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A Study on Interpersonal Communication Language in Family Field—Take Greetings as an Example

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Abstract

In recent years, digital intelligence products have been widely adopted in household environments. The extensive human-machine interactions between users and these devices have fostered a new type of relationship within family dynamics—specifically, the human-machine relationship between users and smart devices. These conversations have generated bidirectional address terms that exhibit distinct characteristics compared to conventional interpersonal communication. This study examines address term usage in home-based human-machine interactions through pragmatic identity analysis, utilizing questionnaire surveys to collect linguistic data. By analyzing the patterns of these terms and the underlying human-machine relationships and psychological traits they reveal, this research aims to contribute linguistic insights for building harmonious and friendly digital households.

Keywords: family field, pragmatic identity, digital intelligence products, users, address words

1. Introduction

In recent years, China's digital intelligence market has experienced rapid growth. While many products now incorporate multimodal interaction methods like voice and visual interfaces, voice interaction remains an essential foundation and a potential upgrade factor for most devices. During user-conversational interactions with digital intelligence products, machines have replaced traditional human-to-human dialogue as a key component of conversations, giving rise to a new interaction model known as human-machine conversation.

In terms of application domains, digital intelligence products have been widely adopted in both household and public spheres. Within the home environment, daily needs demand multi-scenario and multi-topic applications from these devices, contrasting with the singular functionality characteristic of public spaces. These conversations exhibit broader content diversity and varied formats, showcasing distinct linguistic features. As the most unstable and adaptable elements in language systems, vocabulary patterns particularly manifest in human-computer interaction through distinctive address terms that demonstrate usage preferences diverging from traditional interpersonal communication. However, this aspect of research has yet to garner widespread academic attention.

Therefore, based on relevant report analyses and

sales rankings from leading domestic e-commerce platforms, this study focuses on the terms used in human-machine interactions within household environments. Specifically examining smart speakers, intelligent assistants, and companions AI, we employ questionnaire surveys to explore distinctive features of these interactive terms in the digital age, along with their underlying causes and operational mechanisms.

2. Related Research and Theoretical Basis

2.1 Research on Terms of Address

Addressing has long been a key focus in pragmatics and sociolinguistics. Scholars such as Wu Xiuwen (2025) and Lu Yuwei (2023) have respectively demonstrated how students' choices between "teacher" and "surname + teacher" discourse strategies, influenced by social relationships, are governed by principles of power dynamics and intimacy levels. Wang Jianhua and Cen Youhui (2025) investigated speech violations in e-commerce live streaming, revealing a tripartite interaction mechanism in online pragmatic activities. Wang Xinxin (2023) examined emerging addressing terms in e-commerce live streaming from a sociolinguistic perspective, analyzing their pragmatic functions and influencing factors. While research on addressing remains highly active, with studies expanding from offline to online contexts and diversifying research subjects, a search using "human-machine addressing terms" as keywords on CNKI yields no relevant findings.

2.2 Theoretical Basis of the Study

Interpersonal pragmatics stands as a pivotal field in pragmatic studies. The pioneering concept of interpersonal rhetoric by Leech (1983) marked the first exploration of human relationships. Locher and Graham (2010) formally established the discipline, defining interpersonal pragmatics as the study of how communicators construct interpersonal relationships through language in communicative contexts. Building on these foundations, Chen Xinren (2018) introduced the pragmatic identity concept within communicative scenarios, emphasizing its communicative attributes, discourse characteristics, contextual constraints, and user agency. In practical terms, communicators adopt dynamic pragmatic identities in real-world interactions — whether authentic or fictional — that serve as strategic tools to achieve specific goals or attain desired outcomes.

In human verbal communication, every utterance involves a speaker. These speakers often require referential terms (historically conflated with "addressing terms", but this paper adopts the term "referential terms" following [1] Hu Fanzhu's assertion that "referential terms are essentially behavioral processes") to ensure clarity or fulfill emotional-cultural functions. Within household contexts, when interacting with smart devices through voice commands, traditional human speakers become replaced by digital entities—each serving as distinct participants in the conversation. Similar to human-to-human communication, device interactions involve bidirectional addressing, creating both human-device and device-human referential terms. Although these devices are human-made, their addressed terms are human-defined (by manufacturers or users), fundamentally reflecting human expectations and conceptual frameworks for the device-human relationship. Thus, referential terms in human-machine interactions construct pragmatic identities for digital engagement. This aligns with Chen Xinren's (2018) concept of communicative identity in social contexts. Guided by this theoretical framework, this study analyzes referential terms in household human-machine interactions.

3. Research design

3.1 Research Corpus and Problems

This study's corpus was generated through conversations between users and the product mentioned in the introduction within domestic interaction contexts. After defining the research subjects, we collected data via questionnaires over a two-month period. With participants' consent, we transcribed the materials while implementing secondary processing to protect privacy and noting temporal details like conversation time and location to preserve contextual relevance. Ultimately, 327 valid records were obtained (with each task cycle constituting one turn recorded based on human-computer interaction patterns), forming a small corpus. We analyzed salutation types

[1] Hu Fanzhu, also known as Hu Yi Ming. (2024). A Reassessment of the Modern Chinese Nomenclature System — Based on the Theory of New Speech Acts Analysis. *Journal of Contemporary Rhetoric*, (03), 52.

and usage frequency through tagging and statistical analysis. Building on pragmatic identity theory, this study examines salutation resources in domestic human-computer interactions and addresses two key questions:

a. In the era of digital intelligence, what are the characteristics of human-machine interaction in family field?

b. What kind of interaction relationship is embodied in this interaction? What are the real psychological demands of users behind it?

3.2 Research Tools and Process

This study adopts a combination of quantitative and qualitative methods to explore the use and development mechanism of address terms in human-computer interaction in family field. It consists of four steps from corpus collection to data analysis.

The first step involves corpus collection. To ensure authenticity and validity, we adopted a hybrid online-offline questionnaire approach. By reviewing industry reports and analyzing sales rankings on e-commerce platforms, we identified three digital intelligence products with high household adoption rates: smart speakers, AI assistants, and intelligent companion/chatterbots. These were designated as primary survey items (listed as multiple-choice questions) to systematically collect relevant data. During the collection process, we recorded users' gender, permanent residence, age, and educational background as baseline information. Additionally, we designed a Q&A format to explore users' motivations for choosing specific address terms.

The second step involves corpus transcription, screening, and annotation. First, transcribe the raw corpus to establish a primary corpus. Next, screen for corpora containing honorific expressions to create a secondary corpus. Then, manually annotate the honorific expressions in the secondary corpus according to predefined criteria, and finally build an honorific expression corpus using Excel tables.

The third step is corpus information statistics and analysis. The use of terms is counted through the search function in Excel table, and charts are made according to the use, so as to analyze the hidden information behind the corpus data.

The fourth step was to conduct another offline questionnaire survey. The statistical classification of user terms used for digital intelligence products was carried out, and a separate questionnaire was issued to investigate the attitudes of different age groups towards different types of terms. The number of age groups and distribution plans were 100 copies each for children, young people and the elderly, with a recovery rate of 98%.

4. Results and Discussion

In the digital intelligence era, the integration of AI-powered products has fostered human-machine interactions beyond traditional social relationships. Within these human-machine engagements, terms of address have evolved beyond conventional social contexts into novel hybrid forms. However, constrained by machine characteristics, such addressed terms often exhibit distinctive features in face-to-face communication, primarily reflecting the conceptual frameworks and current dynamics between humans and AI-driven products as distinct linguistic entities.

To facilitate analysis of address terms usage between humans and digital products in modern family contexts, this study adopts Cui Xianjun's (2012:65-73) classification framework for modern Chinese address terms, while incorporating specific characteristics of digital products. The addressed terms are categorized into nine types: official greetings, functional terms, kinship terms, role-specific terms, neutral terms, nicknames, negative terms, person-reference terms, and honorific terms. Address term selection is closely tied to social contexts including occupation, gender, social class, educational background, and usage frequency (Meng Wanchun, 2010). However, distinct patterns emerge in user-product interactions. The following discussion examines both users' addresses for digital products and the reciprocal addressing patterns between digital products and their users.

4.1 How Users Refer to Digital Intelligence Products

Statistical data shows that users' terminology for digital intelligence products is diverse in household settings, though no honorifics are used. The top three most frequently chosen categories are official greetings, familial terms, and nicknames, accounting for 89.4% of usage. Conversely, less common options like person references, functional labels, role-specific terms, neutral terms, and negative terms make up the remaining 10.6%.

Table 1. Features of user's terms for intelligent products

Type of address	Typical manifestations	Total/occurrences	scale/%
Official wake-up call	Little Art, Xiao Du, Tmall Genie	239	64.95
Kinship terms	Xiao Du brother, Xiao Du sister, Hei Bao	47	12.77
A nickname or greeting	Hei Zi, Dudu, Wah Zai, Little Fatty	43	11.68
A personal name is a term of address	you	22	5.98
Functioning as a greeting	Music box, story box	9	2.45
Character name	Miss Xiao Du	5	1.36
Zero greeting	understand it or not	2	0.54
Negative terms of endearment	fool	1	0.27
A term of respect	-	-	-
amount to		368	100

Among these address terms, official greetings, kinship terms, nicknames, functional titles, and role-specific terms can all appear at the beginning of sentences as standalone expressions. In contrast, person-reference terms and neutral terms must coexist with these five categories and appear within sentences. Notably, negative terms exhibit unique characteristics: the corpus analysis reveals only one instance where such terms appear at the sentence's beginning (as indicated by survey data, users perceive "idiot" as derogatory and serve as emotional release channels), with this singular case being omitted from further discussion.

The formation of this distribution pattern stems from the inherent nature of AI-powered products. Essentially, these devices are machines equipped with AI technology that require activation to perform subsequent operations (functional commands or conversational companions). Therefore, when manufacturers configure products at factory settings, they typically offer two options to enable wake-up functionality: either embedding pre-installed wake-up phrases (as seen in Xiaomi's "Xiaoke Xuexue" product name) or allowing users to customize wake-up prompts. This customization process naturally generates four types of greetings: familial terms, nickname-style addresses, function-related phrases, and role-specific salutations. These five greetings share a defining characteristic: they possess highly distinctive features that meet wake-up requirements. In contrast, humanized terms like "personified references" and "zero-reference expressions" lack such distinctiveness, thus coexisting with the first five types while serving other conversational purposes. Building on this foundation, the following discussion will focus on analyzing and delving into these five distinctive greetings.

4.1.1 Official Wake Word

Official wake-up phrases, as a type of officially embedded naming conventions, inherently hold inherent advantages in default selection. When addressing the domestic market, these digital products predominantly adopt the "X + small" structure, which demonstrates significant productive and emotional functions, closely aligning with local cultural influences and users' psychological habits. In Chinese cultural contexts, "small" not only carries strong productive value—evolving from object size to abstract concepts contrasting with "big"—but also serves as an emotional marker, typically symbolizing cuteness and craftsmanship. This meaning has transcended physical dimensions, as seen in the cognitive association between "dog" and "puppy," where the latter evokes more endearing imagery. Other officially designed terms like Tmall Genie (Chinese form) or MOMO (English form), whether activating visual associations through everyday animal imagery or enhancing phonetic harmony through voice integration, all share similar creative brilliance with the "X + small" structure.

This naming convention facilitates rapid cognitive adaptation during human-computer interactions, enabling users to develop a gentle

and approachable pragmatic identity when engaging with controversial AI products. By helping mitigate preconceived notions of technological threats, it effectively bridges emotional divides between humans and digital systems. The predominant use of such terms primarily stems from the emotional resonance generated by the convenience of standardized naming conventions established by official guidelines.

In-depth statistical analysis reveals that among the 239 official wake-up phrases, four influencing factors—gender, place of residence, age, and educational level—exhibit distinct patterns. Gender, geographic location, and educational background show minimal impact on usage frequency, while age demonstrates significant variation, predominantly concentrated in the middle-aged and young adult demographic (20-50 years old). Furthermore, these phrases exhibit varying combinations with other address terms across different age groups. For example, middle-aged and young adults typically avoid co-occurrence with other address terms, reflecting their rational thinking, concise language, clear instructions, and emphasis on functional operations. Conversely, children (3-12 years old) and seniors (60+ years old) frequently combine these phrases with other address terms, particularly person-reference address terms, indicating more complex linguistic expressions and greater focus on interactive communication in these groups.

① Xiao Ai classmate, play Jay Chou's "Blue and White Porcelain". (Age: 30)

② Xiao Yi Xiao Yi, you tell me a story. (Age: 7)

③ Xiao Ai classmate, can you sing "Lao Bao Chops Chen Shiming"? (Age: 72)

4.1.2 Kinship Terms

Kinship-derived product names primarily refer to titles containing familial terms (such as "sister" or "brother"), characterized by anthropomorphic product personification. These names mainly follow two patterns: The first combines familial terms with brand names, leveraging brand identity to highlight unique features—particularly significant for diverse household digital smart products. This pattern accounts for 74.47% of collected data, totaling 35 instances. The second approach integrates familial terms with specific product characteristics like shapes and colors, reflecting users' perception of the product's physical appearance. However, this method is less prevalent, appearing in only 12 instances (25.53%) of the collected data.

Similar to the usage patterns of official wake-up calls, users' gender, place of residence, and educational level show minimal influence on the frequency of such address terms, though there are significant age-related differences. Unlike the "peak" characteristics observed in previous analyses, these address terms exhibit a U-shaped distribution pattern across user ages, predominantly concentrated among children (3-12 years old) and elderly individuals (60 years and above). This distribution highlights the importance of emotional companionship for these two demographic groups.

Among these two groups, children tend to use "you" as a personal pronoun, while digital devices often address them with "I". This seemingly equal relationship between speakers facilitates smooth conversations. However, elderly users frequently mix zero-person pronouns with digital devices, revealing an identity imbalance in how seniors perceive these tools. Many older adults mentally associate digital devices with their grandchildren, which sometimes disrupt communication. These divergent approaches reflect the growing need for companionship in today's aging and declining birthrate society.

④ Child: Xiao Du brother, can you dance?

Products: I practice ethnic dance and samba dance. After learning, I will show you how to do it.

Child: Xiao Du brother, you are really stupid.

Product: Don't say things like, "I'm gonna be sad."

⑤ Old man: Hei Bao'er, know "Mu Guiying as Commander"?

Product: Oh, that's beyond my understanding.

4.1.3 Nicknames

A nickname refers to a form of address with affectionate connotations, typically used in intimate relationships. These nicknames exhibit three main linguistic features: 1) combinations of characteristic words with prefixes or suffixes (e.g., "Heizi" or "Xiaofatou"); 2) pairing brand names with prefixes or suffixes (e.g., "Adu" or "Hua Zai"); 3) the use of reduplicated words (e.g., "Dudu" or "Mao Mao").

The emergence of such nicknames correlates with users' age, gender, and place of residence. Regarding age distribution, nicknames predominantly appear among younger demographics, including children and teenagers, with children showing a notable preference for reduplicated words. Gender-wise, female users outnumber male users. In terms of residential regions, northern users favor combinations of characteristic words with prefixes or suffixes, particularly the suffixes "er" and "zi"; southern users prefer brand names combined with prefixes or suffixes, where "A" and "Zai" serve as key identifiers.

In summary, children's linguistic preferences favor reduplicated words due to their catchy nature, ease of memorization, and childlike qualities that align with their psychological expectations of "playmates". Women tend to excel at crafting home environments, where affectionate nicknames help establish digital products' household status. Users in northern and southern China exhibit distinct regional characteristics in suffix selection influenced by dialects and cultural traditions. As illustrated in the example:

⑥ Child: Dudu, I want to buy a present for my father.

Product: Okay, that's a great idea.

⑦ Young man: Heizi, sing us a song.

Product: Ok, here's the play of "Boundless".

⑧ Youth: A du a du, how to make chicken wings at home.

4.1.4 Functional and Role Terms

Functional terms refer to the terms used by users focusing on product functions. These terms are mainly seen in children's terms for smart speakers and chatbots. These products have prominent functions, such as chatbots developed for children, whose main function is to tell stories. For example:

⑨ Story box, I want to hear Wolf Came Back.

Role-based epithets are social identifiers that construct positive product identities, typically associated with proactive and uplifting personas. These terms predominantly appear in children's education settings and elderly communities, sharing functional similarities with utility-based epithets in their focus on practical product value. Examples include:

⑩ Miss Xiao Du, how to solve the problem of chicken and rabbit in the same cage?

4.2 How Digital Intelligent Products Refer to Users

Statistical data shows that digital intelligence products use four main types of user addresses, ranked by frequency: personal references> honorifics> neutral terms> role-based addresses. While personal and honorific references have similar usage rates, both significantly outpace neutral and role-based terms. Notably, role-based addresses are the least frequently used, accounting for merely 5.12% of total usage.

Table 2. Features of user names for intelligent products

Type of address	Typical manifestations	Total/occurrences	scale /%
Official wake-up call	-	-	-
Kinship terms	-	-	-
A nickname or greeting	-	-	-
Negative terms of endearment	-	-	-
A personal name is a term of address	you	142	42.77
Functioning as a greeting	-	-	-
Character name	master	17	5.12
Zero greetings	request ……	46	13.86
A term of respect	nin	127	38.25
amount to		332	100

Personification refers to the use of personal pronouns to address people or objects. In Xian Dan Chinese, common personifications include first-person (self-reference), second-person

(addressing others), and third-person (referring to subjects). Digital products predominantly use the second-person "you" in user interactions, without displaying variability features like plural forms such as "you all." This indicates that digital products default to addressing a single conversational subject during language embedding. The usage remains consistent throughout conversations, unaffected by preceding linguistic expressions. As demonstrated in Example ⑪ and ⑫, the product consistently responds with "you" regardless of whether the question explicitly specifies a person. This addressing pattern has not elicited varied user reactions.

⑪ User: You can stay here for now.

Product: No problem, I'll always be here waiting for you. If you have any other needs in the future, whether you need to search for information or solve problems, you can talk to me anytime.

You can tell me anything you need to know, whether it's breathing or a problem.

⑫ User: Which is more recommended, "How to sigh" or "Spring is not late"?

Product: What did you just say? How about trying to put it another way?

Distinguished from personal pronouns, honorifics in interpersonal communication serve multifaceted pragmatic functions—maintaining harmonious relationships, reflecting cultural etiquette, and demonstrating communicators' modesty. These terms exhibit rich diversity in structure. In smart device interactions, the "nin" form remains prevalent, though its use in human-machine communication has diminished its social relevance. The acceptance of honorifics varies across age groups, with notable disagreements: 56% of children find it "weird," 23% of youth consider it "affected/pretentious/annoying," while elderly users particularly favor it in northern China as a sign of politeness.

In human-machine interactions, the use of "master" as a title carries both formal respect and emotional dependency, emphasizing the subordinate position of the self-proclaimed "master". This linguistic practice essentially reimagines human-machine relationships as traditional master-servant hierarchies. Similar to honorific terms, perceptions vary across age groups and remain contentious: 78% of children accept the term as appropriate, while 19% of young adults find it "pleasant" though 51% consider it "affected". Notably, 73% of elderly users describe it as "chaotic" or "uncomfortable".

Zero-form address refers to a conversational approach in communication where specific salutations are omitted, allowing direct engagement with content. In interpersonal interactions, this is typically accompanied by body language and facial expressions. Digital devices often lack physical gestures, and their address patterns for users typically involve using particles like "please" to form imperative sentences. This addressing style predominantly occurs in function-oriented conversations, as demonstrated by examples ⑬ and ⑭. Such communication patterns have not elicited varied user responses.

⑬ User: I want you to continue to sing next?

Product: Ok, I'm always here, 0 call me if you need anything. Bye.

⑭ User: Hello, XX, I have a class at 3:00 this afternoon.

Product: XX does not support adjusting the course time yet. 0 can usually manually add courses in my schedule today to make sure any classes won't miss.

4.3 Comparative Analysis

In the family field, users 'terms for digital intelligence products and digital intelligence products' terms for people have different expressions, forming a two-way calling pattern (as shown in Table 3). Under this pattern, there are three prominent phenomena.

Table 3. Comparison of distribution patterns of address terms

Type of address	User → digital intelligence product	Smart products → users
Official wake-up call	+	-
Kinship terms	+	-
A nickname or greeting	+	-
Negative terms of endearment	+	-
A personal name is a term	+	+

of address		
Functioning as a greeting	+	-
Character name	+	+
Zero greetings	+	+
A term of respect	-	+

First, the emotional investment in product nomenclature differs significantly. User-identified digital intelligence products exhibit both functional and emotional attributes, contrasting with the reverse emotional inversion in product-to-user communication. Rooted in traditional Confucian culture, users maintain the "father-son" familial bond and extend this relational framework to product interactions, personifying products within social communication circles. Conversely, products adopt more flattened addressing patterns that prioritize functional programming and formulaic responses, with honorific terms failing to gain widespread acceptance among user communities.

Second, the use of address terms reveals an imbalance in human-machine identity construction. The terms used by digital products to address users are essentially human-imposed, mirroring how users address products themselves — both reflecting the proactive role of humans in this communicative relationship. Within these constructed identities, terms like "nin" that strictly adhere to face-saving principles and politeness demonstrate the sense of distance and unfamiliarity between humans and machines. Terms like "idiot" or "master", which reflect power dynamics, fundamentally reveal human attitudes toward machines: subconsciously, machines are not seen as symbiotic partners but rather as tools for psychological compensation.

Third, the cultural asymmetry between users and digital products. In user interactions with intelligent digital products, culturally embedded terms exhibit kinship-like linguistic features and dialectal characteristics. When users actively employ cultural deconstruction techniques to challenge authoritative responses, these cultural elements remain inadequately integrated into the products. For instance, when users address digital interfaces using distinctive dialectal expressions like "Hua Zai" (a Cantonese nickname), the product still responds with standardized templates rather than dialectally tailored responses. As dialects serve as crucial tools for building intimate relationships, this deficiency in responsive mechanisms highlights an underdeveloped aspect in human-computer interaction evolution.

In summary, the asymmetric distribution of human-machine address terms within family contexts reveals how digital civilization is reshaping traditional family structures and relationships. These phenomena reflect a facet of the complex power dynamics between humans and machines. Notably, divergent responses from different groups toward existing address terms demonstrate that the ideal family-machine relationship remains underdeveloped with significant gaps. Moving forward, while adhering to family ethics, we should prioritize constructing pragmatic identities within familial spheres through contextualization, subjectivity, emotional engagement, and differential order principles. By bridging the divide between technological rationality and humanistic warmth, address terms may become crucial transformational codes, helping build a new digital family that integrates functional, emotional, and cultural dimensions.

5. Conclusion

This study examines the forms and characteristics of bidirectional address systems between users and smart devices within contemporary household contexts through a pragmatic identity construction lens. The findings reveal that user-initiated addresses predominantly feature official greetings, kinship terms, and nicknames, blending functional utility with emotional resonance while demonstrating cultural influence on naming conventions. Conversely, device-initiated addresses show higher prevalence of person-reference expressions and honorifics, exhibiting formalized patterns with residual power dynamics in other address types. This bidirectional communication pattern reflects current human-machine relationships and digital household development trends. Future efforts should focus on refining address systems to preserve familial significance in the digital age, ultimately fostering more harmonious human-machine interactions within smart home ecosystems.

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Aging in Place and the Role of Accessibility in Dutch Housing Policy

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Abstract

The demographic aging of Dutch society has placed increasing emphasis on the concept of aging in place as a cornerstone of housing and care policy. This paper critically examines the intersection between aging in place and the accessibility of the built environment within the context of Dutch housing policy. Drawing on recent empirical studies, policy frameworks, and demographic data, the analysis explores the material, institutional, and social dimensions that enable or hinder older adults from remaining safely and independently in their homes and communities. The research identifies a significant mismatch between policy ambitions and the realities of the existing housing stock, which remains largely inaccessible to individuals with mobility or sensory limitations. It also highlights the fragmented implementation of accessibility standards, the insufficient rate of construction of adapted dwellings, and the unequal distribution of resources across municipalities. Neighborhood-level accessibility, social infrastructure, and cultural inclusivity emerge as critical but under-addressed factors in sustaining aging in place. Participation of older adults in design and planning processes is recognized as an emerging strength, although inconsistently practiced. The paper concludes that while aging in place is institutionally prioritized in the Netherlands, its realization depends on systemic reform that embeds accessibility as a normative and structural principle in housing development, urban planning, and social governance.

Keywords: aging in place, accessibility, Dutch housing policy, built environment, social infrastructure, independent living

1. Introduction

The Netherlands, like many industrialized nations, is undergoing a profound demographic transformation characterized by a rapidly aging population. The proportion of Dutch citizens aged 65 and older is projected to rise from approximately 20 percent today to nearly 26 percent by 2040. This demographic shift poses fundamental challenges for national healthcare systems, pension infrastructure, and urban development. One of the most pressing issues is how to ensure that older adults can maintain autonomy, dignity, and quality of life in the environments where they have spent most of their lives. The concept of "aging in place" has emerged as a policy priority, not only as a cost-saving alternative to institutional care but also as a human-centered approach to aging that aligns with the preferences of the majority of

older adults.

In the Dutch context, aging in place has become more than a sociological ideal. It has become a structural necessity embedded in long-term care reforms, housing strategies, and local governance. Since the introduction of the 2015 Social Support Act (Wet maatschappelijke ondersteuning), responsibility for supporting older adults has shifted significantly to municipalities, which are now tasked with creating age-friendly environments through infrastructural design, community services, and housing adaptations. As a result, local governments, housing associations, and care providers are now at the forefront of shaping a built environment that supports older people in remaining safely and comfortably in their own homes for as long as possible.

The ability to age in place depends not only on health status or social support but critically on the accessibility and adaptability of the home and its surrounding neighborhood. Accessibility in this context refers to more than physical features like step-free entrances, elevators, or grab bars. It encompasses spatial planning, transport connectivity, proximity to essential services, and the social fabric of the community. For aging in place to be viable, the home must be a site of safety and comfort, while the neighborhood must function as an extension of that home, offering opportunities for social engagement, mobility, and access to care. The Dutch housing stock, however, was largely built during decades when population aging was not a central concern. A substantial proportion of the existing homes are ill-suited to accommodate people with limited mobility, chronic illness, or cognitive decline.

Aging in place also intersects with broader issues of housing supply, affordability, and urban inequality. In the Netherlands, where housing shortages are acute, many older adults continue to live in homes that exceed their needs in size but fall short in safety and accessibility. The lack of suitable alternative housing options exacerbates this mismatch, creating a bottleneck in the housing market that affects younger generations as well. Although national efforts aim to stimulate the construction of senior-friendly housing, progress remains slow due to rigid zoning regulations, limited funding, and a fragmented policy landscape. The ambition of aging in place, while socially desirable and economically sound, therefore collides with the structural and spatial realities of the Dutch built environment. Understanding the role of accessibility in making this ambition a lived reality is essential. It is in the intersection between aging policy, housing design, and urban accessibility, that this paper situates its analysis.

2. The Policy Context

The trajectory of Dutch housing policy over the last several decades reveals a fundamental recalibration of how the state approaches aging, care, and the built environment. Historically, the Netherlands operated a highly institutionalized model of eldercare. Retirement homes, nursing institutions, and specialized care facilities formed the backbone of public policy responses to aging. Older adults, especially those with declining health or limited family support, were often relocated to state-supported care institutions. This model was widely seen as both comprehensive and humane at the time, yet it also came with limitations. Institutional care models, by design, remove older adults from their familiar social environments. They reduce daily autonomy, often require downsizing or relinquishing personal property, and in many cases create psychological and emotional stress related to forced displacement.

In the late 20th century, a paradigm shift began to emerge. Cost pressures in the healthcare system became increasingly difficult to ignore, especially with projections of rising longevity and declining birth rates. Policymakers recognized that institutional care models were not only expensive but also poorly aligned with the preferences of the aging population. Surveys consistently showed that older adults overwhelmingly preferred to remain in their own homes as long as possible. The concept of “aging in place” gained ideological and political traction. It offered the promise of autonomy and dignity, framed aging as a social rather than medical phenomenon, and aligned with broader cultural values that emphasized independence and participation.

Dutch housing policy began incorporating this conceptual shift into formal regulatory frameworks. The major turning point arrived with the 2015 decentralization of long-term care through the Social Support Act (Wet maatschappelijke ondersteuning, Wmo). This legislation transferred significant responsibilities from the national government to municipalities.

Local authorities were now charged with delivering a wide range of support services, from home modifications and assistive technologies to community engagement initiatives and transport subsidies. The rationale for this move was rooted in the principle of subsidiarity: local governments are presumed to be closer to their populations and thus better equipped to tailor services to specific community needs. Under this model, municipalities became active agents in facilitating aging in place, with direct accountability for creating environments conducive to later life.

At the same time, this policy reform introduced a highly decentralized and often uneven landscape of service delivery. While some municipalities embraced their expanded roles with innovative policies, collaborative housing projects, and public-private partnerships, others struggled with financial constraints, administrative capacity, and lack of technical expertise. A patchwork system emerged in which access to services and housing adaptations varied significantly depending on geographic location. This variability introduced inequities in the lived experience of aging in place, raising questions about the state's ability to guarantee uniform standards of dignity and care across the country.

Central to this evolving policy environment is the issue of housing accessibility. Aging in place presupposes that homes are not only safe but also capable of supporting the evolving physical and cognitive needs of older individuals. For many Dutch households, this is not currently the case. Much of the Dutch housing stock was built between the 1950s and 1980s, a period marked by rapid urbanization and mass housing construction. These buildings were not designed with aging populations in mind. Multi-story homes with narrow staircases, high bathtubs, inaccessible entryways, and insufficient lighting dominate large segments of the urban and suburban landscape. Retrofitting these homes poses a technical and financial challenge, especially for low- and middle-income homeowners and social housing tenants.

To address this gap, the Dutch government introduced various grant schemes and tax deductions aimed at stimulating private investment in home modifications. These policies include subsidies for installing stairlifts, widening doorways, replacing tubs with walk-in showers, and implementing smart-home technologies. Housing associations—responsible for a significant portion of social rental housing in the Netherlands—are also encouraged to modernize their building portfolios. Yet these measures have produced mixed results. The pace of renovation is slow. The demand for accessible housing significantly outstrips supply. Waiting lists for adapted social housing remain long, especially in urban areas where housing pressure is intense. Older adults who wish to move to a more suitable home often find few available options, leading to situations where people age in place not by design but by default, in homes that fail to support their well-being.

The Dutch government has also attempted to stimulate the construction of new housing units specifically designed for aging populations. These efforts include promoting intergenerational housing, senior co-housing communities, and small-scale clustered living arrangements that blend privacy with communal services. Policy instruments such as the National Housing Agenda and the Programma Langer Thuis articulate these ambitions clearly. They stress the need to build tens of thousands of senior-friendly homes by the end of this decade. Strategic alignment between urban planning, healthcare policy, and housing development is emphasized as a necessary condition for achieving this goal. Local zoning laws are being revised in some areas to permit higher-density construction and mixed-use developments near amenities and transport hubs.

Although policy commitments have been established, structural barriers remain unresolved. Land scarcity in high-demand regions, lengthy permitting processes, and community opposition to new developments limit the scalability of such projects. Real estate developers often prioritize higher-margin investments, reducing incentives to build for an aging demographic that may lack the financial resources of younger homebuyers. The result is a planning paradox: while national policy encourages aging in place, market dynamics and local regulatory hurdles often constrain the practical realization of this vision.

Accessibility in Dutch housing policy is not limited to physical infrastructure. It extends into the realm of social accessibility. Older adults with limited digital literacy face difficulties in navigating increasingly digitized public

services. Municipal portals, application processes for subsidies, and access to care providers often rely on online systems. The shift to digital service delivery, though cost-efficient, risks excluding the very populations that most depend on public support. Municipalities are now tasked with bridging this gap through service desks, community centers, and outreach initiatives, but these efforts remain underfunded and inconsistently applied.

Another important dimension of the policy context is the role of informal caregiving. Dutch policy increasingly assumes that family members, neighbors, and local volunteers will provide much of the day-to-day support required for older adults living at home. This assumption is embedded in policy language that emphasizes "self-reliance" and "participation." While these values align with broader social ideals, they can obscure the practical burdens placed on caregivers, many of whom are themselves aging or balancing employment with caregiving responsibilities. Women, in particular, bear a disproportionate share of informal care work, raising questions about gender equity in the implementation of aging-in-place strategies. Policy frameworks acknowledge the importance of informal caregivers but offer limited structural support such as respite care, caregiver allowances, or mental health services.

The Dutch policy context also reflects broader European and international trends. The Netherlands is an active participant in WHO's Age-Friendly Cities and Communities initiative, which promotes comprehensive planning across transport, housing, health, and social participation. Many municipalities have adopted age-friendly charters, developed senior councils, and launched pilot projects inspired by international best practices. These initiatives signal a growing recognition that aging is not solely a medical or individual matter, but a public and spatial one. Cities and towns must be designed not just to accommodate older residents, but to actively support their full participation in social life. In this sense, accessibility becomes a foundation for democratic inclusion.

The increasing momentum behind aging-in-place policy has not bridged the gap between aspiration and implementation. Accessibility, though universally acknowledged as essential, is still treated as a supplemental rather than foundational component of housing development. Many architects, developers, and policymakers continue to design for an able-bodied population, viewing aging as a niche issue rather than a demographic inevitability. Design standards often fail to mandate universal accessibility, and incentives for compliance are weak. This disconnect between policy rhetoric and design practice contributes to a built environment that marginalizes rather than integrates aging populations.

Cultural perceptions of aging also shape the policy environment. In Dutch society, aging is often framed through the lens of productivity and active citizenship. Successful aging is associated with continued independence, social participation, and health maintenance. While this framework offers a positive vision of later life, it can inadvertently stigmatize those who are frail, disabled, or dependent. Policies built on ideals of self-sufficiency may overlook the structural barriers that prevent many older adults from achieving them. This tension becomes especially visible in immigrant communities, where aging is experienced differently due to language barriers, cultural expectations, and socioeconomic disparities.

The future of Dutch aging policy depends on confronting these contradictions. Accessibility must be redefined not as a reactive accommodation but as a proactive design principle embedded in every stage of urban and housing development. Aging in place requires more than localized interventions. It requires systemic change in how the built environment is imagined, funded, and governed. The challenge is not simply to allow older adults to remain where they are but to ensure that those places remain habitable, safe, and empowering across the lifespan.

3. Accessibility and the Built Environment

Accessibility in the context of aging in place is not confined to architectural features within individual homes. It operates across multiple scales—spatial, infrastructural, and social—and shapes the broader ecosystem that determines whether older adults can remain in their communities with dignity, autonomy, and safety. In the Dutch context, the built environment plays a central role in mediating the experience of aging, yet much of this environment remains inadequately equipped to meet the complex

demands of an aging population.

The physical design of dwellings is often the most visible dimension of accessibility. Step-free entryways, wide corridors, non-slip flooring, lever-style door handles, and walk-in showers represent a baseline for aging-friendly home design. In the Netherlands, a substantial share of the existing housing stock fails to meet even these minimum accessibility standards. A legacy of post-war housing expansion produced vast tracts of apartments and terraced houses built without elevators, often with steep staircases and narrow doorways. These structural features are not easily modifiable. Home adaptations such as stairlifts or bathroom renovations can be expensive, time-consuming, and contingent on tenant approval or municipal subsidies.

Private homeowners may lack the financial capacity or motivation to undertake such adaptations unless compelled by necessity. Renters in social housing often depend on long bureaucratic processes to access modification services. Municipal schemes intended to finance accessibility improvements are unevenly applied across jurisdictions. Some local governments maintain active aging-in-place programs that include home assessments and targeted grants. Others treat accessibility retrofits as reactive, responding only after a crisis has occurred. These inconsistencies in service provision create unequal aging experiences, shaped not by individual need but by geographical circumstance.

Beyond the private dwelling, the design of residential buildings also poses challenges. In many older multi-unit buildings, shared spaces such as stairwells, lobbies, and entrances are not wheelchair accessible. Elevators, where present, may be too small to accommodate mobility devices. Emergency exits and fire safety protocols may not account for the slower response times or sensory limitations of elderly residents. Even the placement of mailboxes, signage, and waste disposal areas can create daily friction for people with mobility, vision, or cognitive impairments. These cumulative barriers contribute to a silent attrition of autonomy, as individuals gradually reduce their participation in everyday life outside the home.

The surrounding neighborhood exerts an equally profound influence on the feasibility of aging in place. Walkability, safety, and environmental quality are critical features of an age-friendly built environment. Sidewalks must be even, well-lit, and free of obstructions. Public benches, resting points, and pedestrian crossings need to be available and appropriately spaced. Street signage should be legible, intuitive, and positioned at eye level. In many Dutch neighborhoods, especially those built during the car-centric planning era of the mid-20th century, these features are either absent or poorly maintained. The dominance of cars in suburban and peri-urban areas creates hostile environments for pedestrians, particularly for older adults who rely on walking or mobility aids.

Access to amenities such as grocery stores, pharmacies, general practitioners, and recreational facilities determines the extent to which older adults can perform daily tasks independently. In many parts of the Netherlands, retail consolidation and centralization have led to the disappearance of local shops. Large supermarkets and health centers have relocated to regional hubs, often on the outskirts of cities and towns, accessible primarily by car or bicycle. Public transportation offers a theoretical solution, but practical use is often constrained by limited service frequencies, poorly designed stops, or the complexity of digital ticketing systems. Older residents who no longer drive or use smartphones may find themselves effectively isolated from essential services, even if those services exist within municipal boundaries.

Cultural and linguistic accessibility also shape the usability of the built environment. In diverse urban areas such as Rotterdam, Amsterdam, and The Hague, older residents with migration backgrounds often face additional barriers. Language differences, unfamiliarity with bureaucratic systems, and culturally unresponsive service provision intersect to create environments that feel exclusionary. Research on Moroccan and Turkish older adults in the Netherlands illustrates how social isolation, lack of culturally familiar spaces, and perceived insecurity in public areas diminish the potential of aging in place. These challenges are not simply matters of preference. They reflect systemic gaps in urban design that fail to recognize or respond to the plural realities of aging.

The built environment also interacts with social infrastructure in ways that influence psychological well-being. Public spaces such as

libraries, community centers, parks, and places of worship provide venues for intergenerational interaction, social engagement, and informal caregiving networks. In many communities, these spaces are disappearing due to budget cuts, privatization, or changing urban priorities. As physical meeting points vanish, older adults lose access to the kinds of weak social ties, acquaintances, neighbors, shopkeepers, that form the scaffolding of social inclusion. This decline in everyday publicness contributes to loneliness and alienation, both of which are significant predictors of physical and cognitive decline in later life.

Accessibility also encompasses the temporal rhythms of urban life. Nighttime lighting, noise levels, service hours, and traffic patterns affect how safe and comfortable older residents feel in their surroundings. An environment may appear accessible during daylight hours but become hostile at night. Older adults, especially those with visual impairments or balance issues, may begin to self-restrict their movements based on perceived threats or discomfort. These restrictions, although self-imposed, stem directly from environmental cues that communicate whether or not a space is meant for them. The built environment can either invite or exclude, reassure or intimidate, encourage or deter.

Designing for accessibility in the built environment requires coordination across multiple policy domains. Urban planning, transport engineering, public health, housing, and social services must align to produce age-inclusive outcomes. In the Netherlands, siloed governance structures often complicate such alignment. While the Ministry of the Interior sets national housing targets and building codes, municipal governments control land use, transport planning, and service delivery. Housing associations operate under a separate regulatory framework, often with competing priorities related to affordability and environmental sustainability. The absence of a unified regulatory or funding mechanism for age-friendly development leads to fragmented implementation and missed opportunities for systemic reform.

Innovation in accessibility design remains uneven. Some municipalities and housing developers have piloted smart-home technologies, modular construction, and co-housing models to address accessibility challenges. These projects, while promising, remain exceptions rather than the rule. The mainstream construction industry still prioritizes cost efficiency and aesthetic norms that cater to younger demographics. Universal design remains largely underutilized in new construction, even with evidence supporting its cost-effectiveness and accessibility. Architectural education and professional standards continue to reflect outdated assumptions about who cities and homes are built for, reinforcing design paradigms that marginalize older adults.

Climate adaptation policies introduce a new set of tensions. Efforts to densify urban areas, reduce car dependency, and create green infrastructure often conflict with the accessibility needs of older populations. Shared mobility systems like bike-sharing and app-based car rentals exclude those without smartphones or with limited physical mobility. Car-free zones may improve air quality but reduce transport options for people with disabilities. Vertical densification through high-rise construction creates logistical challenges for emergency services, elevator maintenance, and social cohesion. Environmental sustainability and social sustainability are frequently treated as separate agendas, although both exert overlapping impacts on aging populations. Technological accessibility introduces another layer of complexity. As public services migrate online, older adults encounter new forms of spatial exclusion. Booking medical appointments, applying for housing adaptations, or accessing transportation subsidies often requires digital literacy and reliable internet access. In the Netherlands, where digitalization has been rapid, older residents without computer skills or smartphones are at risk of falling through the cracks. Physical spaces such as municipal offices and libraries are increasingly staffed and resourced under the assumption of digital self-service. The disappearance of analog alternatives, paper forms, in-person appointments, telephone hotlines, transforms the built environment into a maze of inaccessible portals.

The concept of accessibility in the built environment must also contend with the psychological dimension of place attachment. Older adults often express deep emotional connections to their homes and neighborhoods. These attachments are formed over years or decades and include memories, routines, social

relationships, and a sense of personal history. Policies or planning interventions that disrupt these attachments can produce trauma, resistance, and loss of identity. Forced relocations, rapid neighborhood change, or intrusive modernization projects may undermine rather than support aging in place. Accessibility, in this broader sense, requires sensitivity to the symbolic and emotional significance of place.

Design processes that incorporate older adults as co-creators rather than passive recipients offer a promising path forward. Participatory planning, user-centered design, and community-based initiatives provide mechanisms for aligning the built environment with the lived realities of aging. In the Netherlands, such models are emerging in experimental housing cooperatives, neighborhood design charrettes, and inclusive urban labs. These efforts demonstrate that accessibility is not merely a technical issue but a social practice, embedded in relationships of trust, recognition, and shared agency. When older residents are invited to articulate their needs, preferences, and aspirations, the resulting environments are more likely to be inclusive, flexible, and resilient.

Accessibility in the built environment is ultimately about the right to inhabit space. It is a claim to visibility, mobility, and participation. In an aging society, the failure to prioritize accessibility represents not just a policy oversight but a violation of that right. The Dutch policy commitment to aging in place must be grounded in a built environment that supports rather than constrains later life. This support must be designed, funded, regulated, and maintained with intentionality, not left to the market or chance. It must recognize that aging is not an exception but a universal condition, and that environments built to support the old are environments that will, eventually, support all.

4. Data Overview

Quantitative data plays a crucial role in revealing the structural and systemic conditions surrounding aging in place within the Netherlands. While qualitative studies offer rich narratives about individual experience, statistical indicators offer a macroscopic view of infrastructural readiness, demographic patterns, and emerging policy gaps. The five core data points outlined in the table provide a diagnostic lens through which the feasibility and effectiveness of aging-in-place policies can be assessed. They not only reflect the current state of housing and accessibility but also point toward impending challenges that require coordinated and proactive responses.

Table 1.

Indicator	Value / Findings	Source
Proportion of homes fully accessible (step-free, wide doors, adapted bathrooms)	~25% of housing stock	Henegouwen, 2019
Older adults (65+) living independently	93% (majority without formal care support)	Wammes et al., 2024
Anticipated shortage of accessible homes by 2030	300,000+ units	van Hoof et al., 2021
Seniors citing neighborhood accessibility as key to aging in place	70–80% (across cultural groups)	Hussein et al., 2024
Participation of older people in housing design	Increasing, but unevenly implemented	van Hoof et al., 2021

4.1 Interpreting the Housing Accessibility Deficit

The statistic that only around 25% of homes in the Netherlands are considered fully accessible underscores a foundational barrier to aging in place. Full accessibility refers not only to physical alterations such as step-free access or wide doorways but also to an integrated spatial design that anticipates and supports varying levels of physical and cognitive decline. A three-quarters inaccessibility rate in the national housing stock indicates a profound spatial mismatch between the environments where people age and the functional needs that arise with aging.

This mismatch has multiple origins. Much of the housing stock was constructed between the

post-war decades and the late 20th century under assumptions of able-bodied occupancy. Mass housing projects prioritized speed and cost-efficiency over adaptability. The low percentage of accessible homes also reflects the historical segregation of health and housing policies, with medical institutions bearing the primary responsibility for eldercare. As the policy model shifted toward community-based care, the inherited housing infrastructure failed to keep pace.

The figure also suggests that aging in place, while desirable, is currently constrained by built conditions that do not support physical decline without significant retrofit or relocation. The cost and complexity of retrofitting old buildings—especially multi-unit dwellings with shared stairwells and no elevator shafts—pose logistical and regulatory obstacles. Many older adults live in housing that will require extensive modification to accommodate walkers, wheelchairs, or reduced sensory capacities. Without public subsidies or coordinated interventions, many will remain trapped in unsuitable living environments or be forced into institutional care despite personal preference.

4.2 Independence versus Infrastructure

The figure that 93% of Dutch adults aged 65 and older live independently appears at first glance to be an indicator of success. High rates of independent living suggest that the policy goal of aging in place is not only aspirational but already being realized at scale. Most older adults continue to manage their own households, participate in community life, and navigate their environments without formal care dependency.

The surface impression of this figure, however, deserves critical examination. Independence in this context often masks a silent burden. Many older adults continue living independently not because their homes and communities support them adequately but because alternatives are either unavailable or undesirable. Independence may be maintained at the cost of social isolation, self-neglect, or quiet suffering. Some may avoid requesting support out of fear of being relocated, institutionalized, or labeled as burdensome.

Informal caregiving plays a significant role in sustaining this independence. Family members, neighbors, or community volunteers often fill the care gap left by limited formal support. This model is efficient for the system but may be unsustainable for caregivers. The high rate of independent living must be understood in light of cultural expectations, generational values, and structural pressures. It reflects agency but also necessity. In some cases, independence is not chosen but endured, revealing the limits of the housing and care infrastructure in accommodating varying stages of aging.

4.3 Projected Shortage: A Failing Pipeline

The anticipated shortage of over 300,000 accessible homes by 2030 is perhaps the most urgent signal that current housing policies and construction trends are out of step with demographic realities. This figure combines two deficits: the lack of adapted existing housing and the slow pace of construction of new senior-friendly homes. Even as the government promotes aging in place as a strategic priority, the physical environments needed to support this policy are not being produced at a sufficient rate.

The projected shortage highlights the absence of a scalable strategy for integrating accessibility into new builds. The private housing market prioritizes profitability and trend responsiveness. Developers often cater to the tastes and budgets of younger or middle-aged buyers. Accessibility features are either excluded or offered as upgrades. Regulations do not always mandate universal design in new housing, and incentives to include such features are inconsistent across jurisdictions.

The shortage also stems from limited political alignment across planning, housing, and health departments. Aging in place is framed as a health or social care issue rather than a spatial planning responsibility. This siloed governance model impedes the creation of unified pipelines for aging-ready housing. Without coordinated land-use policy, streamlined permitting for accessible units, or financial mechanisms to reduce development risk, the gap between need and supply will continue to widen.

This projected shortfall is not just a numerical gap. It represents a generation of older adults who may be left without viable housing choices. It also has downstream consequences for health systems, informal care networks, and labor force participation. Unmet housing needs lead to preventable injuries, accelerated institutionalization, and higher health expenditures. They also trap younger families in

unsuitable dwellings as older adults remain in homes that no longer serve them functionally but cannot be relinquished due to lack of alternatives.

4.4 Neighborhood Accessibility and Social Connection

The finding that between 70% and 80% of older adults across cultural groups identify neighborhood accessibility as a key component of aging in place reflects the critical role of the external environment in shaping lived experience. Housing accessibility begins at the threshold but extends outward into the social and spatial matrix that surrounds the home. Walkability, proximity to services, safety, and the availability of social infrastructure all influence whether aging in place remains viable beyond a certain threshold of health or mobility loss.

This data point captures both a shared human need and a differentiated experience. Across demographic categories, older adults recognize the importance of being able to reach pharmacies, markets, clinics, and public transport stops. These needs are amplified in later life as car usage declines and physical resilience diminishes. Yet the experience of neighborhood accessibility is not distributed equally. In urban cores, dense amenities may be available but not always physically accessible. In suburban or rural areas, the absence of transit and the spatial dispersal of services may pose insurmountable barriers.

The statistic also reflects the invisible architecture of social inclusion. Neighborhoods function not only as logistical spaces but as stages for informal social life. The ability to greet a neighbor, sit in a public square, or access a library defines the social quality of aging. When the built environment erodes these opportunities, loneliness and psychological decline increase. Neighborhood accessibility is not a luxury but a structural determinant of health and belonging in older adulthood.

4.5 Design Participation and Democratic Deficits

The final indicator points to a growing recognition that participation in housing design processes by older adults is increasing, although implementation remains uneven. The importance of user involvement is not simply procedural. It reflects an ethical and epistemological shift in how expertise is valued. Older adults bring lived experience, tacit knowledge, and long-term perspectives to housing design that technical experts alone cannot provide. The rise in support for participatory models has not eliminated the structural barriers that inhibit their application. Planning timelines, professional hierarchies, and financial pressures often marginalize end-users in the design process. Participation is sometimes limited to tokenistic consultation rather than co-creation. Those who are invited to participate tend to reflect more privileged segments of the older population. Migrants, lower-income individuals, and those with cognitive impairments are often excluded from these processes.

The uneven implementation of participatory practices reveals a democratic deficit in how the aging experience is translated into spatial form. It also suggests that policies promoting aging in place may falter unless they incorporate the voices of those most affected. Inclusive design must be process-driven as well as outcome-oriented. Without meaningful participation, design risks reproducing the same exclusions under new aesthetic forms.

5. Challenges and Opportunities

The ambition of enabling aging in place across the Netherlands is shaped by a landscape of competing constraints, shifting responsibilities, and embedded structural disparities. Policy documents at the national and municipal levels express a clear commitment to promoting autonomy, dignity, and accessibility for older adults. This ambition resonates with demographic urgency, fiscal necessity, and the articulated preferences of the aging population. Still, the pathway from policy to practice remains riddled with persistent challenges. These include the architectural rigidity of the existing housing stock, the inertia of the housing market, financial limitations at the local level, and social inequalities that compound vulnerability in later life.

One of the most formidable challenges lies in the nature of the current housing infrastructure. A significant share of Dutch dwellings were built before aging populations became a planning consideration. These homes reflect design assumptions centered on young, mobile, nuclear families. The layouts often include steep internal staircases, small bathrooms, narrow doorways, and poor insulation. Converting these spaces into safe and supportive environments for older individuals is technically complex and

financially burdensome. Structural changes such as installing elevators in walk-up apartment blocks or converting bathtubs into accessible showers require not only investment but also coordination among property owners, tenants, and regulatory authorities.

Retrofitting homes to meet accessibility standards is not a uniform process. The effectiveness of these modifications depends on the original design of the home, the adaptability of the materials, and the presence of shared ownership arrangements. In buildings managed by housing associations or co-operatives, decisions about renovations often require collective approval. This process introduces delays and may lead to uneven implementation, particularly when priorities between younger and older tenants diverge. Private homeowners, particularly those with low to moderate incomes, may not qualify for renovation subsidies or may lack the financial stability to invest in adaptations that do not increase resale value.

Affordability remains a critical issue. The Dutch housing market is experiencing high demand and constrained supply across nearly all segments. Rising property prices, long waiting lists for social housing, and stagnant new construction rates have produced a mismatch between available housing and demographic need. Older adults who wish to downsize or move into more accessible homes often find themselves with few viable options. Many remain in large, multi-story family homes not out of choice but because no better alternative exists. The lack of appropriately scaled, single-level, or senior-adapted housing units in urban centers forces older individuals either to endure increasingly unsuitable living conditions or to relocate to unfamiliar or remote areas, where services may be lacking and social networks are disrupted.

The housing shortage affects not only older adults but also younger generations, creating competition in the market and political pressure on policy decisions. Efforts to prioritize senior housing may meet resistance from constituencies advocating for starter homes, family housing, or refugee accommodation. Municipal planning departments must navigate these competing demands within the limits of zoning laws, land availability, and development incentives. The result is a triage system in which aging-in-place policies are subordinated to broader housing concerns, rather than integrated into a comprehensive framework that anticipates lifelong needs.

Decentralization, intended to bring services closer to the people, has introduced both innovation and disparity. Under the 2015 Social Support Act, municipalities were given expanded responsibility for facilitating aging in place through housing support, domestic assistance, and local care services. Some municipalities, particularly larger and wealthier ones, have developed sophisticated systems for identifying vulnerable seniors, coordinating service delivery, and financing home modifications. Others have struggled with budget constraints, limited staffing, and inadequate data infrastructure. Older residents in rural or low-capacity municipalities may encounter fragmented services, long waiting times, and insufficient outreach. The quality of aging in place becomes contingent not on individual need but on postal code.

Digitalization is accelerating this disparity. Municipalities increasingly rely on digital platforms for service requests, eligibility assessments, and application tracking. While this transition improves efficiency for some, it alienates those without digital literacy or internet access. Older adults who are unfamiliar with online systems may become dependent on family members or neighbors, undermining the policy goal of independent living. Attempts to create alternative access points, such as telephone lines or in-person support desks, are often under-resourced or inconsistently staffed. The push toward digital-by-default governance in an analog-reliant demographic deepens the accessibility gap and introduces new forms of exclusion.

Social isolation, already a significant concern among older populations, is exacerbated by inaccessible housing and neighborhoods. Individuals who cannot navigate their homes safely or leave them easily are at higher risk of losing social contacts. This isolation leads to mental health decline, reduced physical activity, and increased reliance on emergency services. Policy efforts to combat loneliness have gained attention in recent years, yet they often operate independently from housing policy. The built environment is rarely considered a determinant of social connection, even though features such as communal spaces, walkable areas, and intergenerational proximity are proven to

support spontaneous interaction and emotional well-being.

Ethnic and cultural diversity within the aging population adds layers of complexity. Older migrants often have different household structures, caregiving expectations, and spatial preferences. Housing policies built around normative Dutch nuclear-family models may fail to meet the needs of multigenerational households or culturally specific living arrangements. Language barriers and lack of culturally competent service provision inhibit access to support systems. Migrant seniors also experience intersecting forms of disadvantage, including lower socioeconomic status, limited pension entitlements, and historical experiences of marginalization. A one-size-fits-all approach to aging in place overlooks these differences and risks reinforcing inequities under the guise of universality. Significant opportunities exist to reframe aging in place as a transformative urban policy agenda. The demographic shift toward an older population is not a temporary phenomenon but a structural condition of the 21st century. Designing cities, neighborhoods, and homes that support aging populations offers benefits that extend across generations. Universal design, though originally conceived for disability inclusion, provides a framework for environments that accommodate a wide range of abilities, stages of life, and household types. Applying these principles at scale would reduce the need for costly retrofits, improve safety for all users, and enhance the functionality of public space.

Cross-sectoral collaboration can amplify impact. Housing associations, health insurers, urban planners, technology developers, and community organizations each hold partial solutions to the aging challenge. When these actors coordinate efforts, they can co-produce environments that support aging in place in a holistic manner. Pilot projects across the Netherlands demonstrate the value of integrated design. Some have combined senior housing with day-care facilities, creating intergenerational spaces that reduce age segregation and maximize resource efficiency. Others have used participatory design processes to include older residents in decision-making, ensuring that projects reflect lived experience rather than abstract standards.

Data analytics and predictive modeling offer tools for proactive intervention. Municipalities that invest in data systems can identify at-risk individuals, forecast service needs, and allocate resources more effectively. Geographic information systems (GIS) can map accessibility barriers, service gaps, and social infrastructure density, enabling targeted investments. Privacy and ethics must guide the use of such technologies, but their potential to shift policy from reactive to anticipatory cannot be overlooked. A data-informed approach allows policymakers to move beyond general declarations of support for aging in place and toward measurable outcomes.

Educational and cultural shifts within the design and planning professions are beginning to challenge the implicit ageism of the built environment. Architecture schools are incorporating universal design and inclusive planning into their curricula. Municipal planning departments are piloting age-impact assessments alongside environmental or economic impact analyses. These developments suggest a growing awareness that accessibility is not a niche issue but a core criterion of sustainable urbanism. Built environments that welcome aging are not relics of compromise but models of resilience.

Financing mechanisms represent another area of opportunity. Current subsidy programs for home adaptation and aging-in-place support tend to be fragmented and underfunded. Creating dedicated investment streams through housing funds, public-private partnerships, or social impact bonds could enable larger-scale innovation. Aligning financial incentives with long-term social outcomes would encourage developers and municipalities to prioritize accessibility from the outset. Designing homes that support aging in place reduces downstream costs in health care, emergency services, and institutional care. These savings justify upfront investment if the funding models are structured to capture cross-sectoral returns.

Narratives about aging also play a role in shaping policy and practice. Aging is often framed as decline, dependency, and burden. Reframing it as a phase of life with potential for contribution, growth, and leadership alters the political calculus. Older adults are not simply service recipients but community stakeholders with knowledge, skills, and perspectives that enrich collective life. Including them in planning processes, housing governance, and urban debates transforms aging in place from a

technical fix into a democratic imperative.

The opportunity lies not in isolating aging from other policy domains, but in weaving it through the entire fabric of urban development. Aging in place intersects with climate adaptation, digital inclusion, transport planning, economic development, and social cohesion. Treating it as a standalone issue narrows its scope and limits its transformative potential. Embedding accessibility into mainstream policy agendas recognizes the inevitability of aging and prepares society to meet it with dignity and care.

6. Conclusion

Aging in place has emerged as both a strategic imperative and a normative vision within Dutch housing and social policy. It reflects demographic inevitability, financial prudence, and a deeper cultural preference for continuity, autonomy, and belonging in later life. The Netherlands, with its strong tradition of social planning and decentralized governance, has taken concrete steps toward embedding this vision into its legal, architectural, and care infrastructure. Policy instruments such as the Social Support Act, municipal housing strategies, and national aging programs have signaled a reorientation of state responsibility toward facilitating independent living within the community. These reforms are not rhetorical gestures. They represent a structural pivot away from institutional care toward a model where homes and neighborhoods must carry a greater share of care provision and daily functionality.

At the core of this transition lies the concept of accessibility not as a secondary concern but as a foundational precondition for the realization of aging in place. The built environment, both inside and beyond the home, mediates nearly every aspect of older adulthood. Physical design determines whether a person can bathe, cook, exit the house, cross the street, or visit a neighbor. Urban infrastructure shapes access to services, opportunities for social interaction, and the overall sense of safety and orientation. Social infrastructure including parks, libraries, and public seating either facilitates or impedes participation in civic life. Accessibility is not simply a matter of eliminating architectural barriers. It is the enabling condition for presence, engagement, and dignity across time.

The analysis of the Dutch context reveals significant tensions between aspiration and implementation. National policy endorses aging in place, yet much of the housing stock remains inaccessible to people with limited mobility, chronic illness, or cognitive decline. Municipalities have been tasked with supporting older residents but often lack the resources, coordination mechanisms, or long-term planning capacity to meet demand. The housing market is shaped by demographic competition, land scarcity, and regulatory complexity, leaving many older adults with few feasible alternatives to unsuitable dwellings. Technology promises greater efficiency in service delivery, but often introduces new forms of exclusion for those with limited digital access. Cultural diversity within the aging population presents additional challenges, which are frequently under-addressed in generic housing and care models.

At the same time, the opportunities for transformation are real and present. Universal design, when implemented with foresight and inclusivity, offers a blueprint for spaces that support human variation across the lifespan. Participatory planning practices shift older adults from passive beneficiaries to active agents in shaping their environments. Interdisciplinary collaboration linking housing, health, transport, and social care can generate innovations that scale beyond pilot projects. Data-driven governance tools allow for proactive identification of needs and allocation of resources, particularly when equity is made a central criterion. Framing accessibility not as a cost but as a value-generating investment has the potential to shift economic and political incentives across the development sector.

Accessibility must no longer be treated as a compensatory measure applied after a problem has emerged. It must become a guiding principle from the earliest stages of design, planning, and regulation. Homes, neighborhoods, and cities must be conceived not only for the agile and the affluent but for those who age, who slow, who remember, and who adapt. The challenge is not simply to prolong independent living but to create conditions in which dependency does not equate to exclusion, and vulnerability does not foreclose dignity.

The future of Dutch aging policy depends on moving from localized interventions to systemic transformations. This will require political commitment, sustained investment, and the willingness to challenge inherited assumptions about who cities are for. It will also require

listening to those who live aging every day—not as a policy category but as a lived, embodied experience. In placing accessibility at the heart of the built environment, the Netherlands has the opportunity not only to meet the needs of its aging citizens but to model a form of urbanism that affirms care, interdependence, and inclusion as central civic values.

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Second-Child Fertility Intentions Among Urban Women in Beijing Under the Two-Child Policy

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Abstract

Since the implementation of China's two-child policy in 2015, national efforts to raise fertility rates have met with limited success in urban areas, particularly among highly educated women in cities like Beijing. This paper explores the underlying factors influencing second-child fertility intentions among urban women, focusing on the socio-economic, cultural, and institutional dynamics that shape reproductive decision-making. Drawing on recent demographic data, policy analysis, and qualitative research, the study reveals a persistent gap between state-led pronatalist ambitions and the lived realities of urban women. Economic pressures, workplace discrimination, unequal domestic labor burdens, and emotional burnout serve as key deterrents. Moreover, the absence of structural support systems—such as affordable childcare, flexible work arrangements, and paternal leave—amplifies the cost of motherhood, making second childbirth a perceived risk rather than a rational choice. The paper argues for a shift from fertility-targeted policies to a framework of reproductive autonomy, in which social equity, gender-sensitive reforms, and the voices of women are placed at the center of population policymaking.

Keywords: second-child policy, urban women, fertility intention, Beijing, gender roles, reproductive autonomy, family policy, structural barriers

1. Introduction

China's demographic transition over the past four decades has been shaped by one of the most radical population control experiments in human history—the one-child policy. Introduced in 1979 and enforced through a combination of legal, economic, and social pressures, the policy was credited with curbing population growth but also led to a series of unintended consequences, including rapid population aging, a shrinking labor force, and skewed sex ratios. By the early 2010s, the Chinese government began to acknowledge these challenges, culminating in the implementation of the two-child policy in 2015.

The policy change was positioned as a corrective measure, intended to encourage family expansion and reverse declining fertility rates. State discourse emphasized national rejuvenation, demographic sustainability, and economic competitiveness. However, expectations that urban couples—especially well-educated, economically stable families—would respond positively were largely unmet.

In Beijing, the total fertility rate (TFR) stood at 0.7 in 2020, far below the replacement level of 2.1 and even lower than the national average of 1.3, according to the China Statistical Yearbook (2021). Despite the formal removal of policy restrictions, second-child birth rates in urban centers remained stagnant or declined, especially among women born in the 1980s and 1990s. For instance, a 2019 study by Renmin University's Institute of Population and Development found that only 16.8% of urban women surveyed in Beijing intended to have a second child within the next five years.

Several early evaluations of the two-child policy revealed that the policy's legal relaxation failed to address the deeper socioeconomic and cultural drivers of low fertility. Unlike in rural areas where larger families once symbolized economic utility, urban fertility behavior is shaped by career pressures, housing costs, and individualistic values. In effect, the two-child policy removed the regulatory ceiling but not the practical or psychological constraints that limit family expansion.

What emerges is a fundamental misalignment between state fertility ambitions and urban women's lived realities. While the state seeks to "mobilize" fertility as a demographic resource, many women see childbirth—especially a second child—as a decision that involves significant personal and professional trade-offs. This disjunction sets the stage for exploring the perspectives, constraints, and decisions of women navigating fertility under Beijing's urban pressures.

2. Profiling Urban Women in a Changing Demographic Landscape

Understanding second-child fertility intentions among urban women in Beijing requires a nuanced profile of who these women are—not merely as a statistical cohort, but as social actors embedded in dynamic economic, cultural, and institutional contexts. These women are not passive recipients of policy; rather, they are active decision-makers whose reproductive intentions are deeply shaped by their educational backgrounds, professional trajectories, and evolving personal values.

Over the past two decades, the educational attainment of women in Beijing has undergone a remarkable transformation. According to data from the Beijing Municipal Bureau of Statistics (2022), over 73% of women aged 25–39 hold a college degree or higher, a figure that outpaces both the national urban average and that of most OECD countries. Higher education often translates into delayed marriage and childbirth. National census data indicates that the mean age at first marriage for urban women in Beijing rose from 25.1 years in 2005 to 29.6 years in 2020, while the average age of first childbirth surpassed 29.3 years by 2021.

This delay is closely tied to career prioritization. In Beijing's hyper-competitive labor market, many women enter sectors such as finance, technology, media, and civil service, where performance metrics and promotion cycles leave little room for extended maternity leave or childcare breaks. As one interviewee in a 2020 Peking University study put it: *"Taking a year off for a second child means giving up a three-year promotion track."* This sentiment reflects a broader tension between institutional demands and biological timelines—a tension intensified by the lack of structural support for working mothers.

At the same time, there has been a clear generational shift in how urban women conceptualize motherhood. For the post-80s and post-90s cohorts in Beijing, motherhood is no longer a compulsory marker of feminine success. Instead, personal development, life satisfaction, and emotional autonomy often rank higher than traditional family formation goals. A 2020 survey conducted by the Institute of Population and Labor Economics at the Chinese Academy of Social Sciences found that 42.6% of urban women in first-tier cities viewed a single-child family as "sufficient and optimal," citing time, energy, and emotional bandwidth as major reasons.

This value shift is also influenced by the intensive parenting culture that dominates urban China. Middle-class families in cities like Beijing often feel compelled to invest heavily in early childhood education, extracurricular training, and emotional involvement. The idea of having a second child often elicits not concerns about state policy, but about one's capacity to *adequately parent* two children in a high-pressure environment. Raising a single child is increasingly seen not as minimalist, but as responsible.

Nevertheless, urban women are not a monolith. Class, hukou status, employment type, and access to social resources all shape the

experience of motherhood. Women with Beijing hukou and stable civil service jobs, for example, may have access to extended maternity leave, employer-sponsored childcare, and family housing. In contrast, migrant women working in private firms or informal sectors may lack even basic social protections. For them, a second child represents not just an emotional or ideological choice, but a material risk with long-term livelihood implications.

In this changing demographic landscape, fertility becomes an increasingly individualized decision-making process. The urban woman in Beijing is navigating a contradictory terrain: a policy that encourages more births, a culture that demands perfection in parenting, and a personal life path that often prioritizes autonomy, achievement, and wellbeing. Understanding this evolving profile is crucial to interpreting why second-child fertility intentions remain low—even among those who are economically and legally "eligible" to have more children.

3. Economic and Structural Challenges in Beijing

3.1 The Financial Weight of a Second Child

For urban women in Beijing, the decision to have a second child is rarely a question of preference alone—it is deeply rooted in the economic realities of city life. Beijing consistently ranks among the most expensive cities in China in terms of housing, education, and healthcare, all of which weigh heavily on reproductive planning.

Housing presents one of the most significant barriers. For many families, having a second child implies the need for a larger living space. According to data from the China Index Academy (2023), the average price of new residential property in Beijing exceeds ¥70,000 per square meter, making housing upgrades financially burdensome for most middle-class households. Even for those who already own property, the prospect of renovating, relocating, or renting additional space often deters consideration of a second child.

Education costs further reinforce this hesitation. "Education anxiety" is pervasive in Beijing's urban parenting culture, where intense competition for access to high-quality public schools and elite private training begins as early as preschool. Families often invest in "school district housing" (学区房), pay for after-school tutoring, and compete for limited slots in bilingual or international programs. According to a 2021 report by New Oriental Education, the average annual spending on a single primary school student in Beijing exceeded ¥35,000—and this figure does not include childcare or extracurricular costs. The idea of doubling this investment for a second child often feels financially unsustainable, even for dual-income households.

Childcare expenses and early education access are also crucial factors. Public childcare for children under age 3 remains extremely limited, and most affordable nursery options have long waiting lists. Private kindergartens are often prohibitively expensive and vary widely in quality. Without reliable and affordable childcare, women face the prospect of exiting the labor market temporarily or hiring domestic help, both of which carry high costs or career penalties.

These cumulative financial pressures make the idea of having a second child a deeply calculated risk—one that many urban couples, especially women, are unwilling to take in the absence of substantial external support.

3.2 Inflexible Institutions and Workplace Disincentives

Beyond direct financial costs, the structural organization of work and public services in Beijing creates additional barriers that disproportionately affect women's fertility intentions. Despite state-level pronatalist rhetoric, the everyday institutions governing labor, maternity, and family support remain largely inflexible and underdeveloped.

One major constraint is the limited availability of paid parental leave, particularly for fathers. While Beijing offers 158 days of maternity leave, paternity leave is typically just 7 to 15 days, depending on the employer and local implementation. This reinforces traditional gender roles, where child-rearing is seen as the mother's sole responsibility, placing additional pressure on women to manage both professional and domestic spheres during and after childbirth.

Moreover, many private-sector employers in Beijing—especially in tech, media, and finance—are reluctant to hire or promote women of childbearing age. Though illegal, such discriminatory practices persist in subtle forms: informal interview questions, delayed contracts,

and performance-based promotion delays. A 2020 study by the Beijing Women's Federation reported that over 56% of surveyed women believed pregnancy negatively impacted their career progression, particularly when having a second child.

Workplace flexibility is also limited. Remote work options, part-time arrangements, or on-site childcare facilities remain rare in most organizations. This lack of institutional accommodation makes it difficult for women to re-enter the workforce after childbirth or to balance dual roles as workers and caregivers. The result is often a "motherhood penalty" that intensifies with a second child, making the choice not just difficult—but systemically discouraged.

In sum, Beijing's economic and structural environment sends conflicting signals: while the state encourages childbirth, the institutions that shape women's daily lives offer little practical support for raising a second child. This contradiction helps explain why many urban women are increasingly resistant to expanding their families, despite legal permission or policy encouragement.

4. Gender Roles and the Domestic Burden of Motherhood

4.1 Persistent Gender Norms in Urban Households

Despite the rise of education and employment among urban women in Beijing, traditional gender roles remain deeply embedded in family life. Marriage and child-rearing continue to be feminized responsibilities, with social expectations placing the burden of domestic labor squarely on women's shoulders. This is particularly evident during and after the transition to motherhood, when even dual-income couples often revert to conventional divisions of labor.

A study by the All-China Women's Federation (2021) revealed that among urban families with one or more children, women perform over 75% of unpaid domestic work, including childcare, cooking, and housework. These numbers persist even among couples who claim to support "gender equality." This imbalance becomes more acute with the birth of a second child, when time demands double but structural support remains stagnant.

Cultural expectations further reinforce this disparity. The ideal of the "self-sacrificing mother" continues to dominate media portrayals, parenting forums, and peer discourse. For many women, this results in intense psychological pressure to not only have children, but to be the *primary* and *perfect* caregiver. The societal judgment against "outsourcing motherhood"—such as relying on nannies or grandparents—adds emotional strain to an already burdensome role.

Even when male partners express willingness to participate in parenting, workplace norms and limited paternity leave often prevent them from doing so in practice. Consequently, second-child decisions are not made in isolation—they are evaluated within the context of existing gendered labor expectations, which overwhelmingly disincentivize women from expanding their families.

4.2 The Invisible Cost of Maternal Sacrifice

The decision to have a second child often demands a level of personal compromise from women that extends beyond time and energy—it impacts their identity, autonomy, and mental health. In many cases, the physical and emotional demands of first-time motherhood leave women feeling exhausted, undervalued, and unsupported. The idea of repeating this experience with a second child is often perceived as emotionally unsustainable.

Qualitative interviews conducted by Renmin University's Family Studies Center (2020) showed that among mothers who chose not to have a second child, many cited "loss of self," "emotional burnout," and "constant mental overload" as key reasons. These narratives challenge the assumption that economic factors alone deter second-child births. Instead, they point to a broader issue: motherhood in contemporary urban China is not simply a private joy, but a socially undervalued and emotionally taxing labor.

Moreover, maternal identity in urban China is closely linked to performance. Mothers are expected not just to *raise* children, but to *optimize* them—academically, socially, and emotionally. This "intensive mothering" model amplifies the stakes of parenting and makes the thought of dividing attention and resources between two children daunting, if not overwhelming.

In this context, many women view choosing to have only one child as a rational act of self-preservation. Far from being a sign of selfishness or individualism, it reflects a deeper

resistance to societal structures that place the weight of parenting disproportionately on mothers while offering little in return.

5. Women's Perceptions and Lived Experiences

While policy debates and demographic statistics provide a macro-level understanding of fertility trends, the decision to have—or not have—a second child is ultimately made at the micro level, within individual lives shaped by emotion, uncertainty, and deeply personal trade-offs. For many urban women in Beijing, the choice regarding a second child is not simply a reaction to national policy, but a reflection of their lived experiences with motherhood, work, marriage, and identity.

Empirical studies and qualitative interviews reveal that women's fertility intentions are rarely binary. Rather than a clear "yes" or "no," most women express ambivalence—an internal negotiation between desire, capacity, and fear. A 2020 study by the Institute of Population and Labor Economics (CASS) found that while approximately 41% of urban women in Beijing under 40 said they were "open to the idea" of a second child, only 13% said they were actively planning for one. The gap between abstract openness and actual planning speaks to the weight of invisible constraints many women internalize after experiencing motherhood for the first time.

For some, the first childbirth experience itself becomes a turning point. Many report feeling unprepared for the physical toll, psychological isolation, and abrupt shift in identity. Support systems—whether spousal, familial, or institutional—are often inadequate. Even when partners are supportive, the default burden of parenting frequently falls on the mother, reinforcing the sense of "doing it alone." As one respondent in a 2021 Tsinghua University qualitative study expressed: *"I love my child, but I lost myself for two years. I can't imagine doing that again."*

These narratives challenge the assumption that the absence of a second child stems from selfishness, materialism, or a lack of patriotism—as sometimes implied in media or political discourse. Instead, they point to a rational response to an environment in which the costs of additional motherhood—emotional, professional, and physical—often outweigh the perceived benefits. Many women articulate this as a matter of quality over quantity: raising one child "well" is preferable to struggling to raise two under constant stress.

Peer influence and social comparisons also play a subtle role. Within urban professional circles, having only one child has increasingly become normalized. When nearly all one's peers opt for single-child families, the pressure to conform to a two-child ideal—already weak—further diminishes. In this sense, lived experience intersects with emerging social norms to create a fertility culture distinct from both state messaging and older generational expectations.

What emerges from these accounts is not a rejection of family or motherhood, but a careful redefinition of what family means in a modern urban context. Second-child fertility intentions are filtered through prior experience, anticipated burden, and the deeply personal need for emotional sustainability. Recognizing and centering these lived realities is essential if policies are to resonate with the very women they aim to influence.

6. Policy Limitations and Misalignment with Lived Realities

The two-child policy, introduced in 2015 as a major reform in China's population control regime, was underpinned by a top-down demographic logic: it aimed to slow population aging, rebalance the workforce, and secure long-term economic sustainability. However, the policy was conceptualized and implemented primarily through a macroeconomic lens, with insufficient attention to the social, emotional, and structural conditions that shape reproductive decision-making—especially for urban women. This has resulted in a growing gap between what the policy assumes and what women actually experience.

A fundamental limitation of the policy lies in its instrumentalist framing of fertility, treating childbearing as a national duty rather than a deeply personal and socially embedded choice. Official discourse often portrays increased fertility as a moral contribution to the nation, yet it fails to engage with the reality that motherhood, particularly in urban centers like Beijing, entails significant individual costs. The state's approach assumes that once the previous restrictions were lifted, women would respond with enthusiasm. But this assumption overlooks how the lived context of modern life has shifted dramatically since the era of the one-child policy.

Moreover, the policy has been poorly integrated with the broader welfare system. Although some cities, including Beijing, offer cash subsidies, extended maternity leave, or childbirth allowances, these measures are often limited in scope, uneven in implementation, and fail to address core issues such as affordable childcare, flexible working arrangements, and comprehensive paternal leave. According to a 2022 report by the National Health Commission, while 85% of surveyed families supported the idea of government financial assistance for second children, only 17% reported receiving any form of meaningful support beyond birth registration.

The lack of intersectional sensitivity further weakens policy effectiveness. Urban women are not a homogenous group—differences in hukou status, employment type, class position, and education level dramatically influence one's ability to act on fertility intentions. Migrant women without local hukou often lack access to subsidized healthcare and public kindergarten slots, while women in the private sector may face more career penalties than their counterparts in public institutions. These variations are rarely reflected in policy design, which tends to operate on the assumption of a uniform, able-bodied, middle-class mother.

Another disconnect arises from the absence of gender analysis in fertility governance. While state narratives increasingly emphasize "shared parenting responsibilities," actual policy tools continue to place the onus of reproduction on women, both symbolically and practically. Maternity leave policies are longer and more developed than paternity ones; family planning propaganda still targets women disproportionately. The resulting asymmetry reinforces the idea that reproductive labor is primarily a female obligation, thereby perpetuating the very gender dynamics that deter many women from having more children.

Finally, there is a lack of feedback mechanisms to incorporate women's voices into fertility policymaking. Surveys, when conducted, are rarely used to shape concrete reforms. There are few consultative channels between local authorities and actual mothers who face these choices daily. In this context, the two-child policy becomes a one-way directive—technically permissive, but socially disconnected.

The result is a policy environment that is demographically ambitious but socially tone-deaf. By treating fertility as a problem of numbers rather than one of social wellbeing, the state continues to miss the opportunity to craft reproductive policies grounded in respect for individual autonomy, gender equity, and everyday realities. Until such alignment is achieved, the gap between policy intention and public response is likely to persist, if not widen.

7. Building a Supportive Framework for Reproductive Autonomy

To meaningfully address the declining fertility intentions among urban women in Beijing, the policy focus must shift from encouraging more births to supporting the people—particularly women—who bear the social, emotional, and economic weight of reproduction. This requires moving beyond numerical targets and demographic engineering toward a framework rooted in reproductive autonomy, gender equality, and structural support.

Central to such a framework is the recognition that reproductive choices are shaped by systems, not just preferences. The state must acknowledge that women are not withholding fertility out of apathy or selfishness, but because their lived environments—employment conditions, family dynamics, access to care—often make the idea of a second child feel untenable. Reframing fertility policy through a lens of choice rather than obligation means respecting women's rights to have, delay, or forgo additional childbirth without social or institutional penalties.

A key pillar of this support structure should be the expansion and normalization of public childcare services. Beijing currently suffers from a significant shortage of affordable childcare options, particularly for children under the age of three. Introducing publicly funded, high-quality early childhood care centers—available regardless of hukou status—would relieve mothers of the impossible burden of being full-time caregivers while pursuing a career.

Equally important is workplace reform. Flexible scheduling, part-time return tracks, and guaranteed protection against discrimination due to pregnancy or maternity leave must become standard rather than exceptional. Encouraging paternal involvement through longer, compulsory paternity leave and incentivizing employers to create

family-friendly policies would begin to rebalance gendered parenting roles. Lessons can be drawn from countries like Sweden and Iceland, where generous, non-transferable paternal leave has contributed to more equitable divisions of care and increased fertility stability.

On a cultural level, the societal narrative surrounding motherhood and success must also evolve. Current representations—whether in media, education, or government messaging—often frame motherhood as both an individual duty and a national contribution, without questioning the cost or support mechanisms involved. A more inclusive narrative would embrace diverse family forms and parenting choices, including the decision to have one or no children, without stigma or moral judgment.

Finally, policy design must include the voices and experiences of women themselves. Whether through participatory policymaking, regular feedback surveys, or consultative forums, the state should actively seek out and respond to the perspectives of the women its fertility policies target. This would not only improve the legitimacy of such policies but also ensure that interventions are grounded in lived experience rather than abstract projections.

In essence, building a supportive framework for reproductive autonomy means seeing women not as tools for demographic recovery but as full citizens with complex lives, aspirations, and constraints. Policies that align with their realities—rather than attempting to reshape them—are far more likely to foster a sustainable, equitable approach to family and population in contemporary urban China.

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A Study on English Translation of Chinese Brand Slogans in Global Campaigns from an Intercultural Communication Perspective

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Abstract

Amid globalization and the national strategy of Intelligent Manufacturing in China, Chinese brands are accelerating their globalization. As a core carrier of brand communication across cultures, the translation quality of advertising slogans is of vital importance. Guided by the theory of intercultural communication, with particular reference to Hofstede's Cultural Dimensions Theory and Hall's High-/Low-Context Theory, this study constructs a three-dimensional analytical model encompassing values, linguistic signs, and aesthetic-emotional appeal to systematically examine the English translation of Chinese brand slogans. Through comparative analysis of successful and less successful cases, the study identifies three major issues in current practices: cultural misinterpretation, contextual information imbalance, and lack of aesthetic function, which stem from a systematic lack of intercultural awareness. Therefore, the study proposes that effective slogan translation should abandon the language-conversion-centered approach and instead adopt a composite strategy dominated by domestication, supplemented by transcreation and addition, to produce versions that are value-compatible, communicatively effective, and aesthetically appealing, which provides theoretical support and practical guidance for the international dissemination of Chinese brands.

Keywords: intercultural communication, advertising translation, translation strategies, brand internationalization

1. Introduction

Against the backdrop of the globalization of Chinese brands and the strategic transformation toward Intelligent Manufacturing in China, brand internationalization has evolved into a complex, multi-dimensional systematic project. As a highly condensed representation of brand philosophy and cultural connotations, advertising slogans serve as a critical bridge for connecting with global consumers emotionally and establishing brand identity. However, the current quality of English translations for Chinese brand slogans is uneven: while successful cases effectively convey brand spirit, flawed translations—often due to literal rendering or neglect of cultural differences—can lead to impaired brand image and communication barriers. These phenomena indicate that slogan translation is far more than mere linguistic conversion; at its core, it involves

addressing deep-seated intercultural communication challenges, including overcoming differences in values, ways of thinking and aesthetic preferences between Chinese and Western cultures, as well as reconstructing brand identity and achieving effective communication in foreign cultural contexts.

Grounded in the perspective of intercultural communication theory, this study aims to systematically investigate the strategies and practices of English translation for Chinese brand slogans in the process of brand internationalization. The core research questions include: first, at the level of problem identification, analyzing the main intercultural communication issues and misconceptions in current English translations of Chinese brand slogans and exploring their root causes; second, at the level of translation strategy exploration, summarizing effective translation strategies to overcome cultural barriers and examining the specific mechanisms through which they resolve cultural conflicts in practical application; third, at the level of effect evaluation, establishing a set of criteria for assessing translated texts based on intercultural communication dimensions, and identifying the common characteristics and principles of successful translations.

This study holds both theoretical and practical significance. Theoretically, it situates translation studies within the framework of intercultural communication, moving beyond the traditional focus on intralingual conversion to emphasize the dynamic and purposeful nature of translation as a cross-cultural act, thereby broadening the research dimensions of applied translation studies. Moreover, by examining concrete cases of Chinese brand slogans, this study provides empirical support for intercultural communication theories and promotes their interdisciplinary integration and innovative development with translation studies. On a practical level, this study offers actionable strategies for Chinese enterprises to avoid cultural pitfalls and enhance the acceptability of their slogans in international markets, thereby strengthening global brand competitiveness. It also serves as a reference for translation practitioners and learners, providing a target-audience-centered approach to achieve communicative functionality. Additionally, at the strategic national level, by effectively conveying the image of Chinese enterprises, it contributes practical pathways for enhancing the country's cultural soft power.

2. Current Research Status on Brand Slogan Translation at Home and Abroad

Research on brand slogan translation exhibits a notable imbalance between domestic and international scholarship. Regarding the translation of Western brand slogans into Chinese, studies have reached a relatively mature stage, primarily focusing on how global brands such as Coca-Cola, Nike, and Apple achieve effective localization through strategies like domestication and transcreation. These studies often employ theoretical perspectives such as functional equivalence and reception aesthetics to explore the translation mechanisms that facilitate successful market penetration, thereby providing this research with rich strategic examples and methodological references.

In contrast, research on the outward translation of Chinese brands, particularly in the field of English translation of advertising slogans, remains in a developmental phase. Existing studies generally suffer from the following limitations: Firstly, the research perspective tends to be simplistic, mostly confined to traditional translation techniques (e.g., literal translation, free translation), without delving into conflicts at the level of cultural values from an intercultural communication theory perspective. Secondly, there is insufficient theoretical application; while the impact of cultural differences is widely acknowledged, few studies systematically employ Hofstede's Cultural Dimensions Theory or Hall's High-/Low-Context Theory as analytical tools, resulting in a lack of theoretical depth. Thirdly, strategy summaries are often overly generalized; proposed recommendations are mostly limited to macro-level principles and fail to integrate with specific cultural dimensions (e.g., individualism/collectivism, high-/low-context), thus offering limited practical guidance.

In response to the above research gaps, this study aims to adopt intercultural communication theory as its core framework to systematically analyze cases of English translations of Chinese brand slogans. It seeks to explore the root causes of existing issues from the perspectives of cultural values and semiotic transformation, with the goal of constructing a theoretically grounded and practically feasible

translation strategy system to provide concrete references for the international dissemination of Chinese brands.

3. Core Concepts of Intercultural Communication Theory and Their Application in Translation

Translation is, in essence, an act of cross-linguistic and cross-cultural communication. Therefore, intercultural communication theory provides an indispensable macro theoretical framework for translation studies, particularly in the field of applied translation. This study is grounded in Intercultural Communication Theory, which posits that effective communication relies not only on linguistic accuracy but also on the insight into and adaptation to deep-seated cultural differences. From this perspective, advertising translation can be viewed as an act of semiotic transformation aimed at achieving cross-cultural understanding and fulfilling communicative functions. This study primarily draws on two classical theoretical models as analytical lenses to examine the core issues in advertising slogan translation.

3.1 Hofstede's Cultural Dimensions Theory

Hofstede's Cultural Dimensions Theory provides a systematic analytical framework for cross-cultural comparison and translation studies, particularly suited for investigating the transmission and adaptation mechanisms of cultural values. The theory reveals profound differences in cognitive patterns and social behaviors across cultures at the level of values through dimensions such as power distance, individualism/collectivism, uncertainty avoidance, masculinity/femininity, and long-term/short-term orientation.

In the practice of advertising slogan translation, these dimensions serve as critical references for identifying cultural conflicts and selecting adaptation strategies. For instance, authoritative expressions prevalent in high-power-distance cultures may need to be transformed into appeals for equality in low-power-distance societies. Concepts such as unity and win-win, common in collectivist contexts, often require individualized adaptation in individualistic cultures. Furthermore, differences in cultural tolerance for uncertainty, achievement orientation, and time perception directly influence the target audience's receptivity to ways of commitment, emotional appeals, and value propositions.

Thus, this theory demands that translators move beyond superficial linguistic conversion, deeply identify differences in cultural dimensions, and employ cultural adaptation strategies such as value reconstruction, appeal transformation, or creative rewriting to ensure effective communication of the translated text. The ultimate goal is to facilitate the alignment and integration of values in intercultural communication, rather than merely accomplishing information transfer (Ren & Zhao, 2023).

3.2 Hall's High- and Low-Context Cultures Theory

In his 1976 work *Beyond Culture*, Edward T. Hall first systematically proposed and elaborated the theory of High-Context Culture and Low-Context Culture, providing a critical analytical framework for intercultural communication and translation studies. This theory categorizes cultures into two types: high-context cultures (e.g., China, Japan) rely on context, non-verbal cues, and shared knowledge to convey information, often expressing meaning implicitly and indirectly; whereas low-context cultures (e.g., the United States, Germany) tend to encode information through explicit and direct language, emphasizing clarity and precision.

In advertising slogan translation, this theory directly influences translators' strategies at the linguistic and semiotic levels. Chinese, as a high-context language, often embeds cultural allusions, metaphors, and collective memory in its advertisements, making the message highly context-dependent. When translating into English, a low-context language, translators must explicate implicit information by supplementing logical connections and cultural background to prevent comprehension barriers for the target audience. Conversely, when translating from a low-context to a high-context culture, redundant expressions may need simplification to adapt to implicit communication norms. This process also serves as a key basis for choosing domestication or foreignization strategies.

Thus, Hall's theory not only reveals how cultural differences manifest in communication styles but also provides practical principles and methods for addressing contextual disparities in translation, particularly in advertising translation, where effectiveness and

acceptability are paramount.

Additionally, in intercultural communication, values—as the core of culture—profoundly shape individuals' cognitive and behavioral patterns. Symbols, as external carriers of values (including language, images, colors, and numbers), possess culturally specific meanings that may elicit completely different interpretations across social contexts. For example, the "dragon" symbolizes auspiciousness in Chinese culture but is often associated with evil in the West; "white" represents purity in Western cultures yet is linked to mourning in some Eastern societies. Due to this cultural dependency of symbolic meaning, culturally loaded terms, metaphors, symbols, and humor in advertising slogans constitute core challenges in translation. Therefore, translators must possess acute intercultural awareness to identify potential semantic associations and emotional responses triggered by source-culture symbols in the target culture. Then, based on the principle of functional equivalence, strategies such as substitution, explanation, or omission should be employed to avoid cultural misinterpretation and ensure both the effectiveness of message delivery and the achievement of communicative intent.

4. Characteristics and Principles of Advertising Translation

As a specialized form of applied translation, advertising translation is not merely a process of linguistic code-switching but rather a cross-cultural recreation based on the source text, with the ultimate goal of achieving commercial communication objectives.

According to Katharina Reiss's (2000) text typology theory, advertising texts fall under the category of vocative texts, whose core function is to persuade the reader to take specific actions, such as stimulating purchase intent or building brand identity. Therefore, the primary principle of advertising translation is to pursue functional equivalence at the effect level rather than formal equivalence at the textual level (Nida, 2001). The ultimate criterion for evaluating a translated text lies in its ability to elicit psychological responses and behavioral feedback in the target cultural audience that are similar to those evoked in the source audience, thereby fulfilling its persuasive intent.

From this functionalist perspective, the concept of faithfulness undergoes a fundamental shift: what the translator remains faithful to is not the literal form of the source text but its marketing purpose and communicative effect. This grants translators considerable freedom to engage in creative transformation (transcreation) beyond the surface structure of the language. Commonly employed strategies include the following: first, transcreation, which involves completely departing from the source text structure to recreate content based on the brand's core values within the target culture; second, adaptation, which refers to replacing source-cultural imagery with widely recognized symbols in the target culture to enhance acceptability; third, omission and addition, whereby content that may cause comprehension barriers due to cultural differences is removed, while necessary background information implicit in the source text is explicated; fourth, aesthetic reconstruction of language, which emphasizes refining the rhythm, cadence, and rhetoric of the translated text to ensure it possesses the same appeal and communicability as native-language advertisements in the target context.

In summary, the essence of advertising translation lies in strategic rewriting within cross-cultural contexts to achieve specific functions. This process heavily relies on the translator's insight into the target market's cultural cognition and linguistic habits, as well as their creativity.

5. Research Design and Case Analysis

5.1 Research Design

This study primarily employs the case analysis method within qualitative research. This approach is suitable for in-depth and detailed exploration of complex social phenomena such as cross-cultural advertising translation, aiming to elucidate the underlying motivations and operational mechanisms. Case analysis facilitates a systematic and multidimensional examination of the English translation practices of Chinese brand advertising slogans in real-world contexts. By comparing successful and unsuccessful translation examples, it effectively reveals the applicability of translation strategies and the principles of intercultural communication, thereby achieving a progression from concrete experience to theoretical understanding and providing comprehensive contextualized empirical support for the

research questions.

Integrating classical theoretical models with the characteristics and principles of advertising translation, this study constructs a three-dimensional analytical framework to systematically evaluate the English translation practices of Chinese brand advertising slogans. First, the *values dimension* employs cultural dimensions theory to examine whether the translation aligns with the value orientations of the target culture, such as adaptations between individualism and collectivism or long-term and short-term orientations. Second, the *linguistic signs dimension* draws on high-/low-context theory to analyze the treatment of culturally loaded terms, rhetorical devices, and implicit information, assessing whether functional equivalence and effective communication are achieved in low-context cultures. Third, the *aesthetic-emotional dimension* comprehensively evaluates whether the translation possesses appeal and resonates with the target audience in terms of rhythm, imagery, and emotional appeals (Zhang H, 2009), ensuring it aligns with the artistic and persuasive functions of advertising texts. This framework aims to provide a systematic and operable analytical path for the cross-cultural adaptation mechanisms of advertising translation from the perspectives of cultural values, semiotic transformation, and aesthetic experience.

5.2 Corpus Selection Criteria and Sources

To ensure the representativeness, credibility, and operability of the research, the corpus for this study was selected based on the following criteria:

(1) Industry Representativeness: Covering dominant and emerging sectors in Chinese brands' globalization, such as consumer electronics, home appliances, automobiles, cosmetics, and internet services.

(2) Market Influence: Prioritizing brands with high international visibility and widespread attention in global markets.

(3) Translational Comparability: Cases must include both the original Chinese slogan and its official English translation, with the translation demonstrating significant discussion value (e.g., widely acclaimed, controversial, or evidently flawed).

(4) Timeliness: Focusing primarily on cases from the post-2010 period, coinciding with the accelerated phase of Chinese brands' internationalization, to enhance the practical relevance of the study.

The corpus was sourced from:

(1) Official international websites and English-language pages of the brands;

(2) The official accounts on mainstream overseas social media platforms (e.g., Twitter, Instagram, Facebook);

(3) Official press releases and video materials from globally launched advertising campaigns;

(4) Coverage of international marketing activities of relevant brands by authoritative business media outlets (e.g., Bloomberg, Reuters).

Ultimately, this study selected four core cases for in-depth analysis.

5.3 Typical Case Analysis

5.3.1 Analysis of Successful Cases

Case 1: Huawei

Chinese Slogan: "构建万物互联的智能世界"

English Translation: "Bring digital to every person, home and organization for a fully connected, intelligent world."

Multidimensional Analysis:

Values Dimension: The translation demonstrates a strategic shift from collectivism to individualism in cultural dimensions. The original Chinese phrase, "构建万物互联的智能世界," exhibits typical collectivist-oriented and grand-narrative characteristics. In contrast, the English version concretizes the abstract vision by specifying "every person, home and organization," transforming it into an empowering promise targeting individuals and independent entities. This aligns with the cultural cognition of Western markets, which emphasize individual value and independent units, reflecting the appeal of individualism in Hofstede's Cultural Dimensions Theory. This approach represents a clear domestication strategy.

Linguistic Signs Dimension: The translation effectively achieves a shift from high-context to low-context communication through explicitation and elaboration. The highly condensed concept of "万物互联" (wan wu hu lian) in the original Chinese carries rich high-context cultural connotations. The translation wisely supplements "Bring digital

to" to clarify the agent and means of implementation. Simultaneously, it decomposes "智能世界" (zhi neng shi jie) into "fully connected, intelligent world," explicitly conveying core technical features and the ultimate state. This meets the low-context culture's demand for informational clarity and logical explicitness, demonstrating the application of Hall's High-/Low-Context Theory in translation practice.

Aesthetic-Emotional Dimension: The translation enhances appeal and memorability through syntactic parallelism and rhythmic control. Although the English version is longer, the parallel structure of "every person, home and organization" creates a smooth rhythmic flow. It conveys an emotional tone of inclusivity, technological empowerment, and a positive future, aligning with the optimism and humanistic care that technology brands must exhibit. This successfully fulfills the emotional appeal function of advertising texts.

Case 2: DJI

Chinese Slogan: "未来无所不能"

English Translation: "The Future of Possible"

Multidimensional Analysis:

Values Dimension: The translation acutely captures the differences between Chinese and Western cultures in the uncertainty avoidance dimension. The absolutist tendency conveyed by the Chinese phrase "无所不能" (wu suo bu neng, meaning omnipotent) could easily raise doubts about the authenticity of the promise in Western cultures, which typically exhibit low uncertainty avoidance. In contrast, the English translation "The Future of Possible" skillfully shifts the narrative focus from "omnipotence" to "possibility," emphasizing exploration, potential, and open-ended innovation. This not only effectively avoids cultural conflict but also precisely aligns with the Western cultural value orientation that prioritizes developmental processes and future opportunities.

Linguistic Signs Dimension: This case is a typical example of the transcreation strategy. The translator completely broke free from the literal constraints of the original phrase "无所不能," deeply deconstructed and extracted the brand's core spirit of pushing the boundaries of technology, and conducted a successful semiotic recreation grounded in the target culture. The result is a highly original, concise, and immensely communicable English expression that achieves the cross-cultural transmission of the brand's core value.

Aesthetic-Emotional Dimension: The translation constructs a strong sense of futurism and technological aesthetics through minimalist wording and grand philosophical undertones. "The Future of Possible" features symmetrical structure and condensed rhythm, conveying high confidence while appearing inclusive and humble due to its open-ended expression. This perfect integration of forward-looking vision, artistry, and technological appeal significantly enhances the brand's emotional appeal and image sophistication.

5.3.2 Analysis of Less Successful Cases

Case 1: A Well-Known Tea Brand

Chinese Slogan: "品茗思韵，传承千年"

English Translation: "Taste tea and think rhyme, inherit thousand years."

Multidimensional Analysis:

Values Dimension: The translation fails to achieve an effective transformation of cultural dimensions. The Chinese phrase "传承千年" (chuan cheng qian nian) embodies the long-term orientation characteristic of Chinese culture, emphasizing historical continuity and temporal accumulation. However, the literal translation "inherit thousand years" not only suffers from grammatical errors that render the meaning ambiguous but also appears hollow due to a lack of cultural adaptation. It fails to establish value resonance with Western audiences and cannot convey the brand's historical depth and cultural richness.

Linguistic Signs Dimension: This case reveals a severe neglect of the principles governing high-/low-context conversion. The term "思韵"(si yun) in the original slogan is a high-context culturally loaded word, blending the dual connotations of contemplation during tea tasting and cultural charm. The rigid translation "think rhyme" not only completely loses the core imagery but also creates confusing ambiguity, leading to semantic deviation and cognitive barriers. The overall translation adheres rigidly to literal correspondence, lacking necessary explanatory additions or imagery reconstruction, resulting in the complete failure of high-context cultural information in a low-context culture.

Aesthetic-Emotional Dimension: The

translation exhibits severe issues in acceptability. Awkward grammatical structures and inappropriate lexical choices (e.g., "inherit thousand years") deprive the text of basic linguistic fluency, let alone the elegant aesthetics and profound experience inherent in tea culture. The mechanical translation utterly destroys the poetic rhythm and cultural ambiance of the original phrase, making it difficult for the target audience to generate any positive emotional associations or aesthetic experiences. Ultimately, this leads to a failure in intercultural communication.

Case 2: An Early Slogan of an Automobile Brand

Chinese Slogan: "稳坐江山，驭享人生"

English Translation: "Sit Stable the Country, Drive and Enjoy Life."

Multidimensional Analysis:

Values Dimension: The translation exposes a severe neglect of the power distance cultural dimension. The Chinese idiom "稳坐江山"(wen zuo jiang shan) carries distinct imperial imagery and a sense of power control, reflecting the reverence for authority and status in high-power-distance cultures. However, its literal translation, "Sit Stable the Country," is prone to political misinterpretation and audience discomfort in low-power-distance Western cultures. The implied ambiguity of "controlling the country" not only conflicts with mainstream values of equality and freedom but also completely deviates from the brand's intended core message of the joy of driving.

Linguistic Signs Dimension: This case demonstrates a breakdown in semiotic chains due to mechanical literal translation. The translator failed to recognize "稳坐江山" as a high-context cultural idiom with a holistic metaphorical function, erroneously adopting a word-for-word correspondence strategy that resulted in semantic absurdity and logical confusion. Meanwhile, the aesthetic conception of "驭享"(yu xiang), which blends the notions of mastering and enjoying, is entirely lost in translation, reduced to the emotionally flat "Drive and Enjoy." This reflects a complete disregard for the cultural connotations and contextual dependency of the source-language symbols.

Aesthetic-Emotional Dimension: The translation creates severe reception barriers and emotional misalignment. The awkward and bizarre wording, coupled with distorted semantics, fails to convey the original phrase's grandeur and philosophical outlook on life, instead provoking confusion and negative associations. Its linguistic style runs counter to the positive emotions of pleasure, freedom, and sophistication that automobile advertisements should evoke. Ultimately, this not only leads to communicative failure but also causes irreparable damage to the brand image.

6. Findings and Discussion

This study systematically analyzes the issues, strategies, and evaluation dimensions in the English translation of Chinese brand advertising slogans. The main findings are as follows:

First, current translation practices are plagued by three interconnected issues: cultural misinterpretation and conflict, arising from misplaced cultural imagery or violated taboos due to excessive literal translation; contextual information imbalance, wherein high-context sources fail to be explicated, resulting in ineffective semantic transfer; and aesthetic and functional deficiencies, where translations lack the emotional appeal and persuasive force necessary to fulfill communicative intent. These problems stem fundamentally from a systematic deficit in intercultural awareness, epitomized by translators' prevalent one-sided belief that linguistic conversion takes precedence over cultural adaptation—thus reducing translation to mere code-switching—coupled with an insufficient understanding of Hofstede's Cultural Dimensions Theory, which leads to mismatched value propositions in the target culture, and a weak grasp of Hall's High-/Low-Context Theory, resulting in the failure to achieve effective recoding of cultural information.

Second, regarding translation strategies and their applications, effective advertising translation necessitates the adoption of composite strategies grounded in in-depth cultural analysis. Among these, transcreation stands out as the most efficient approach to addressing cultural differences, particularly for culturally loaded texts or those with tightly bound form-meaning relationships, as it reconstructs core brand values to align with the target culture. Domestication, as a commonly used strategy, facilitates target-context integration through cultural imagery

substitution and value proposition adaptation, while addition serves as a key technique for handling high-/low-context disparities by explicating logical relationships and background information to achieve informational equivalence. In contrast, literal translation or foreignization has limited applicability, typically being reserved for universal cultural imagery or scenarios where brands intentionally highlight cultural heterogeneity. For mass consumer markets, a domestication-oriented approach, strategically combined with transcreation and addition, yields optimal communicative outcomes.

Finally, regarding translation evaluation, this study proposes a systematic assessment across three intercultural dimensions: value compatibility, which examines whether the translated value proposition aligns with the target cultural dimensions; communicative effectiveness, referring to the clarity of brand message delivery and adherence to low-context expression norms; and aesthetic-emotional appeal, concerning the translation's phonological rhythm and emotional impact to resonate with the target audience. Successful translations are generally characterized by target-audience-centricity, reading as if originally crafted for the specific cultural context; functional equivalence with the original commercial persuasive intent; and global sublimation of brand value, whereby regionally specific cultural features are transformed into universal emotional propositions.

The English translation of Chinese brand advertising slogans constitutes a complex process of cross-cultural reconstruction. Its ultimate success hinges on whether translators can be guided by intercultural communication theory and flexibly employ strategies such as domestication and transcreation to produce translations that seamlessly align with the target audience in terms of values, communicative function, and aesthetic appeal. This process demands that translators evolve from passive linguistic artisans into proactive intercultural communication experts and co-creators of brand value, thereby effectively enhancing the soft power of Chinese brands in global communication.

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A Study on the Translation of Allusions in Ancient Chinese Poetry from the Perspective of Cross-Cultural — Taking the English Translation of Li Bai's Poetry as an Example

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Abstract

President Xi once said: "Chinese culture has a long history, accumulating the deepest spiritual pursuit of the Chinese nation, representing the unique spiritual identity of the Chinese nation, and providing rich nourishment for the endless development and growth of the Chinese nation." Poetry, the brightest pearl in the treasure house of Chinese culture, with its rich cultural heritage and profound cultural connotation, glows with great vigor and vitality in the new era. The key to the profound meaning of Chinese poetry lies in the use of allusions. From the perspective of cross-cultural communication, this paper will study the English translations of Li Bai's poems and translation strategies, so as to further explore the differences between Chinese and Western cultures and better spread Chinese culture.

Keywords: Chinese culture, poem, allusion, cross-cultural communication, English translation

1. Introduction

The Chinese civilization is one of the world's civilizations that has never been interrupted, and poetry is a shining pearl in the treasure house of Chinese civilization. Chinese culture is a poetic culture, and the traces of poetry can be found in almost all fields of its culture. Carrying forward Chinese culture is inseparable from Chinese poetry, which is the root of Chinese culture.

Up to now, the development of Chinese poetry has roughly gone through eight stages: poetry in ancient myths and legends; the period of *The Book of Songs* and *Chu Ci*; the period of Yuefu poems in the Han Dynasty and folk songs in the Wei, Jin, Southern and Northern Dynasties; Tang poetry in the prosperous Tang Dynasty; Song ci; Yuan qu; poetry in the Ming and Qing Dynasties; and modern poetry. However, when it comes to the peak and heyday of poetry development, it must be the Tang Dynasty. Tang poetry stands as the culmination of classical Chinese poetry. During the Tang Dynasty, China was powerful and prosperous, the people lived and worked in peace and contentment, and scholars were full of high spirits—all of which provided fertile soil for the prosperity of Tang poetry and created important conditions for it to surpass the poetry of previous dynasties. The

great national integration in the Tang Dynasty laid the foundation for cultural integration and prosperity, and a large number of talents and masters emerged continuously. Tang poetry reached the climax of all-round prosperity during the 50 years of the Kaiyuan and Tianbao reigns of Emperor Xuanzong in the heyday of the Tang Dynasty. When talking about the prosperous Tang Dynasty, it is impossible not to mention Li Bai, the most outstanding poet of this period. With his profound thoughts, amazing talent and extraordinary literary inspiration, he deservedly became an extremely shining star among the numerous talents of the Tang Dynasty. Li Bai enthusiastically eulogized all beautiful things in the real world, while showing contempt for unreasonable phenomena. This progressive attitude of pursuing liberation and freedom is a concentrated embodiment of the powerful spiritual strength of the Chinese nation in resisting dark forces and vulgar customs.

Nowadays, with the country's emphasis on traditional Chinese culture, large-scale programs such as Everlasting Classics and Chinese Poetry Competition have once again captured the hearts of thousands of Chinese people. Reading classics has become a national trend. Poetry is also a window for cultural exchange. Adopting reasonable translation methods and strategies to translate Chinese poetry into foreign languages can play a role in disseminating Chinese culture. In view of this, this paper starts from the English translation of Li Bai's poetry, explores the cultural factors to be considered in translation, and adopts appropriate translation strategies to better carry out cultural exchange.

2. Comparison Between Chinese Poetry and Western Poetry

Regarding the relationship between Chinese and Western poetry, Lv Yang mentioned in his article "*Comparative analysis of Chinese and Western Poetry*" (2014): "Chinese and Western poetry differ in many aspects such as form, content and structure, yet it is not difficult to find the intricate intrinsic connections between them." (P.1)

2.1 Similarities

Classical Chinese poetry is concise in wording and profound in artistic conception, and can express the author's thoughts and feelings in a few words. Western modern poetry, influenced by classical Chinese poetry, also presents the characteristics of implicitness and gravity.

2.2 Differences

China started with lyrical short poems, forming a strong tradition of lyrical poetry. The West, on the other hand, began with epics, forming a strong tradition of narrative poetry. Chinese culture is introverted and implicit, so Chinese poetry emphasizes implicitness and takes simplicity as beauty. Chinese poetry either expresses aspirations through objects or conveys emotions through scenery, burying the author's feelings deep in the poetry. Only by "savoring" carefully can one feel its true beauty, which is just as the saying goes: "The words are finite, but the meaning is infinite." Western culture is bold and explicit, so British and American poetry is more unrestrained, free and full of emotional tension. British and American poetry usually expresses the poet's meaning directly, making the intended meaning fully expressed with the words.

3. Allusions

The term "allusion" (dian gu in Chinese), originates from of "dian"（典）, meaning principle or rule, and "gu"（故）, meaning reason or cause. Originally, it referred to old systems, old examples, and also the official title in the Han Dynasty responsible for rituals, music systems and other historical facts. Later, it commonly refers to stories or legends about historical figures and institutions that are cited in literary works such as poetry and prose (Zhang, 2013).

3.1 Sources of Allusions

In summary, allusions mainly come from historical events, historical stories, myths, folk legends, fables, literary works, proverbs, customs, personal names, place names, and names of animals and plants.

3.2 Structure of Allusions

The structure of allusions is not fixed, but they are all compact, mostly using concise phrases or expressions, and there are also allusions in the form of short sentences. Generally speaking, English allusions are more flexible in form, which can be either long or short. Chinese allusions mostly adopt a four-character structure.

4. Employing Allusions: A Defining Feature of Li Bai's Poetic Style

Li Bai's poetry is full of allusions and quotations,

and this unique technique makes his poetry more diverse and profound in meaning.

4.1 Modes of Using Allusions

In Chinese poetry, the use of allusions is relatively flexible, with four common ways: explicit use, implicit use, positive use and reverse use (Li, 2016).

4.1.1 Explicit Use and Implicit Use

(1) Explicit use refers to directly quoting the original story of an allusion, and the poet's emotion is consistent with the train of thought of the allusion used.

Example 1:

"景公一何愚，牛山泪相续。物苦不知足，得陇又望蜀"。——李白《古风·秋露》

"King Jing of Qi was so foolish; Tears flowed continuously on Mount Niu. People suffer from insatiability; Having seized Long, they covet Shu again." — Li Bai, *Ancient Style Autumn Dew* (Translated by author)

Analysis: In these four lines, the poet quotes the allusion of Duke Jing of Qi. Once, Duke Jing of Qi climbed Mount Niu. Although the scenery in front of him was extremely beautiful, he suddenly thought that people would eventually die, so he couldn't help but shed tears. At the same time, the poet also uses the idiom "得陇望蜀" from the *Book of the Later Han（Hou Hanshu)* to warn people not to be insatiable, as greed may eventually lead to gaining nothing.

(2) Implicit use refers to indirectly quoting an allusion, that is, integrating the allusion into the poetry in a concise, meaningful, natural and unadorned way. The writing is smooth and coherent, and the words seem to be the poet's own creation. Even if one does not know the allusion used, one can still understand the poetic meaning; those who know the source of the allusion will find it more meaningful. Therefore, implicit use is also called "adaptation".

Example 2:

"闲来垂钓碧溪上，忽复乘舟梦日边"。——李白《行路难》

"I poise a fishing pole with ease on the green stream; Or set sail for the sun like the sage in a dream." — Li Bai, *Hard is the Way of the World* (Translated by Xu Yuanchong)

Analysis: These two lines implicitly use allusions: Jiang Ziya (Lv Shang) once fished by the Panxi River in Wei Shui, met King Wen of Zhou, and helped the Zhou Dynasty destroy the Shang Dynasty; Yi Yin once dreamed that he was sailing past the sun and the moon, and later was hired by King Tang of Shang to help the Shang Dynasty destroy the Xia Dynasty.

4.1.2 Positive Use and Reverse Use

(1) Positive use of allusions means directly borrowing the original meaning of a story or literary work to express the author's thoughts and feelings from a positive perspective, that is, "directly using the event". Authors consciously use allusions to enhance the artistic effect of their works or express deeper meanings. By using allusions, authors can rely on cultural knowledge familiar to readers to deepen their understanding and resonance with the works. Positive use of allusions can also be used to emphasize themes, express emotions, shape images, etc., making works more rich and diverse.

Example 3:

"陈王昔时宴平乐，斗酒十千恣欢谑"。——李白《将进酒》

"The Prince of Poets feast'd in his palace at will; Drank wine at ten thousand a cask and laughed his fill." — Li Bai, *Invitation to Wine* (Translated by Xu Yuanchong)

Analysis: These two lines adapt the sentence "Returning, they feasted at Pingle; Fine wine cost ten thousand coins a cask" from The Capital. "Prince Chen" (Cao Zhi) was a role model in Li Bai's mind. Cao Zhi was suspected in the imperial court and could not realize his ambitions, which resonated with Li Bai emotionally. Through this allusion, the poet expressed his feelings about life, his belief in himself, and his deep anxiety and indignation.

(2) Reverse use refers to using an allusion in the opposite sense to its original meaning, that is, the meaning of the allusion is opposite or relative to the author's intention. It extends the meaning of the allusion through implication, contrast, foil and other techniques, expressing one thing while implying another. Reverse use of allusions is a kind of reverse thinking and even a kind of wisdom.

Example 4:

"脚著谢公屐，身登步云梯"。——李白《梦游天姥吟留别》

Hsie's sandals so homely I wear; And climb the ladder Blue Sky. —Li Bail, *My Dream of Mt. Sky*

Mum: To Go Or Not to Go (Translated by Zhao Yanchun)

Analysis: The character Xie Gong in the poem is known for his landscape poetry, and is represented by Xie Lingyun. Therefore, for Xie Gong, the wooden clogs symbolize his exploration and pursuit of nature. However, the poet Li Bai uses this allusion in reverse to highlight his longing for Tianmo Mountain with the clogs of Xie Gong, implying his dissatisfaction with the constraints of reality and his pursuit of a free spirit.

Example 5:

“归时莫洗耳，为我洗其心”。—— 李白《送裴十八图南归嵩山之二》

“When you return, do not wash your ears; Wash your heart for me.” — Li Bai, *Seeing Pei Shiba Tunan Off to Songshan (II)* (Translated by author)

Analysis: Origin of the allusion: According to Biographies of Gao Shi (Gaoshi Zhuan) by Huangfu Mi of the Jin Dynasty, Xu You was upright and would not sit on an evil mat or eat evil food, living in seclusion in the Peize. Yao, the wise king, wanted to abdicate the throne to Xu You, but Xu You refused and hid. He fled to farm on the north bank of the Ying River, at the foot of Jishan Mountain. Later, Yao came again to ask him to be the governor of the nine provinces. Xu You thought this statement defiled him, so he went to the bank of the Ying River to wash his ears. Therefore, Xu You became a representative of noble and loyal people who were far away from secular fame and wealth.

Here, the poet Li Bai used this allusion in reverse: “When you return, do not wash your ears; Wash your heart for me.” Because at that time, there were many people who retired from officialdom to fish for fame and reputation. By this, the poet wanted to advise his friend not to pretend to learn from Xu You to wash his ears, but to “wash his heart” and maintain a noble and sincere soul.

5. Methods for Translating Allusions in Li Bai’s Poetry

Translation aims to achieve information equivalence between two languages, but not all forms of genres can achieve complete equivalence. The translation field has always believed that translating poetry is extremely difficult, and translating allusions with national cultural characteristics in poetry is even more challenging. When translating poetry, we must consider both the original text and the target text, try to reproduce the national cultural characteristics implied by the allusions in the original poem, and also take into account the target language readers to make it easy for them to understand and accept. Many scholars at home and abroad have translated Li Bai’s poetry, and the large number of allusions in his poems undoubtedly increases the difficulty of translation. The following are different strategies adopted by domestic and foreign translators when translating the allusions contained in Li Bai’s poetry.

5.1 Literal Translation or Literal Translation with Notes

Example 1:

“闲来垂钓碧溪上，忽复乘舟梦日边”。——李白《行路难》

The two allusions in these two lines have been mentioned above. Both Lv Shang and Yi Yin assisted emperors in establishing great undertakings. However, Li Bai was not valued politically, had an unsmooth official career, and his talent was not recognized, leading to a very tortuous life. At this time, Li Bai thought of the experiences of Jiang Ziya (Lv Shang) and Yi Yin, wanting to show that his political future was not dark and there was great hope.

Translation 1: “So I sat quietly drooping my hook, on the banks of gray stream. Suddenly, I mounted a ship, dreaming of a sun’s horizon.” (British scholar)

Translation 2: “I poise a fishing role with ease on the green stream. Or set sail for the sun like the sage in a dream.” (Chinese scholar)

The first translator adopted the method of literal translation, which conveys the basic meaning of the poetry but ignores the cultural connotation implied by the poetry, failing to convey the cultural connotation of the allusion behind the poetry and unable to achieve the conversion and transmission between cultures.

The second translator, a Chinese scholar, has a better understanding of Chinese culture and the allusions behind the poetry. Therefore, in Translation 2, the translator made some subtle adjustments and used “like the sage in a dream” to convey the author’s thoughts, which is quite ingenious.

Example 2:

“白兔捣药秋复春，嫦娥孤栖与谁邻？”——李白《把酒问月》

This poem involves two allusions: “jade hare” and “Chang’e”. Chang’e is the fairy living on the moon in Chinese mythology, and the jade hare is the immortal hare living in the moon palace in Chinese mythology. Chang’e and the jade hare are usually regarded as images representing the moon and are often used in literary works.

Xu Yuanchong’s translation: “Jade Hare is not companion boon; For lonely Goddess of the Moon”

Yang & Dai’s translation: “Year after year the white hare pounds medicine; Who is there to keep lonely Chang E company?”

When translating “白兔” (white hare), both translators adopted the method of literal translation, translating it as “Jade Hare” and “white hare”. However, in translating “嫦娥” (Chang’e), a word with Chinese cultural characteristics, the translators handled it differently. Mr. Xu Yuanchong translated it as “Goddess of the Moon”, while Yang Xianyi and his wife translated “嫦娥” as “Chang’e” and added notes on the basis of literal translation, which largely retained the allusions in the original poem. Comparatively speaking, literal translation with notes is also a reasonable translation strategy to promote the dissemination of Chinese culture.

5.2 Free Translation

Example 3:

“功成拂衣去，归入武陵源”。——李白《登金陵冶城西北谢安墩》

Here, the allusion of “Peach Blossom Spring” is used. “Wulingyuan” in the poem refers to “Peach Blossom Spring”. Peach Blossom Spring, described in The Peach Blossom Spring (Tao Hua Yuan Ji), is a secluded paradise imagined by the author, where people are self-sufficient and far away from the troubles of the world. It is an ideal perfect society, which can also reflect people’s dissatisfaction and resistance to the real society at that time.

Zhao Yanchun’s translation: “When I succeed, I’d go afar; For free life there in Shangrila”.

Here, “Wulingyuan” is translated as “Shangrila”, which is considered the place closest to paradise and more in line with Western thinking. Through free translation, the connotation of the allusion is expressed without causing misunderstanding among Western readers.

5.3 Creative Translation

Example 4:

“十五始展眉，愿同尘与灰。常存抱柱信，岂上望夫台。”——李白《长干行》

Pound’s translation:

At fifteen I stopped scowling,

I desired my dust to be mingled with yours

Forever and forever and forever.

Why should I climb the lookout?

In Li Bai’s poem, there is an allusion of “embracing the pillar” (Bao Zhu). This allusion comes from Zhuangzi·Dao Zhi: “Weisheng made an appointment with a woman under a bridge. The woman did not come, and when the water rose, Weisheng did not leave and died holding the bridge pillar.” Later, “embracing the pillar” became an allusion to sticking to a promise. From Pound’s translation, we cannot find the translation of the allusion “embracing the pillar”, which shows that the translator did not translate it directly. Moreover, Pound’s translation is not confined to the meaning of the original poem, but is more like a re-creation beyond the original text. Pound chose to use the repetition of three ‘forevers’ to express the heroine’s desire to accompany her husband through old age, while also subtly revealing her endless sense of loss and sorrow in her heart (Zhang, 2014). This may be because Western translators have relatively little understanding of Chinese culture, so they adopted the strategy of creative translation to deal with it.

Here are the translations by Xu Yuanchong and Xu Zhongjie:

Xu Yuanchong’s translation:

I was fifteen when I composed my brows.

To mix my dust with yours were my dear vows.

Rather than break faith, you declared you’d die

Who knew I’d live alone in a tower high.

Xu Zhongjie’s translation:

By fifteen, more of marital love I had learnt;

We had vowed constancy till to ashes we’re turned

I e’er kept in mind the tale that Wei Sheng died—

To keep his promise-drowned by the rising tide

Or, to the Wives — Watch — Tower, must I go

my way?

There would not be and could not be, such a day!

As two Chinese translators, Xu Yuanchong and Xu Zhongjie have different translations of this poem. Xu Yuanchong adopted the method of free translation, while Xu Zhongjie skillfully explained the allusions contained in the poem. Coupled with the handling of the poem's rhymes, it is easier for foreign readers to understand the meaning of the poem and appreciate the formal beauty of Li Bai's poetry.

6. Conclusion

Translation is for communication and exchange, not just a word-for-word bilingual conversion. The ultimate goal of translation is to make the effect of the original text on the source language readers the same as that of the translated text on the target language readers. Translators should not only understand and convey the surface meaning of the original work, but also deeply understand its cultural connotation, try to retain the culture in the original work and convey it to the target language readers, and try to make it easy for readers to understand and accept. The same is true for the translation of allusions in poetry. Translators should first understand the source of the allusion, its original story content, the meaning it expresses, and the cultural connotation it contains. Then, according to the purpose of translation, readers' requirements and acceptance level, they should flexibly adopt appropriate translation methods to creatively reproduce the allusions in the original poem in the target language, so as to effectively disseminate the bilingual culture (Chen, 2012). There is no distinction between good and bad translation strategies, as their purpose is to achieve information transmission and exchange, and cultural dissemination.

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Clarifying Human Rights Under the Prism of the EU Initiatives on Artificial Intelligence

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Abstract

The present work aims to shed light on the work of the EU in artificial intelligence and in particular in the adaptation and use of the latter in the field of human rights protection. The first attempts are connected with the General Data Protection Regulation (GDPR) which put the basis for discussing some innovations that led to the proposal of Regulation of Artificial Intelligence of 2021 as a supporter to cover gaps of the past, and to create an important network for the protection of personal data and support the evolution of the digital market.

Keywords: GDPR, regulation IA, protection of human rights, EU law, comparative law

1. Introduction

The continuous development of new technologies especially from the United States and China make Europe feel like the "distant relative" who has lost the way of novelties. Speaking of artificial intelligence (AI) we mean sophisticated systems, capable of understanding the evolution of users within certain limits and with the outcome often ambiguous and unsafe, perhaps because there is also a lack of legal regulation.

By the expression artificial intelligence, we mean: "(…) of machines endowed with a very significant calculation capacity. Artificial intelligence systems are, in fact, computers (and computer programs) that combine large amounts of data (so-called Big Data), with the aim of learning how to manage future decision-making processes (…). We are not dealing with machines capable of making real decisions, but more simply of drawing certain conclusions from the data that can be deduced from previous experiences (...)" (Gillespie, 2014). The continuous work of the AI is very extensive and transcends not only the economic sphere but also the public order control (Castets-Renard, 2022), for the management of public transport networks, pollution control, public health and telemedicine. It concerns a series of sectors where human development and collective well-being remain the first argument for carrying out this work.

It was the European Parliament that tried to regulate the AI through a preparatory report organized by the rapporteur Mady Delvauv trying to identify the legal, deontological principles and at the same time responding through a proposal for a regulation on AI. The related work was approved through the Resolution of 16 February 2017. As was obvious, this is not a finished work, but "suggestions" to

autonomously develop and fill in some rules, especially juridical ones, in the absence, however, of the ethical ones that are necessary for this area of legal regulation. The report of the European Parliament: "(...) clearly states that the matter requires specific regulation and that the existing legal framework is not sufficient to regulate the industry that exploits the mechanisms of artificial intelligence (...). It points out that the machine, as such, cannot assume legal personality (…). The consequence is that the obligations that will derive from the legislative instruments that will be introduced at the European level will apply to the creators of the system or to the planners; but never to the machine itself, which is incapable of being the recipient of subjective juridical situations (...)".

The related regulation on AI was also discussed at the Tallinn European Council of 29 September 2017 where: "(...) the Member States renewed their commitment to rapidly complete the so-called digital single market (...)". It has not brought important results but only a Declaration on cooperation in the field of AI signed on 10 April 2018: "(...) the signatory countries, in addition to renewing their commitment to increase investments to allow the creation of a European Digital Union, established that the subsequent regulation of artificial intelligence should have been the result of a "balancing" with other fundamental rights, such as, in particular, the protection of privacy (...)".

This was followed by a Communication from the European Commission, on 25 April 2018, where: "(...) given the huge investments required, the executive body recognized the need to also involve private individuals in the collection of data and in the development of technical suitable tools (…)." In reality, the executive body failed to make a conclusive decision, limiting itself to conferring the mandate on a specific group of experts. The work continues with the subsequent communication, of December 2018, in a more precise and "rigorous" way. A real coordinated plan for the development of artificial intelligence was approved which should have taken into account the pre-existing legal framework and the one set up to protect personal data (Cowert, 2017).

A group of experts elaborated the related ethical principles that pass from the development of the AI in a more complete form in the March of 2019 entitled: Guidelines. The relative regulation of the human-centered AI was underlined showing thus the anthropocentric character of the European attempt and implying the relative AI programs that allow human intervention to take the relative necessary decisions. In particular, the Guidelines stated that: "(...) (the) AI systems must guarantee the confidentiality and protection of data during the entire life cycle of the system (...)". Furthermore, the Group of Experts identified the Commission which ran to ensure a form of control by the human being. The control by the human being in the relative functioning of the AI systems was reaffirmed, which can be disregarded thus from the protection of fundamental rights and the protection of personal data.

The work of the Council of Europe has also come within this working circle where the Advisory Committee (so-called T-PD) based on the Convention for the protection of individuals with regard to automatic processing of personal data (Convention 108), has stated that: At all stages of processing, including data collection, AI developers, manufacturers and service providers should adopt a human rights by design approach (Lane, 2022) avoiding thus any potential bias even involuntary or hidden. AI developers should carefully screen the quality, nature, origin and quantity of personal data used, reducing unnecessary, redundant or marginal data during the development and training phases and then monitor the accuracy of the model as which is fed with new data (Tzimas, 2020; Tinnirello, 2022).

Thus, the EU has taken a step forward by reiterating that the developers of the related AI systems must design the systems taking into consideration the right of the interested party, i.e., of the human being in a precise, exclusive way to an automated decision, as well as to avoid discrimination regarding the related algorithms that will be placed in the established system. The EU continues with the publication of the White Paper on artificial intelligence in February 2020 stating that the development of such systems must be transparent allowing the interested party to decide, in full autonomy, and not be subjected only to an automated decision (Sanz-Urquijo, Fosch-Villaronga & Lopez-Belloso, 2022).

Already the EC has involved members of the European civil society as well as companies operating in the sector to collect opinions on the subject by subsequently presenting through the

European Council a legislative proposal to safeguard our values as well as our fundamental rights and our security in a socially balanced way. Therefore, the functioning of artificial intelligence systems would not have been an end in itself, but would have contributed to guaranteeing the affirmation of the European model at the level of global rules (Micklitz, Tom Thumbs, Reichman, Simoncini, Sartor & De Gregorio, 2022). The European Parliament, with a subsequent resolution, asked the Commission: "(...) that the proposal under preparation take into account the existing legislation on data protection (...)".

As can be understood, the EU through its institutions has tried to regulate the AI through exhaustive regulation that takes into consideration the human factor, i.e. the protection of fundamental rights and as a consequence the protection of personal data, a sector that for years has been pursuing with caution and continuous effort.

The proposal for a regulation on the AI discipline was presented by the European Commission on 21 April 2021. It tried to respond to the liability of the producer for defective products while maintaining the relative attention on the protection of fundamental rights (Pagallo, 2013; Pagallo, 2017). Thus, a certain strict liability has been introduced to an AI system which shows that the relevant Regulation has spoken of damage from a design or manufacturing defect of the system. The first typology of the related proposal includes high-risk systems where the behaviours determine a classification of users, in order to attribute them a certain social score or to evaluate their economic reliability putting in force a generalized prohibition of introduction on the market, which can be waived only for purposes of public order, such as the prevention of crimes or terrorist attacks. The second typology from articles 6-51 have to do with the greatest number of provisions. Systems that cumulatively include two characteristics with the aim of being used as a safe object product by harmonization provisions at a supranational level enter this category that is called high risk. The product is subject to a relative evaluation which must comply with the standards of third parties and which respects the relative products thus establishing the relative secondary, supplementary obligations which help the "suppliers" of AI systems establishing a registration system. Continuous monitoring of the functioning of the system as an obligation of transparency and information for the end users who have to do with the overall functioning of the system is necessary. In practice, suppliers must ensure that high-risk artificial intelligence systems comply with the requirements of the regulation before placing them on the market and must in any case ensure that human oversight of the artificial intelligence decision-making processes is always possible to ensure compliance with all these parameters, following a certification procedure, with specific bodies specifically authorized by the Member State authority, along the lines of the one already envisaged for the marking of products with the EC mark. The certificates thus issued must be drawn up in one of the official languages of the Union and are valid for five years. The third category of products, which we could define as "moderate risk", includes all those artificial intelligence systems intended to operate with people, which are not included in the previous two categories. With respect to these products, the proposed regulation is limited to establishing, for suppliers, only a specific obligation to inform users. In particular, the suppliers guarantee that "(…) natural persons are informed of the fact that they are interacting with an AI system (art. 52) (...)".

As was obvious, the proposed regulation envisaged the establishment of an Artificial Intelligence Committee to carry out the related liaison and consultancy functions. The Committee has the task of facilitating the dissemination of techniques for the construction of artificial intelligence systems, as well as that of facilitating the concrete implementation of the provisions of the regulation and establishing a specific competent authority, with the task of supervising and reporting any adverse events that may affect the functioning of artificial intelligence systems. The supervisory authority, which will generally be the same in charge of personal data protection, has the power to impose sanctions, which in some cases can reach up to six percent of the worldwide turnover of the company operating in the sector (Tinnirello, 2022).

The application of the Regulation 2016/679 on the protection of personal data has also included the AI which requires a large mass of data which these systems can have at their disposal. Fundamental moment for the functioning of an

artificial intelligence system, should be therefore, the data collection phase. The artificial intelligence regulation does not deal with the collection and processing of data, which therefore remain subject to the instruments in force and, in particular, to the regulation 2016/679, on the protection of personal data. It remains to be clarified at this point which discipline is applicable to them, once they are entered into the system. It is the same EC that accompanied the proposal of the Regulation of the IA clarifying that: "(…) does not affect the general regulation on data protection (Regulation (EU) 2016/679) (…)" (Buttarelli, 2016; Voigt & Von Dem Bussche, 2017; Erdos, 2021).

The Regulation on personal data attempted to protect the fundamental rights that were already established by art. 8 CFREU and of art. 166 TFEU (Blanke & Mangiamelli, 2021). Thus, it is understood that these normative sources are aimed at implementing a fundamental right expressly provided for at the level of the primary source. Additionally, it is easy to say that both derived sources under consideration should be applied cumulatively. There are various textual elements of the proposed regulation on artificial intelligence that seem, in fact, to confirm this conclusion.

Recital 24 describes: "(...) the methods of collecting biometric data (i.e. data concerning the physical, physiological or behavioral characteristics of an individual, through which it is possible to unequivocally identify a specific subject) (…) any processing of biometric data and other personal data affected by the use of AI systems for biometric identification purposes (…) should continue to meet all the requirements deriving from art. 9, par. 1, of Regulation (EU) 2016/679 (…)" (Enarsson, Enqvist & Naarttijärvi, 2022). Equally important is the recital 72 which provides for: "(…) the creation of spaces for experimenting with artificial intelligence systems — i.e. of those spaces in which the artificial intelligence systems are developed and trained — take into account the provisions of art. 6, par. 4, of Regulation 2016/679, in the hypothesis in which the data collection cannot take place behind or the consent of the data subject (...)". Overall, there is a clear indication of legislative commitment that allows us to speak to regulatory instruments that are applied cumulatively.

2. The Data Controller

Both the Regulations of personal data and on AI have identified the data controller. The latter should be unique and responsible for the collection and processing of data as well as the recipient of user requests for the exercise of rectification and limitation of data transfer (Frantziou, 2014; Kropf, 2014; Vlachopoulos, 2018; Liakopoulos, 2020).

As far as the AI systems are concerned, there are surveys that have to do with different tools, i.e. acoustic sensors, cameras, facial recognition technologies but also with other connected objects that will be able to perceive and process the related data. The access elements are capable of collecting the related data which are necessarily diversified and multiple and respect the idea of the existence of a unitary figure considered as the owner of the legal situations which are passive and active in the use of certain personal data. The data controller is also the owner of the AI system.

The AI systems are composed by scientists capable of making decisions independently of human control. Within this circle we recall that art. 4, par. 1, no. 7 of the Regulation of personal data defines the data controller and expressly refers that it is the natural or legal person, public authority, service or other body which, individually or together with others, determines the purposes and means of processing, clearly including in the category of the owners also entities without a legal entity ("the service or other body"). However, it seems to require a minimum of personification to take on the role of data controller, excluding the possibility of identifying him with the artificial intelligence system. Art. 22 of the Regulation of personal data provides that the interested party can request not to be subjected exclusively to an automated decision (Tinnirello, 2022).

The passive subject must not be influenced by a given treatment and requests not to be subjected to a relative automated decision as a consequence that the AI system must be conceived in such a way as to allow human intervention, i.e. the intervention of a subject with full legal capacity and equipped to exclude the machine and related decisions. The provisions on data protection also provide for the power of the national authorities to impose sanctions by linking a different graduation of the pecuniary penalty as well as the voluntary

nature of the behavior of the offender. Whoever decides in the AI sector is also responsible for the calculation of data, as the result of discretionary choices, indicative of a legal landscape that conceives an artificial intelligence system with an automated way any human intervention that remains open to the descending obligations of the application of the Regulation of personal data relating to the functioning of an AI system. The obligations proposed by the Regulation are imposed on the supplier of the AI system as its trainer. The regulation of personal data and in particular art. 22 provides for the right to rectification by requesting de-indexing or the relative cancellation of personal data, links to web pages that concern him, limitation of treatment and data portability to a different treatment system. The AI system includes also the Regulation 2016/679, i.e. the descending obligations as a regulatory source weighing on the company exercising a right of possession, as well as the use of the AI system which is due to a precise guarantee of the exercise of the guaranteed rights of the Regulation on personal data, the operational phase of the system and the identification of the data controller who at this point is responsible according to national law.

3. Principles of Minimization, Data Collection, Consent and Anonymization

Another discourse related to AI is that of data collection which actually responds to articles 5 and 6 of the Regulation on personal data (Tinnirello, 2022). The collection of data has to do with the principle of minimization as the express consent of the interested party which imposes only the data necessary for a specific purpose and which are canceled once the treatment ends. The principle of consent represents the internal heart that revolves around the prerogatives of the interested party for the protection of data concerning him. This is a not so precise process in the AI system given that the use of collected data for various processing purposes are presented as predictive models for the use of urban areas and which also use other data, for example such as number of crimes verified with large areas of operation of a crime prevention system thus suggesting to the local police to employ the available patrols. At the time of data collection, the operation of the AI system is connected with the relative consent of the users who pay attention when they give their consent (Zarsky, 2017). Visiting the related navigation sites invites us to name those who accept everything via a button, leaving although the choice of those who refuse to actually manage their preferences. It simply accepts the use of personal data as future uses of the facts and personal data. A greater use is required from the point of view of time that the average user is willing to bear basing on the Regulation on personal data as a form of minimization of consent, a reality that dates back to the distant Directive 95/46. They are conceived in a huge diffusion to the internet and the development of the data industry as a concrete functioning of AI systems which constitutes the main work of multinationals in relation to privacy abuses and the collection in the market of the related data exchange.

This processing observation of the data collection makes the data controller the obligatory body to proceed with the anonymization of the data as required by art. 25 of the Regulation on personal data, as data that become “non-personal”, as a process connected to the subsequent moment that determines the natural person where the data do not allow reaching the user and whoever generated them, thus falling under a different discipline of non-personal data that are freely transferable and assignable but perhaps not controllable from scratch.

4. Discriminatory Data, Functioning of the AI Systems

When we talk about discriminatory data, we immediately think of art. 9 Regulation of personal data which prohibits the processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, as well as the processing of genetic data, biometric data intended to uniquely identify a natural person but also data relating to the health or sex life or sexual orientation of the person. The provision is not structured according to the current uses of artificial intelligence. By excluding the processing of data revealing racial origin or religious beliefs, it could indirectly assume this conformation, while using elements that are not in themselves discriminatory (Liakopoulos, 2020). It is a system that selects suitable candidates for a relative type of employment and high profile in the engineering field thus establishing a previous experience based on candidates who have already held that position in the past, who, hypothetically, will have the

title of study obtained in certain universities, a good knowledge of foreign languages and the consequent ability to take on managerial positions, the propensity to travel abroad frequently, a high degree mark, and experience in multinational companies operating in the sector (Liakopoulos, 2020).

The direct discrimination profile is an object of regulation of the data protection Regulation which discriminates indirectly and descending the use of data without a discriminatory nature at the origin substantially not regulated. The only normative element is the recital n. 71 of the Regulation on personal data which states that "in order to ensure fair and transparent processing with respect for the data subject, taking into account the specific circumstances and context in which the personal data are processed, it is appropriate that the data controller uses appropriate mathematical or statistical procedures for profiling, implements adequate technical and organizational measures in order to guarantee, in particular, that the factors that lead to inaccuracies in the data are corrected and the risk of errors is minimized and in order to ensure the security of personal data in a manner that takes into account the potential risks for the interests and rights of the data subject and that prevents, inter alia, discriminatory effects against natural persons on the basis of racial or ethnic origin, political opinions of religion or belief, trade union membership, genetic status, or state of health or sexual orientation, or of measures involving such effects" (Liakopoulos, 2020; Tinnirello, 2022). Reading the article just mentioned, we understand that is incomplete, expressed in a form that excludes a "preceptive character" of the same where data protection has some obvious gaps and the AI regulation is limited to predicting data of training that responds to certain principles that are free from errors and complete since all the adequate statistical requirements are not included and the result is not prevented as a product in itself discriminatory and in an involuntary way excluding candidates who do not possess certain specific characteristics. Sure, that the treatment complies with the provisions of art. 15 of the Regulation of personal data (right of access) which provides the related purposes of the processing, as well as the recipients for the data retention period, the rights that the interested party can exercise as well as the logic used and the consequences of the automatic processing of use. And it is true that the regulation on personal data does not provide for a specific obligation for the owner to explain the operation of the AI system (Wachter, Mittelstadt & Floridi, 2017). The data controller provides information on the use of the data but does not clarify the relative modalities of a specific system of the AI to a certain result. The recital 71 of the Regulation on personal data in hypothetical way is limited to the data controller to provide the related information on the use of data and to clarify the related methods of a specific system of the AI which has reached a specific result. In any case, such treatment should be subject to adequate guarantees, which should include specific information to the interested party and the right to obtain human intervention, to express one's opinion, to obtain an explanation of the decision reached after such evaluation and to contest the decision. The very use of the "conditional" would seem to exclude the possibility for the interested party to directly invoke this right to explain the logic underlying the artificial intelligence system against the data owner (Wachter, Mittelstadt & Floridi, 2017).

Recital 71 in connection with articles 12, 13, 14 and 22 try to interpret the functionality of the Regulation on personal data. An obligation to the suppliers of the AI which according to art. 13, par. 1: "(…) high-risk AI systems are designed and developed in such a way as to ensure that their operation is transparent enough to allow users to interpret the system's output and use it appropriately (...)". The European legislator already knows that gaps in its legal system are still existing and that they have to do with the interpretation of the Regulation on personal data that seeks to resolve an ad hoc provision, such as a regulatory provision containing the rights of the interested in the processing of their data and which finds its place in the proposed Regulation on AI rather than an ad hoc modification of the Regulation of personal data.

5. Experimental Spaces

When we talk about experimentation spaces we are referring to the development of new AI systems and the related training of the data necessary for their functioning. The creation of the related open spaces allows more participants in the medium-sized enterprises and in the development of the systems of the AI who will not be able to participate due to the investments

that are needed in this area. Art. 53, par. 6, of the proposed AI regulation puts the specific experimentation of these spaces at the forefront as future guidelines that are issued and regulated by the European Artificial Intelligence Committee. The work and use of each body is to introduce the relative provisions that have to do with the rights and obligations, with the use of personal data and the functioning of the experimentation spaces of the AI systems. Art. 54 makes a relative exception to the proposal of the regulation of the AI which establishes the relative additional obligations that are connected with the companies participating in the experimentation of a space: "(…) separate, isolated and protected", under the direct control of the trial participants and preventing access to third parties; the prohibition of data transmission outside the space; the obligation to delete the data once the trial has been completed; and finally, the preservation of an accurate description of the experimentation process and of the underlying logic (…) (Tinnirello, 2022). That is, a forecast that provides for the collection and processing of data for the experimentation spaces and takes place with a series of specific precautions.

What is foreseen by articles 15 and 20 (Regulation on personal data) which has to do with the rectification, cancellation, limitation and portability of data examine the certain additional precautions of a preparation of an experimentation space which focuses on the will of the legislator to regulate them by promoting the development of innovative AI systems. The derogation has a rigorous nature in space and time and corresponds to the relative choice of legislator. The rights of the interested parties according to the Regulation on personal data are absolute rights subordinated to needs of a collective nature where the public desire to have access to a certain information must be achieved with the rights and freedoms of others. The European legislator accepts the introduction of limited exceptions to a full protection of personal data by favoring the development of European industry by creating the relevant conditions for a wide exploitation of the AI technologies. These reflections affirm that the exception to the rights of the interested parties is limited, compatible with the overall functioning of the Regulation on personal data. This is an acceptable compromise that takes into consideration the EU's overall effort to close an enriched gap towards other countries.

6. Concluding Remarks

As we have understood, the attempts for AI are complete and the course of the legislative process is quite evolutionary for the moment, hoping to see not so much the results in practice but a concrete use for the near future, clarifying the related critical aspects between the Regulations of the IA, of personal data and the use of the supplier who will verify the frequency in practice of the role he performs. The path of non-discrimination of the related data makes us think of art. 21 (Regulation on personal data) which: "(...) prohibits any form of discrimination (...)" as the basic principle that regulates certain settings of the algorithms that are introduced by the suppliers of the AI systems.

The use of algorithms produces discriminatory results in an indirect way. The European legislator provides some clarifications regarding the work, control of the data controller, as well as the functioning of the algorithm, as a product of a discriminatory result. Thus, it is clarified that the supplier and the data controller are on a path of a specific functioning that every time the European legislator intervenes to clarify the right of explanation for a specific system of the AI and the related reasons that it reaches a specific result. Art. 13 of the AI Regulation is too generic and there are no precise and stringent obligations to specify the information provided and to introduce a specific penalty system (Tinnirello, 2022). Article 71, par. 4 of the AI Regulation concerning the sanctions for the violation of the general obligations foreseen has to do only with the system provider and no foreseen sanction is included.

Finally, the disciplines that have to do with the AI sector in EU law are connected with those of a digital single market. In addition to the Regulation on personal data, we recall the Regulation 2018/1807 on non-personal data, the proposed regulation on artificial intelligence such as the Digital Markets Act, the Digital Services Act and the Digital Governance Act. Planning is very broad and distant, as a work of codification and coordination of this sector. In the near future, we also see cooperation of the sector with others but also with policies of the EU both at civil and criminal level. The final objective is the unblocking of the innovation of the related data industry which is found in every territory of the Member States where the

regulatory constraints are still many and the companies supplying digital services at a national level continue to favor their own development as a challenge for the next generations and as an active policy of the EU.

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