has addressed the Israeli-Palestinian conflict, participating in a study tour to learn about the Japanese military “comfort women” issue became a turning point. It made me realize that I had set priorities for the issues I face and chosen to address the Israeli-Palestinian conflict, avoiding confronting the Japanese history of colonialism (Takayanagi, 2025c). In my case, it was only after “cultivating a sensitivity to violence” (Ishihara, 2025, March, p.90) through my experience in Palestine/Israel that I could finally acknowledge the violence of colonialism exercised by the Japanese state to which I belong<sup>18</sup>.

For me, unlearning is a process of training my imagination, trying to deepen my understanding of the irreversible impact colonialism has had on human life and the immeasurable pain it has caused. In this process, “colonialism” ceased to be “merely a word” (Oksa, 2024, p.39) and emerged as a concept that refers to situations deeply entrenched in our society and that control our lives. Spivak argues that having multiple home bases allows us to train “the imagination to enter other people’s worlds” (Spivak, 2006, pp.21-22). For me, traveling to Palestine/Israel, South Korea, Okinawa, and Hokkaido provided opportunities to cultivate a sensitivity to violence and train my imagination. Furthermore, solidarity movements with Palestine and former “comfort women” remain important learning opportunities. The experiences of traveling across national and regional boundaries eventually led me to look at divisions within Japanese society, and the solidarity movements in Japan became an opportunity to acknowledge social divisions, which I will consider next.

#### **4-3 Crossing Boundary among Social Divisions**

The third boundary is that among social divisions based on various factors, including race, gender, sexuality, and class. Bond-Theriault (2024) states, “privilege allows one to escape the tedious task of constantly thinking about and analyzing how one's identities are shown up in various spaces” (pp.17-18). However, this does not negate that the realities of the privileged

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<sup>17</sup> In a different place, I reframed unlearning as a practice of undoing institutionalized and entrenched knowledge and learning from others (Ryota, in-press b)

<sup>18</sup> We should not assign “priorities” to certain issues, as I once did; otherwise, we will be trapped by a double standard. Looking at both the local and global dimensions of colonialism and imperialism can help us better understand their complex intertwinement. It would bring us a chance to be aware of our own double standards, thereby overcoming them. (cf. Takahashi, 2002, pp. 136–147)

are intersectional. Therefore, in order to recognize one's own privilege, it is important to engage in a "self-reflective interrogation" of one's behavior as a researcher or intellectual in situations where multiple power relations intersect. As Bond-Theriault (2024) points out, a proper power analysis is only possible by placing oneself in an intersectional position.

In this respect, "intersectionality" is an important concept for crossing social divisions and conducting academic and social practices. According to Collins and Bilge (2020), intersectionality "investigates how intersecting power relations influence social relations across diverse societies as well as individual experiences in everyday life" (p.2). It is an analytic tool that "views categories of race, class, gender, sexuality, nation, ability, ethnicity, and age - among others - as interrelated and mutually shaping one another". As this definition suggests, power relations of race, gender, class, etc., cannot be considered in isolation. Focusing on any one factor obscures the inequalities created by others (Takayanagi, 2025b).

Reexamining who is included in "we" can test our imagination<sup>19</sup>. While "we" always includes diverse people, there are also those who are excluded. Since October 7th, as I have participated in solidarity movements with Palestine, I have come to realize that people from diverse backgrounds are involved in these movements. While participating in the movements across Japan, I have met people who express solidarity with Palestine from a queer perspective, as well as people concerned about the ongoing issue of Japanese colonialism. Even after these encounters, there are likely many people I have failed to meet. However, paying attention to intersectionality at least allows us to recognize the diversity within "we," and this awareness can also serve as an opportunity to broaden our horizons to other issues in society. In my case, interactions with people I met through events organized by Maqluba and the Kansai Queer Film Festival led me to begin participating in events in the sexual and gender minority community, which gave me a chance to reflect on my own gender and sexuality.

Paying attention to intersectionality can also help us recognize the existence of those who are not included in the "we." Addressing the Israeli-Palestinian conflict enabled me to expand my "zone of interest" to include the issues of colonialism in Japanese society. Thinking about the issue of settler colonialism exercised by Israel made me aware of my own position as an imperialist or colonizer in the Japanese context<sup>20</sup>. It allowed me to understand what Collins

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<sup>19</sup> Judith Butler (2009) says that "one way of posing the question of who 'we' are in these times of war is by asking whose lives are considered valuable, whose lives are mourned, and whose lives are considered ungrievable" (p.38). At this point, see also Butler (2023, 19 October).

<sup>20</sup> It was only relatively recently that I began to seriously consider the issue of the right to self-determination of indigenous Ainu and Okinawan peoples, as well as the issue of Japanese military "comfort women"(Takayanagi,

and Bilge (2020) mean when they say, “power relations of race, class, gender, for example, are not discrete and mutually exclusive entities, but rather built on each other and work together” (p.2). Thus, engagement in activism with intersectionality in mind allows us to acknowledge that “the ‘we’ does not, and cannot, recognize itself” and “it is riven from the start, interrupted by alterity” (Butler, 2009, p.14). In this sense, “the obligations ‘we’ have are precisely those that disrupt any established notion of the ‘we’.”

The experience of working across national and regional boundaries, situating oneself in an intersectional position, provides an opportunity to develop sensitivity to violence and train one’s imagination. Learning from others in fieldwork and activism can deepen understanding of the complex power relations that create social divisions<sup>21</sup>. Bringing the social movement sensibilities and experiences that intersect with race, gender, class, etc., into the academic world may create chances to transform its institutions (Collins & Birge, 2020, pp.87-97).

### **Conclusion: Toward the Cross-Boundaries Approach to the Legacy of Imperialism**

Colonialism is not a past event. Rather, it is an issue that persists to this day. This essay reframed postcolonial studies as the result of an interplay between research activity and social practice and proposed a methodological framework to tackle the undying colonialism. The case study of my academic and social practices as a Japanese researcher demonstrated that the movement toward decolonization is unfolding, crossing disciplinary boundaries as well as national and regional boundaries, and that an intersectional perspective is essential when addressing postcolonial issues.

The cross-boundaries approach presented in this essay allows researchers to reexamine their position and deepen their understanding of the complex power relations. This approach can be conceptualized as a practice that traverses three types of boundaries: disciplinary boundary, national and regional boundary, and boundary among social divisions. Imperialist enterprise has expanded globally, dominating colonies and controlling the lives of indigenous people, thereby solidifying asymmetrical relationships between imperialists and indigenous peoples, or between the colonizer and the colonized. Given that it continues to affect various aspects of everyday life, relying solely on a single disciplinary perspective is insufficient to undertake the tasks of postcolonial studies proposed by Doyle and Nomura. Rather, researchers from different

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2025c).

<sup>21</sup> Involving ourselves in social movements and learning from others is important; however, in doing so, we must also remain fully aware of the risk of “ideologically consuming” minorities. Ishihara (2023, January) makes thought-provoking points when it comes to such practical efforts.

fields must utilize their respective specialties to trace complex power relations of race, gender, class, and other factors, crossing national and regional boundaries.

This essay is also an attempt to demonstrate how researchers living in a contemporary society built on the history of imperialism can problematize their own privilege and complicity. The “continuous labor of self-reflective interrogation” that goes inside and outside the academic world constitutes an important moment for decolonization. By crossing national and regional boundaries, as well as boundaries among social divisions, one can grab a chance to reconstruct relationships with others. Thus, the cross-boundaries approach would reframe postcolonial studies as a project continuously generated through the interplay between academic research and social practice.

The significance of this approach lies not in the act of crossing boundaries itself, but rather in the process of reexamining the researcher’s own positioning in the course of crossing boundaries and reconfiguring research questions through (failed) encounters with others. This marks the starting point for confronting the legacy of imperialism.

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The initial draft of this manuscript was written in Japanese. In the process of translating the manuscript into English, the translation-support tool DeepL was used; however, the generated translations were substantially revised and expanded by the author. In addition, suggestions generated by ChatGPT, developed by OpenAI, were consulted during the proofreading process. The final decisions regarding wording, content, and interpretation were made solely by the author, who assumes full responsibility for the manuscript.

## References

- Adams, T. E., Jones, S.H., & Ellis, C. (2014). *Autoethnography: Understanding Qualitative Research*. New York: Oxford University Press.
- Bond-Theriault, C. (2024). *An Invitation: Queering Reproductive Justice*. California: Stanford University Press.
- Butler, J. (2009). *Frames of War: When Is Life Grievable?* London: Verso.
- Butler, J. (2023, October 19). The Compass of Mourning. *London Review of Books*, 45 (20). Retrieved February 16, 2026, from <https://www.lrb.co.uk/the-paper/v45/n20/judith-butler/the-compass-of-mourning>.
- Collins, P.H. & Birge, S. (2020). *Intersectionality*. Cambridge: Polity Press.
- Cusset, F. (2008). *French Theory: How Foucault, Derrida, Deleuze, & Co. Transformed the Intellectual Life of the United States* (J. Fort, Trans.). Minneapolis, MN: The University of Minnesota Press.
- Doyle, M. W. (1986). *Empires*. New York: Cornell University Press.
- Fujisaka, N. (2024, June 25). ‘Chimmokuoyaburu’kotokarahajimaru Shakaimondai heno Akushon: Gurupu Kikaku Shien Katsudo Repoto (Taking Action on the Societal Issues Starting from Breaking the Silence: Support for Group Project Activity Report). The University of Osaka Cross-Boundary Innovation Program. Retrieved February 14, 2026, from <https://www.cbi.osaka-u.ac.jp/reports/20240625-02/>.
- Fujisaka, N. (2025, June 21). Kiokusuru, Kodosuru, Isshonisuru: Kibotane Tsua Hokokukai & “Oreno Kokoro ha Maketenai” Joeikai (Remembering, Taking Action, Doing Them Together: Report Session for Kibotane Tour & Screening of *My Heart is Not Broken Yet*). The University of Osaka, Graduate School of Human Sciences, Center for Mirai Kyoso. Retrieved February 15, 2026, from <https://www.hus.osaka-u.ac.jp/mirai-kyoso/ja/reports/250708/>.

- Garbe, S. (2024). An Autoethnography of and in Solidarity: Post- and Decolonial Critique and Autoethnographic Positioning Analysis. *Qualitative Inquiry*, 30 (8-9), 695–704.
- Go, J. (2016). *Postcolonial Thought and Social Theory*. New York: Oxford University Press.
- Higaki, T. (2023). Supibuak ni okeru Dokkai no ‘Nijusei’ toiu Senryaku ni tuite: Derida no Mararume, Furoito no Koso (On the Reading Strategy of “Duality” in Spivak: Derrida's Mallarmé and Freud's Ancient Strata). *Journal of Kyosei Studies*, 7, 27-46.
- Ishihara, M. (2020). *Chimmoku no Jidenteki Minzokushi: Sairento Ainu no Itami to Kyusai no Monogatari (An Autoethnography of 'Silence': A Story of Silent Ainu's Pain and Relief)*. Sapporo: Hokkaido University Press.
- Ishihara, M. (2023, January). Chishikijin toha nanika: Senjumin Fueminizumu to ‘Keashiau Shakai’ he Mukete (What Is an Intellectual?: Indigenous Feminism and the Path Toward a ‘Caring Society’). *Gendaishiso*, 51, (1), Tokyo: Seidosha, 132-143.
- Ishihara, M. (2025, March). Sairento Ainu toha nanika: Shokuminchishugi/Reishizumu no Bokyaku to Itamu Shintai (What is 'Silent Ainu': Oblivion of Colonialism/Racism and Painful Body). *Sekai*, (991), 90-94, Tokyo: Iwanami Shoten.
- Ishihara, M. & Murakami, Y. (2024). *Ainu ga Manazasu: Itami no Koe wo Kikutoki (Ainu Gazes: When Listening to the Voices of Pain)*. Tokyo: Iwanami Shoten.
- Kang, S. (Ed.). (2001). *Posutokoroniarizumu (Postcolonialism)*. Tokyo: Sakuhinsha.
- Katsura, Y. & Higaki, T. (2022). “Sabarutan ha katarukotogadekiruka” o yominaosu tameni: Kyosei no Fuirosogui no shitenkara (For Re-reading "Can the Subaltern Speak?": From the Perspective of Kyosei Philosophies). *Journal of Kyosei*, 6, 23-57.
- Kim, P. & Onozawa, A. (Eds). (2020). *Seibōryoku Higai o Kiku: ‘Ianfu’ kara Gendai no Seisakushū e (Listening to The Victims of Sexual Violence: From ‘Comfort Women’ to the Contemporary Sexual Exploitation)*. Tokyo: Iwanami Shoten.
- Kim, P. & Nakano, T. (Eds). (2008). *Rekishi to Sekinin: ‘Ianfu’ Mondai to Senkyuhyakukyuju nendai (History and Responsibility: ‘Comfort Women’ and the 1990s)*. Tokyo: Seikyusha.

- Marcus, G. E. (1997). The Uses of Complicity in the Changing Mise-en-Scène of Anthropological Fieldwork. *Representations*, (59), *Special Issue: The Fate of "Culture": Geertz and Beyond*, 85-108.
- Mayuzumi, K. (2011). Re/Membering In-Between “Japan” and “the West”: A Decolonizing Journey through the Indigenous Knowledge Framework. *Counterpoints*, 379, *Indigenous Philosophies and Critical Education: A READER*, 350-366.
- Miyamae, R., Fujisaka, N., Kazusa, A., & Katsura, Y. (2022). “Sabarutan ha katarukotogadekiruka” o Tomoni yomi Tomoni kaku: Kyoseigaku no 3 tsu no asupekuto o chushinni (Co-reading and Co-writing "Can the Subaltern Speak?": Focusing on the Three Aspects of Kyosei Studies). *Mirai Kyoso*, 9, 243-275.
- Nomura, K. (2012). Undying Colonialism: A Case Study of the Japanese Colonizer Shimabuku, (Trans). *The New Centennial Review*, 12, (1), 93–116.
- Nomura, K. (2019). *Muishiki no Shokuminchishugi: Nihonjin no Beigunkichi to Okinawajin (Unconscious Colonialism: Japanese People's U.S. Military Bases and Okinawans)*, Kyoto: Shoraisha.
- Oka, M. (2024). Yoroppa Mondai toshiteno Paresuchina mondai: Gaza no Jienosaido to Kindai gohyakunen no Syokuminchishugi (The Question of Palestine as a European Issue: Genocide in Gaza and Five Hundred Years of Modern Colonialism). M. Oka, S. Koyama, & T. Fujihara. *Chugakusei kara shiritai Paresuchina no koto* (pp.22-54), Tokyo: Mishimasha.
- Paresuchina to tsunagaru Shashinten Project Makuruba (Ed.). (2024). *Maqluba! Vol.IX Etoasetorabukkusu (Maqluba X etc. books)*.
- Said, E. W. (1979). *Orientalism*. New York: Random House.
- Said, E. W. (1994). *Culture and Imperialism*. New York: Random House.
- Shimabuku, A. (2012a). Translator's Afterword. *The New Centennial Review*, 12, (1), 117–30.
- Shimabuku, A. (2012b). Transpacific Colonialism: An Intimate View of Transnational Activism in Okinawa. *The New Centennial Review*, 12, (1), 131-158.

- Spivak, G. C. (1988) “Can the Subaltern Speak?” In C. Nelson & L. Grossberg (Eds.). *Marxism and the Interpretation of Culture* (pp.271–313). London: Macmillan.
- Spivak, G. C. (2003). *Death of A Discipline*. New York: Columbia University Press.
- Spivak, G. C. (2006). *Conversations with Gayatri Chakravorty Spivak*, Calcutta: Seagull Books.
- Spivak, G. C. (2012). *An Aesthetic Education in the Era of Globalization*. Cambridge, MA: Harvard University Press.
- Tajima, M. & Nakatsubo, F. (2024). Kokunai ni okeru Autoesunogurafui no Kenkyudoko (Research Trends in Autoethnography in Japan). *Studies in Education*, (5), 329-336, Graduate School of Humanities and Social Sciences, Hiroshima University.
- Takahashi, T. (Ed.). (2002). *‘Rekishininshiki’ Ronso (The Debate over ‘Historical Recognition’)*. Tokyo: Sakuhinsha.
- Takayanagi, R. (2025a). Mō Hitotsu no ‘Chinmoku’ no Jidenteki Minzokushi: Ierukoto no nai Itami to Ikinobi no Monogatari (Another Autoethnography of ‘Silence’: A Story of Unhealed Pain and Survival). In H. Nakatani, T. Takiguchi, & T. Yoshinari (Eds.), *Dekigoto no Kiroku to Sei no Kioku: Kurozudo Lanzuman Shōah o Miru, Osaka University Forum on China Booklet*, 20 (193-205).
- Takayanagi, R. (2025b). Postkoroniaru Kenkyu: Sabarutan, Chimmoku, Koe (Postcolonial Studies: Subaltern, Silence, Voice). In T. Tsuchimoto, Y. Katsura, & T. Sato (Eds.), *Oto Esuno Gurafui Mappingu: “Watashi” Kara Hajimeru Kenkyu Syuho o Shirutame no Chizu* (pp.164-167) Tokyo: Shinyo Sha.
- Takayanagi, R. (2025c) “Testing My Positionality: Watashi no Tachiba o Minaosu. (Testing My Positionality: Reexamining My Position). Ippan Shadan Hojin Kibo no Tane Kikin (Ed.) Kibotane Wakamono Tsua 2025 SPRING Hokokusho, (pp.25-31).
- Takayanagi, R. (in-press a). Encounter and Divergence between the West and the East: Reading Izutsu After Derrida. *European Journal of Japanese Philosophy*.

Takayanagi, R. (in-press b). From the Problem of Representation to the Training of Imagination: Exploring the Ethics of Transnational Solidarity between Edward W. Said and Gayatri C. Spivak. *Borders/Dialectics/Civility*.

Tamashiro, F. (2022). *Okinawa to Sekushuaritei no Shakaigaku: Posutokoroniaru Fueminizumu Kara Toinaosu Okinawasen Beigunkishi Kanko (Okinawa and Sociology of Sexuality: Rethinking the Battle of Okinawa, US Military Bases, Tourism from the Postcolonial Feminist Perspective)*. Kyoto: Jimbun Shoin.

The University of Osaka Cross-Boundary Innovation Program. (n.d.). *About Program*. Retrieved February 14, 2026, from <https://www.cbi.osaka-u.ac.jp/about/program/>.

The University of Osaka Institute for Transdisciplinary Graduate Degree Programs. (n.d.). *What is DWAA?* Retrieved February 14, 2026, from <https://itgp.osaka-u.ac.jp/en/systems/dwaa/>.

Toyosaki, S. (2017). Toward De/Postcolonial Autoethnography: Critical Relationality With the Academic Second Persona. *Cultural Studies ↔ Critical Methodologies*, 18(1) 32–42.

Tsuchimoto, T., Katsura, Y. & Sato, T. (Eds.). (2025). *Otoesunogurafui Mappingu: “Watashi” Kara Hajimeru Kenkyu Syuho o Shirutame no Chizu (Autoethnography Mapping: A Map to Know the Research Method Starting from “I”)*. Tokyo: Shinyo Sha.

Ukai, S. 1998. Posutokoroniarizumu: Mitsu no Toi (Postcolonialism: Three Questions). n Fukusū Bunka Kenkūkai (Ed.) *"Fukusū Bunka" no tameni: Posutokoroniarizumu to Kureōrusei no Genzai* (pp.39-48). Kyoto: Jinbun Shoin.

Yoshimi, Y. (2002). *Comfort Women: Sexual Slavery in the Japanese Military during World War II* (S. O’Brien, Trans.). New York: Columbia University Press.

Hong, Y. (2020). *“Comfort Stations” as Remembered by Okinawans during World War II* (R. Ricketts, trans.). Leiden, The Netherlands: Brill.

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This proceedings volume comprises a selection of papers written by the student presenters based on their forum presentations. Of the 20 presentations delivered, 12 papers were submitted for this publication (8 from the University of Osaka and 4 from Tongji University). While not peer-reviewed, this proceedings has been compiled following strict formatting guidelines. We sincerely hope that this experience serves as a valuable opportunity for the students to practice writing academic papers in English and paves the way for their future submissions to more and more journals.

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Xixi ZHANG

Specially Appointed Assistant Professor

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Institute for Transdisciplinary Graduate Degree Programs

The University of Osaka



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