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All Rivers Run to the Sea: A Dual-Dimension Integration Study on Technological Empowerment and Cultural Inheritance in Inclusive Design for Age-Friendly Tourism Services

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Abstract

Purpose – The purpose of this paper is to analyze the dual predicament of technological exclusion and cultural marginalization faced by elderly populations in smart tourism contexts, and to examine the ethical essence and cultural mechanisms of age-friendly tourism design through interdisciplinary perspectives.

Design/Methodology/Approach – Based on philosophical technology ethics, this research combines anthropological perspectives on cultural inheritance with sociological theories of social exclusion to construct a multidimensional analytical framework. The study deconstructs technological hegemony's impact on elderly subjectivity and provides thick descriptions of intergenerational cultural interactions as ritual practices.

Findings – This paper reveals how standardized smart guide technologies systematically marginalize elderly users by imposing cognitive barriers and dissolving their cultural agency. It reconstructs "humanistic" ethical principles centered on cognitive adaptability, cultural subjectivity, and value equality. The research identifies age-friendly guides as crucial "carriers of social memory" and demonstrates how technological exclusion creates intergenerational "memory gaps" that threaten cultural continuity.

Research Implications – In the management of cultural tourism services, this study advocates for inclusive design approaches through "intergenerational co-creation" and "memory activation" strategies. These approaches reposition elderly users as both technological subjects and cultural agents, providing dual ethical-cultural support for technology-empowered silver tourism. The findings challenge tourism organizations to move beyond superficial accessibility improvements toward deeper reconceptualizations of technology-human-culture relationships in aging societies.

Keywords: Age-friendly tourism; Technology ethics; Cultural inheritance; Inclusive design; Social memory
JEL Classifications: O32, Z13, L83

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I. Introduction

Contemporary society is experiencing an unprecedented dual process of technological transformation and demographic transition. The tourism industry can promote the prosperous development of urban commerce and society (Xulong Dai, 2024). Against this backdrop, smart guide technologies are rapidly penetrating the cultural tourism domain, reshaping cultural experience and dissemination methods with their efficient and convenient characteristics (Niu, 2023). However, this technological revolution simultaneously brings a dual predicament of "technological exclusion" and "cultural marginalization" for elderly populations, warranting deep consideration from philosophical, anthropological, and sociological multidimensional perspectives (Hu & Wang, 2023).

From a technological ethics perspective, smart guide systems generally follow "youth-oriented" technological logic, manifested in youth-oriented tendencies in touchscreen interface design, information presentation speed, and interaction methods (Yu et al., 2024). Under this design logic, elderly groups are alienated as "technological marginals" due to natural changes in physiological perception abilities and intergenerational differences in digital literacy. Heidegger (1993) in "The Question Concerning Technology" profoundly reveals that the essence of modern technology is a kind of "enframing" (Gestell), which incorporates humans and their experiential world into a calculable and controllable order. Under the domination of this "technological enframing," the subjectivity of elderly groups is dissolved, reducing them to "others" in technological system design.

From the perspective of cultural inheritance, elderly groups serve as "living carriers" of regional culture and folk traditions, and the deprivation of their cultural participation rights leads to risks of rupture in intergenerational cultural transmission (Pei, 2009). Habermas (1984) in "The Theory of Communicative Action" points out that the crisis of modernity lies in the colonization of the lifeworld by the system world, while the technology-dominated logic in smart cultural tourism is a typical manifestation of this colonization—technological systems replace traditional cultural inheritance mechanisms, weakening the role of elderly groups as subjects of cultural inheritance. When elderly groups are excluded from cultural tourism experiences by technology, the cultural memory and experiential wisdom they carry are also marginalized, obstructing channels for intergenerational cultural transmission.

Current research on age-friendly design mostly focuses on technological improvements, such as interface optimization and functional simplification, lacking philosophical-level value reflection on the relationship between technology and elderly subjectivity (Ruijie & Shan, 2024). Cultural inheritance research tends to view elderly groups as "passive carriers" of culture, ignoring their agency as "cultural actors" (Appadurai, 1996). This fragmentation in research approaches leads to disconnection between technological age-friendliness and cultural inheritance at both theoretical and practical levels.

This study attempts to bridge the gap between technological instrumentalism and cultural structuralism through the intersectional perspective of philosophy (technological ethics) × anthropology (cultural practice) × sociology (social exclusion), re-anchoring the dual identity of elderly groups as both "technological subjects" and "cultural subjects" in the contemporary context of technology embedded in cultural tourism. Through in-

depth exploration of the inclusive design ethics of age-friendly cultural tourism services, this research not only responds to the contemporary question of "how technology can be used for good," but also attempts to provide new theoretical perspectives and practical models for intergenerational cultural continuity and social harmonious coexistence in the context of an aging society.

II. Technological Ethics Controversy: The Construction of "Digital Others" in Smart Guides

1. The Paradox Between Technological Rationality and Elderly Experience

The design of smart guide systems generally follows "youth-oriented" technological logic, and there exists a profound paradox between this design orientation and the physical and mental characteristics and cultural needs of elderly groups. From a philosophical perspective, the core of this paradox lies in the rupture between technological rationality and lived experience (Yu et al., 2024). Heidegger (1993) points out that modern technology is not merely a tool, but a specific way of thinking and worldview that simplifies the world into a calculable and controllable object system. When this technological rationality dominates smart guide design, the unique perceptual modes, cognitive habits, and cultural preferences of elderly groups are excluded from design parameters, forming systematic "technological exclusion."

Specifically, this exclusion manifests in three levels of misalignment: perceptual misalignment (such as font size and color contrast not considering elderly visual characteristics), cognitive misalignment (such as information organization methods not considering elderly memory characteristics), and cultural misalignment (such as interactive metaphors not connecting with elderly cultural experience) (Lu & Jiang, 2023). Mannheim (2019) proposes that true technological ethics should respect human diversity, including differences in the age dimension. When technological design ignores this diversity, it transforms from a tool of liberation into a mechanism of exclusion.

This alienation manifests not only as barriers to tool-level usage but more profoundly as an ontological crisis of subjectivity. As Merleau-Ponty (2012) argues in "Phenomenology of Perception," human existence is first and foremost a "bodily existence," where we establish connections with the world through bodily perception and action. When smart guide system design ignores the bodily perceptual characteristics of elderly groups, it actually cuts off the ontological connection between elderly subjects and the cultural world, causing them to fall into a state of "technological absence"—physically present but unable to truly participate in cultural experience through technological mediation.

The ethical core of this paradox lies in the power inequality in technological design (Marcuse, 2013). Baudrillard (1976) in "For a Critique of the Political Economy of the Sign" proposes that contemporary society's symbolic systems have become a power structure, and digital technology interfaces are precisely the concentrated embodiment of this symbolic power. When smart guide interface design and interactive logic take

the cognitive habits of young groups as the standard, they are actually reproducing an age-discriminatory power structure at the technological level, placing elderly groups in a disadvantaged position in technology use.

2. The Ethical Paradox of the Digital Divide

From a sociological perspective, smart guide exclusion of elderly groups is essentially a new form of social exclusion in the digital age (Hu & Wang, 2023). Bauman (2000) in "Liquid Modernity" proposes that contemporary society's fluidity and rate of change have led to new forms of social stratification. In the cultural tourism domain, technological usage ability has become an "entry threshold" for participating in cultural experience, with elderly groups being systematically marginalized due to lack of "digital capital." This exclusion is not merely a barrier at the technology usage level, but an implicit denial of the "existential value" of elderly subjects.

Habermas's (1984) theory of "lifeworld colonization" provides profound insight into understanding this phenomenon: when system rationality (such as technological efficiency) penetrates and dominates the lifeworld (such as cultural experience), human subjectivity and cultural meaning are eroded. In smart guide systems, technological efficiency logic often takes priority over cultural experience logic, and elderly groups are precisely the primary "victims" of this technological colonization—their cultural participation rights are restricted by technological thresholds, and their cultural experiences are disciplined by technological standards.

The formation of this digital divide is based on a "technological determinism" mindset that views technological development as an autonomous, non-intervening process to which humans can only passively adapt (Lai, 2025). This mindset manifests in smart cultural tourism design as: viewing elderly groups' technological adaptation difficulties as results of "natural elimination" rather than failures of design ethics. As Postman (2011) warned in "Technopoly," when we view technology as a neutral tool, we have actually accepted the dominance of technological logic over humanistic values, which is precisely the core paradox of technological ethics.

From an ethical perspective, this digital divide means a violation of "technological justice." Rawls (2001) in "A Theory of Justice" proposes that the principle of "fair justice" requires that the design of social institutions should consider groups in disadvantaged positions. Applying this principle to the field of technological design, smart guide systems should guarantee the equal participation rights of elderly groups rather than creating new inequalities through the standardization of technological standards. When we use the technological usage habits of young groups as the sole standard, we are actually establishing a technological usage "single correctness" while marginalizing elderly groups' technological usage habits as "deviation" or "error," which is itself ethical misconduct.

III. Cultural Inheritance Dilemma: The Risk of "Memory Gaps" in an Aging Society

1. The Crisis of Intergenerational Transmission of Cultural Memory

From an anthropological perspective, elderly groups serve as important carriers of cultural memory, and their restricted participation in the cultural tourism domain is not merely a loss at the individual experience level, but may lead to a crisis in the intergenerational transmission of collective cultural memory (Pei, 2009). Assmann (2011) in "Cultural Memory" points out that cultural memory depends on the joint participation and continuous practice of social groups to maintain and transmit. When smart guide technology excludes elderly groups from cultural participation, it actually cuts off important channels for cultural memory transmission.

This severance causes cultural inheritance rupture at two levels: on one hand, the "bodily memory" carried by elderly groups (such as handicraft skills, living habits, emotional attitudes, etc.) is difficult to transmit through purely technological information transfer; on the other hand, ritualistic interactions in cultural inheritance (such as intergenerational joint participation, dialogue, and emotional exchange) are blocked by technological interfaces. As Giddens (1991) analyzes in "The Consequences of Modernity," modern technology often brings about the effect of time-space distanciation, while cultural inheritance precisely requires temporal continuity and spatial integrity.

It is particularly noteworthy that many forms of local knowledge and intangible cultural heritage often exist in informal, non-systematized ways within elderly groups' daily practices and oral traditions . Geertz (1973) in "The Interpretation of Cultures" emphasizes that culture is not merely a symbolic system but a network of meanings that requires vitality through participants' interpretation and practice. When smart guide systems only focus on standardized, digitizable cultural information while ignoring those difficult-to-quantify cultural experiences and emotional memories, the richness and vitality of cultural inheritance are weakened.

2. The Separation Between Symbolization and Practical Knowledge

Smart guide systems in cultural content presentation often emphasize symbolized and conceptualized knowledge expression, while those cultural knowledge rooted in bodily practice and lived experience are difficult to effectively transmit (Niu, 2023). Polanyi's (1960) concept of "tacit knowledge" provides an important perspective for understanding this dilemma: much cultural knowledge is unspeakable, existing in practice, emotion, and intuition, requiring acquisition through participation and experience.

Elderly groups, as direct witnesses to traditional cultural practices, often possess rich tacit knowledge that is difficult to transmit through purely technological information transfer. When smart guide systems simplify cultural knowledge into retrievable, quantifiable information points, the cultural essence contained in elderly groups' bodily memory and life wisdom becomes difficult to inherit. As Certeau (1984) reveals in "The Practice of Everyday Life," culture exists not only in formal discourse but also in the micro-strategies of daily practice,

and this practical knowledge is precisely what technological systems find difficult to capture.

This separation between symbolization and practical knowledge leads to a "thinning" phenomenon in the cultural inheritance process—cultural content is transmitted at the information level but loses emotional depth and practical context. When smart guides simplify traditional crafts into step-by-step instructions and folk festivals into historical introductions, the vitality and creativity of culture are weakened, potentially leading culture to become a kind of "exhibitive existence" rather than "lived practice."

3. The Risk of Dissolving Cultural Subjectivity

From the perspective of cultural subjectivity, smart guide technology's exclusion of elderly groups not only affects individual cultural rights but may also lead to the overall dissolution of cultural subjectivity (Niu, 2023). Bourdieu (1990) in "The Logic of Practice" proposes that cultural practice is an embodiment of "habitus," rooted in the historical experience and social position of specific groups. When elderly groups are marginalized in the cultural inheritance process, the specific cultural habitus they represent also loses channels for inheritance.

This dissolution of subjectivity manifests as the loss of discourse power—smart guide system content production is often dominated by technology developers and content editors, with elderly groups rarely having opportunities to participate in content selection and expression method decisions (Niu, 2023). Foucault (1972) in "The Archaeology of Knowledge" reveals the close connection between knowledge and power. In the smart cultural tourism domain, whoever masters discourse power in content production largely determines the direction and content of cultural inheritance. When elderly groups lose this discourse power, the cultural memory and values they carry find it difficult to gain full expression in technologized cultural dissemination.

The deeper risk of subjectivity dissolution lies in the weakening of cultural identity. Taylor (1989) in "Sources of the Self" emphasizes that individual self-identity largely depends on cultural identity, which needs to be maintained through active participation in cultural practice. When elderly groups are in a position of passive acceptance or exclusion in smart cultural tourism, their emotional connection and sense of identity with cultural traditions may weaken, subsequently affecting the entire society's cultural identity foundation.

In this situation, technology is no longer an auxiliary tool for cultural inheritance but becomes a key variable in the reconstruction of cultural subjectivity. How to ensure the cultural subjectivity of elderly groups in smart cultural tourism design becomes a core ethical issue that age-friendly cultural tourism services must face. This requires us to transcend purely technological improvement approaches and delve into deeper issues of cultural power distribution and subjectivity construction.

IV. Interdisciplinary Research Gap: The Academic Void in Ethical-Cultural Dual Dimensions

Current age-friendly research fields exhibit obvious disciplinary fragmentation, creating disconnections between theory and practice. This fragmentation manifests in two main aspects: on one hand, technology-oriented age-friendly research mostly focuses on tool-level adjustments such as interface improvement and functional simplification, lacking philosophical reflection on the relationship between technology and elderly subjectivity; on the other hand, cultural inheritance research tends to view elderly groups as "passive carriers" of culture, ignoring their agency as "cultural actors" (Niu, 2023).

1. The Absence of Philosophical Dimensions in Technological Age-Friendliness Research

The mainstream paradigm of technological age-friendliness research is largely built on a "functional compensation" model, viewing elderly groups' technological usage barriers as "deficiencies" that need to be compensated through technological adjustments (Nimrod, 2020). While this research orientation provides some improvement solutions at the practical level, from a philosophical perspective, it still places elderly groups in a position of "passive adaptation," failing to fundamentally question the value presuppositions and power structures implicit in technological design.

Particularly noteworthy is that current technological age-friendliness research often ignores the intrinsic connection between technology and culture. Ihde (2001) in "Technology and the Lifeworld" points out that technology is not value-neutral tools but material expressions that embody specific cultural values and lifestyles. Smart guide systems are not merely tools for information transmission but materialized forms of specific cultural concepts and experiential methods. When we only focus on technological functional adaptation while ignoring its cultural connotations, age-friendly design can hardly touch the core of the problem.

Meanwhile, technological age-friendliness research also exhibits obvious methodological limitations. Mainstream research mostly adopts empirical methods such as laboratory testing or questionnaire surveys. While these methods can capture surface-level usage behaviors, they find it difficult to deeply understand elderly groups' technological experiences and cultural needs (Connelly et al., 2014). Gadamer (1975) in "Truth and Method" emphasizes that understanding is always understanding with pre-understanding, requiring dialogue and horizon fusion to achieve true understanding. This suggests that age-friendly research needs to adopt more participatory and dialogical research methods, making elderly groups true subjects rather than objects of research.

2. The Absence of Technological Dimensions in Cultural Inheritance Research

Traditional cultural inheritance research mostly approaches from the macro perspective of socio-cultural continuity, rarely focusing on the special role of technological media in cultural transmission processes. The

widespread application of contemporary intelligent technology has profoundly changed the methods and pathways of cultural inheritance, yet existing research has not sufficiently attended to this change (Wang, 2021).

Particularly crucial is the prevalent stereotypical understanding of elderly groups' roles in cultural inheritance research. Traditional research tends to view elderly groups as "passive carriers" or "transmitters" of culture, ignoring their potential as active subjects of cultural creation and interpretation (Niu, 2023). Lévi-Strauss (1961) in "Tristes Tropiques" reminds us that no culture is a static "thing" but a dynamic "process," with each participant continuously creating and reinterpreting culture in cultural practice. Elderly groups should not be viewed merely as "repositories" of cultural memory but understood as active constructors of cultural meaning.

Furthermore, cultural inheritance research has insufficient attention to the transformation of intergenerational cultural interaction patterns brought by technological change. With the popularization of intelligent technology, intergenerational cultural interaction is no longer limited to traditional face-to-face instruction but is increasingly realized through technological mediation. This transformation not only affects the form of communication but profoundly changes the content and logic of cultural inheritance. Current research has not sufficiently explored new patterns of intergenerational cultural interaction under technological mediation, leading to obvious gaps in understanding age-friendly cultural tourism services (Wang, 2021).

3. The Urgent Need for Interdisciplinary Integration

Facing the above research gaps, this study advocates constructing an integrative theoretical framework for age-friendly cultural tourism services through the intersectional perspective of philosophy (technological ethics) × anthropology (cultural practice) × sociology (social exclusion). This interdisciplinary integration is not a simple compilation of viewpoints but achieves more comprehensive and in-depth understanding of age-friendly cultural tourism services through dialogue and fusion of different disciplinary perspectives.

The philosophical perspective provides ontological and ethical reflection on the relationship between technology and humans, revealing value presuppositions and power structures in technological design; the anthropological perspective focuses on specific forms and meaning construction processes of cultural practice, helping us understand the special role of elderly groups as cultural actors; the sociological perspective focuses on structural factors of social exclusion and inclusion, exploring social institutional conditions for age-friendly services. Through the intersection and fusion of these three perspectives, we can more comprehensively grasp the ethical essence and cultural mechanisms of age-friendly cultural tourism services.

The significance of this interdisciplinary integration lies in its ability to bridge the gap between technological instrumentalism and cultural structuralism, re-anchoring the dual identity of elderly groups as both "technological subjects" and "cultural subjects" in the contemporary context of technology embedded in cultural tourism. Only by simultaneously attending to technological adaptability and cultural inheritance can we design age-friendly cultural tourism services that truly respect elderly subjectivity and promote intergenerational cultural dialogue.

V. Philosophical Deconstruction: The Return of Subjectivity from a Technological Ethics Perspective

1. Sociological Manifestations of Technological Hegemony: New Forms of Social Exclusion in the Digital Age

The "techno-centrism" design orientation in smart guide systems, such as mandatory registration and complex gesture interactions, is essentially a sociological manifestation of technological hegemony. This technological hegemony not only creates practical barriers to usage but also constitutes a new form of social exclusion in the digital age (Marcuse, 2013). Bauman's (2000) theory of "liquid modernity" provides an important perspective for understanding this exclusion: in the rapidly changing liquid modern society, technological capability has become an important basis for social stratification, with elderly groups being systematically marginalized due to lack of "digital capital."

From the perspective of social exclusion theory, this technological exclusion manifests as multi-dimensional deprivation. Sen's (1999) concept of "capability deprivation" in "Development as Freedom" helps understand this phenomenon: smart guide technology's exclusion of elderly groups is not only a restriction on usage functions but a systematic deprivation of their cultural participation capabilities and social interaction capabilities. This deprivation directly affects elderly groups' social participation rights and cultural experience rights, constituting a form of technologized social injustice (Niu, 2023).

More profoundly, this technological exclusion reflects the "lifeworld colonization" phenomenon criticized by Habermas (1984)—technological system logic invades and reconstructs the lifeworld of cultural experience, making cultural experience increasingly disciplined by technological rationality. In smart guide systems, this colonization manifests as technological standards' presuppositional regulation of cultural experience, with elderly groups' cultural experience methods (such as slow-paced appreciation and emotional understanding) being marginalized as "inefficient."

As Bourdieu (1990) analyzes in "Distinction," each social field has specific capital distribution structures and game rules. In the contemporary cultural tourism field, technological usage capability has become an important form of cultural capital, with elderly groups in obvious disadvantage in this capital distribution. The youth-oriented tendency of technological design further reinforces this inequality, institutionally consolidating elderly groups' marginal position in the cultural field.

The essence of this technological exclusion is an implicit denial of the "existential value" of elderly subjects (Marcuse, 2013). Heidegger (1993) reminds us that the essence of technology lies not in its instrumental use but in how it frames the relational modes between humans and the world. When smart guide systems exclude elderly groups from design considerations, they are actually denying their status as legitimate participants in the cultural world, constituting an ontological-level ethical crisis.

2. Philosophical Reconstruction of Humanistic Ethics: From "Instrumental Rationality" to "Communicative Rationality"

Facing the ethical crisis of technological exclusion, age-friendly cultural tourism services need philosophical-level ethical reconstruction, with the core being a shift from "instrumental rationality" to "communicative rationality" (Habermas, 1984). Habermas's (1984) theory of communicative action provides important theoretical resources for this shift: true ethical relationships are not instrumental subject-object relationships but equal dialogical intersubjective relationships. Age-friendly design should transcend purely functional improvements to construct an "intersubjective" technological ethics.

This intersubjective technological ethics contains at least three core dimensions:

First, cognitive adaptability. This is not merely technical adjustment of interface design but philosophical respect for elderly cognitive rhythms and methods. Merleau-Ponty's (2012) bodily phenomenology reminds us that cognition is first a bodily way of being, with elderly groups' unique cognitive rhythms reflecting their distinctive ways of engaging with the world. Age-friendly design should respect these cognitive characteristics, such as guide speed gradient settings and layered information presentation, breaking the "efficiency-first" technological tyranny.

Second, cultural subjectivity. Age-friendly design should not view elderly groups as abstract "users" but understand them as carriers and practitioners of specific cultural traditions with cultural subjectivity. Ricoeur (2004) in "Memory, History, Forgetting" points out that memory is not only storage of the past but a constituent element of subject identity. Age-friendly guides should respect elderly groups' cultural memory, embedding cultural symbols familiar to them (such as dialect guidance and traditional pattern interfaces), making technology an extension rather than replacement of cultural expression.

Third, value equality. Value orientations in technological design should not be determined by a single group but should reflect the joint participation of diverse groups. Rawls's (2001) theory of justice reminds us that fair social institutions should consider the circumstances of the least advantaged. Age-friendly design should grant elderly groups discourse power in technological design, achieving democratic cultural tourism practices through participatory design methods (such as community participatory guide development), ensuring that elderly groups' values and needs are fully expressed in design.

The deeper significance of this humanistic ethical reconstruction is that it is not only an adjustment of technological usage methods but a fundamental reflection on the relationship between technology and humans. As Arendt (1958) warned in "The Human Condition," the crisis facing modern society lies in instrumental rationality's erosion of human subjectivity. The ethical reconstruction of age-friendly cultural tourism services is precisely to resist this erosion and rebuild elderly groups' subject status in technological culture.

VI. Anthropological Thick Description: Cultural Inheritance Mechanisms in Age-Friendly Guides

1. Rerecognition of Elderly Groups' Role as "Cultural Actors"

In traditional anthropological research, elderly groups are often simplified as "carriers" or "transmitters" of culture, a simplification that ignores their agency as cultural actors. This study advocates breaking through this stereotypical narrative and rerecognizing elderly groups' multiple roles as "subjects of cultural agency."

Geertz's (1973) "thick description" theory provides a methodological foundation for this rerecognition. He points out that culture is not a static symbolic system but a dynamic process of meaning construction that requires "thick description" of actors' interpretive activities to be understood. Elderly groups are not merely carriers of cultural information but active interpreters and re-creators of cultural meaning. In age-friendly guide design, full attention should be paid to elderly groups' understanding and interpretation of culture, viewing them as important subjects of cultural production.

Elderly groups' role as cultural actors manifests in at least three levels: first, they are direct witnesses of cultural experience, carrying much informal, non-textual cultural knowledge through bodily memory and lived practice; second, they are interpreters of cultural meaning, able to understand multiple layers of meaning in cultural phenomena from historical depth; finally, they are innovators of cultural tradition, able to creatively transform traditional culture in contemporary contexts.

Polanyi's (1960) theory of "tacit knowledge" is particularly helpful for understanding the unique value of elderly groups as cultural actors. Much core knowledge in traditional crafts and folk practices is tacit, unable to be completely transmitted through pure linguistic description, requiring acquisition through practical demonstration and bodily participation. Elderly groups often possess rich tacit knowledge that is difficult to transmit completely in purely digitized texts. Age-friendly guides should attend to these tacit knowledge transmission mechanisms, designing interactive methods that support elderly groups in demonstrating and transmitting tacit knowledge.

From the perspective of cultural agency, elderly groups also have the important role of "cultural translators." Benjamin (2016) in "The Task of the Translator" points out that translation is not only linguistic conversion but a bridge for cultural understanding. Elderly groups can perform cultural translation between tradition and modernity, past and present, helping younger generations understand the contemporary significance of cultural traditions. Age-friendly guides should support this cultural translation function, transforming elderly groups from "cultural containers" to "cultural producers."

2. The "Ritualized" Cultural Function of Age-Friendly Guides

From an anthropological perspective, age-friendly guides are not merely tools for information transmission but can become a modern form of cultural ritual (Niu, 2023). Van Gennep's (2019) theory of "rites of passage"

provides an analytical framework for understanding this function: cultural inheritance often occurs through ritualized processes that contain three stages: separation, transition, and reintegration. Age-friendly guides can be designed as "transitional spaces" for intergenerational cultural interaction, promoting cultural flow and reconstruction between generations.

Specifically, the ritualized function of age-friendly guides can be embodied in three stages:

Separation stage: Breaking the intergenerational isolation of traditional technology usage rights. Age-friendly guides can design special segments that showcase elderly groups' traditional guide skills or cultural storytelling abilities, making younger generations aware that valuable cultural transmission methods exist beyond digital guides. The key to this stage lies in breaking young people's monopolistic imagination of "digital technology," creating preconditions for intergenerational dialogue.

Transition stage: Constructing collaborative spaces for intergenerational co-creation. Eliade (1959) in "The Sacred and the Profane" points out that transitional states are a creative disorder where new cultural forms may emerge. Age-friendly guides can design intergenerational collaboration segments, such as grandparents and grandchildren jointly recording intangible cultural heritage story audio, with elderly narrating craft history and young people adding modern artistic elements, transforming intergenerational differences into drivers of cultural innovation through such cooperation.

Reintegration stage: Forming new cultural identity bonds. Turner (2017) in "The Ritual Process" emphasizes that the ultimate purpose of rituals is to form new social connections and cultural identity. Age-friendly guides can design shared achievement display segments, transforming intergenerational collaborative cultural products into new cultural identity carriers. For example, family stories provided by elderly residents combined with digital recreations designed by young people become emotional bonds and cultural bridges connecting generations.

The core value of this ritualized function lies in transforming technology from simple information tools into media for cultural practice, making age-friendly guides not only transmit cultural content but become domains for cultural production and cultural experience. As Turner (2017) points out, rituals are not only ways of expressing culture but processes of creating culture. The ritualized design of age-friendly guides can promote the living renewal and creative transformation of culture in intergenerational inheritance.

3. The Logic of Intergenerational Reproduction of Social Memory

From the perspective of social memory theory, age-friendly guides not only undertake information transmission functions but can become important media for the intergenerational reproduction of social memory (Assmann, 2011). Habermas's (1984) theory of "collective memory" points out that memory is not only an individual psychological phenomenon but a socially constructed product that needs to be maintained and renewed through social interaction and collective practice. Age-friendly guides can serve as a modern form of such social memory practice, promoting memory transmission and reconstruction between generations.

This intergenerational reproduction of social memory follows the basic logic of "memory triggering-

narrative reconstruction-identity reinforcement": first, age-friendly guides trigger elderly groups' memory retrieval through specific cultural symbols, sounds, or images; second, these triggered memories are expressed and reconstructed through elderly groups' narrative activities; finally, these narratives are received and understood by younger generations, forming new cultural identity foundations.

Assmann (2011) in "Cultural Memory" distinguishes between "communicative memory" and "cultural memory": the former exists in daily communication with temporality; the latter is preserved long-term in institutionalized forms. The unique value of age-friendly guides lies in their ability to build bridges connecting these two forms of memory, transforming elderly groups' communicative memory into more durable forms of cultural memory through technological means while preserving the personal emotional dimensions of memory.

The deeper significance of this memory reproduction process lies in its ability to elevate individual memory to collective memory, strengthening the intergenerational bonds of cultural identity. Ricoeur (2004) in "Memory, History, Forgetting" emphasizes that narrative is the key link between memory and identity formation. Through memory narrative activities in age-friendly guides, elderly groups' personal memories dialogue with public history, individual experience interweaves with collective identity, achieving continuous reproduction of cultural identity in intergenerational interaction.

VII. Practical Pathways: Ethical-Cultural Dual-Dimension Inclusive Design Innovation

1. Intergenerational Co-Creative Design: Breaking Through Technological Intergenerational Barriers

The first practical pathway for age-friendly cultural tourism services is establishing an "intergenerational co-creative design" mechanism, with the core being breaking the intergenerational barriers between technological development and cultural experience (Niu, 2023). Simonsen (2013) in "Participatory Design" emphasizes that design should not be unidirectional output from experts to users but a co-creative process among multiple stakeholders. Age-friendly cultural tourism services particularly need this co-creative thinking, transforming elderly groups from passive users into active design participants.

Specifically, intergenerational co-creative design can construct a collaborative mechanism of "elderly cultural think tank + youth technology workshop." The core of this mechanism is achieving bidirectional flow between cultural experience and technological innovation: elderly groups provide cultural content and experiential wisdom, young groups provide technological implementation and innovative ideas, and both jointly complete age-friendly guide design through structured collaborative processes. Schön's (2017) concept of "knowledge dialogue" in "The Reflective Practitioner" helps understand this process: different types of knowledge (such as elderly groups' experiential knowledge and young designers' technical knowledge) generate new design wisdom through dialogical exchange.

This intergenerational co-creative mechanism should be built on three basic principles: the principle of equal participation, ensuring elderly groups have substantive decision-making power rather than merely serving as information providers; the principle of capability complementarity, fully leveraging elderly groups' advantages in cultural experience and young groups' advantages in technological innovation; the principle of iterative development, continuously optimizing design solutions through cycles of "cultural materials-digital translation-user testing."

The deeper value of intergenerational co-creative design lies not only in improving the age-friendliness of technological products but in promoting intergenerational dialogue and cultural inheritance through the design process itself. As Latour (2005) points out in "Reassembling the Social," technological design not only creates material products but reconstructs social relationship networks. When elderly groups participate in smart guide design processes, technology transforms from a "digital divide" separating generations into a "cultural bond" connecting generations, with the design process itself becoming a domain for cultural dialogue.

2. Memory Activation Technology: Awakening Emotional-Cultural Resonance

The second practical pathway for age-friendly cultural tourism services is developing "memory activation technology," with the core being awakening elderly groups' cultural memory and emotional experience through technological means, promoting emotional-cultural resonance between generations. Proust (2011) in "In Search of Lost Time" profoundly reveals the close connection between sensory memory and deep emotional experience, providing important insights for designing memory activation technology.

The basic design approach of memory activation technology is "contextual awareness + memory triggering": by sensing elderly users' spatial location, behavioral characteristics, and other contextual information, intelligently pushing content that can trigger specific cultural memories, such as traditional music, folk ritual sounds, dialect narration, etc., thereby awakening elderly groups' cultural memory and emotional resonance. This design approach is based on the theory proposed by Nora (1996) in "Realms of Memory": specific places, sounds, and images can activate related collective memories.

After memory activation, the technology system should support elderly groups in memory narration and emotional expression, such as providing oral history recording functions and encouraging elderly users to share personal memories and emotional experiences related to specific cultural places. These personalized memories, after processing, can become organic components of the guide system, forming dual cultural expression of "official narrative" and "folk memory." Ricoeur (2004) emphasizes that narrative is the core way humans understand their own experience and construct identity. By supporting elderly groups' memory narration, technology systems not only transmit cultural information but promote the formation and reinforcement of cultural identity.

The deeper value of memory activation technology lies in making technology a unity of "memory probe" and "inheritance medium." On one hand, technology activates cultural resources sleeping in elderly groups' memories; on the other hand, technology transforms these activated memories into forms that can be received

and understood by younger generations. This bidirectional function makes technology no longer a cold information carrier but a cultural medium connecting intergenerational memory, like the "storyteller" mentioned by Benjamin (2016), building bridges for dialogue between tradition and modernity.

3. Multi-Actor Governance Network: Institutional Guarantee for Ethical Practice

The third practical pathway for age-friendly cultural tourism services is constructing a "multi-actor governance network," with the core being providing systematic guarantees for ethical practice through institutional innovation (Habermas, 1984). Foucault's (1972) theory of governmentality reminds us that the effective implementation of any practice depends on specific power-knowledge structures and institutional arrangements. For the ethical concepts of age-friendly cultural tourism services to be effectively implemented, corresponding governance networks must be established as institutional support.

This governance network should integrate multiple actors including government, cultural tourism institutions, community organizations, and elderly groups, forming an inclusive governance system that integrates "technology-culture-institution." Government should provide policy support and resource guarantee, such as establishing age-friendly technology standards and providing R&D subsidies; cultural tourism institutions should provide scenario resources and professional knowledge, supporting the development and implementation of age-friendly guide projects; community organizations should play organizational mobilization functions, promoting effective participation of elderly groups; elderly groups should participate in the entire process as subjective participants rather than passive service objects.

Giddens's (1991) structuration theory emphasizes that social structures both constrain action and provide possibilities for action. The core value of multi-actor governance networks lies in their ability to provide institutional frameworks and resource support for age-friendly practices while ensuring respect for elderly groups' subjectivity through participatory mechanisms. This governance network is not simple administrative management but empowering governance that ensures the transformation of age-friendly ethics from conceptual level to practical mechanisms through reconstructing power relations and decision-making mechanisms.

Multi-actor governance networks should follow three core principles: the inclusiveness principle, ensuring effective participation of elderly groups and other stakeholders; the synergy principle, promoting resource integration and functional complementarity among different actors; the sustainability principle, establishing long-term mechanisms rather than one-time projects, ensuring sustainable development of age-friendly services. Only by following these principles can the ethical practice of age-friendly cultural tourism services transform from individual case innovation to systematic change, truly achieving synergistic development of technological progress and cultural inheritance.

VIII. Conclusion: The Mutual Construction and Symbiosis of Technological Ethics and Cultural Inheritance

Through multidimensional exploration of the inclusive design ethics of age-friendly cultural tourism services, this study reaches the following core conclusions: the essence of age-friendly cultural tourism design is the mutual construction practice of technological ethics (humanistic values) and cultural inheritance (intergenerational interaction) (Marcuse, 2013). This mutual construction and symbiotic relationship manifests at three levels:

First, philosophical-dimension ethical reflection demarcates "humanistic boundaries" for technology, preventing technological rationality from consuming elderly subjectivity (Heidegger, 1993; Marcuse, 2013). Heidegger (1993) reminds us that the essence of technology lies not in its instrumentality but in how it frames the relationship between humans and the world. The philosophical significance of age-friendly design lies in redefining the relationship between technology and elderly subjects, shifting from technology dominating humans to humans mastering technology, ensuring elderly groups' subject status and dignity in technological experience.

Second, anthropological-dimension cultural thick description injects "inheritance dynamics" into practice, activating elderly groups' cultural agency. Geertz's (1973) thick description theory points out that culture is not a static symbolic system but a dynamic process of meaning construction. The anthropological significance of age-friendly guides lies in transforming elderly groups from "passive carriers" of culture to "active producers," promoting culture's creative transformation in inheritance by supporting their cultural narration and intergenerational dialogue.

Finally, sociological-dimension social integration provides "institutional guarantee" for pathways, constructing a governance ecology of multi-actor collaboration. Bourdieu's (1990) field theory reminds us that any practice is embedded in specific social structures and power relations. The sociological significance of age-friendly services lies in reconstructing power structures for technological design and cultural participation, establishing more inclusive and just cultural participation mechanisms, ensuring institutional guarantee for elderly groups' cultural rights and technological rights.

This interdisciplinary reflection not only responds to the contemporary question of "how technology can be used for good" but also provides new theoretical perspectives and practical paradigms for intergenerational cultural continuity and social harmonious coexistence in the context of an aging society. The inclusive design ethics of age-friendly cultural tourism services essentially explores the fusion of technology and humanities in specific domains, seeking balance points between technological progress and cultural inheritance. By reconstructing elderly groups' subject status in technological culture, we can make technology a cultural bond connecting generations rather than a digital divide separating generations, thereby promoting synergistic development of technological progress and cultural continuity.

References

Appadurai, A. (1996). Modernity at large: Cultural dimensions of globalization. University of Minnesota Press.

Arendt, H. (1958). The human condition. University of Chicago Press.

Assmann, J. (2011). Cultural memory and early civilization: Writing, remembrance, and political imagination. Cambridge University Press.

Baudrillard, J. (1976). Toward a critique of the political economy of the sign. Substance, 5(15), 111-135.

Bauman, Z. (2000). Liquid modernity. Polity Press.

Benjamin, W. (2016). The task of the translator: An introduction to the translation of Baudelaire's Tableaux Parisiens. In Readings in the theory of religion (pp. 131-139). Routledge.

Bourdieu, P. (1990). The logic of practice. Stanford University Press.

Certeau, M. D. (1984). The practice of everyday life (S. Rendall, Trans.). University of California Press.

Connelly, K., ur Rehman Laghari, K., Mokhtari, M., & Falk, T. H. (2014). Approaches to understanding the impact of technologies for aging in place: A mini-review. Gerontology, 60(3), 282-288. https://doi.org/10.1159/000357207

Eliade, M. (1959). The sacred and the profane: The nature of religion. Harcourt Brace Jovanovich.

Foucault, M. (1972). The archaeology of knowledge (A. M. Sheridan Smith, Trans.). Routledge.

Gadamer, H. G. (1975). Truth and method (J. Weinsheimer & D. G. Marshall, Trans.). Continuum. (Original work published 1960)

Geertz, C. (1973). Thick description: Toward an interpretive theory of culture. In The interpretation of cultures: Selected essays (pp. 3-30). Basic Books.

Giddens, A. (1991). The consequences of modernity. Stanford University Press.

Habermas, J. (1984). The theory of communicative action (T. McCarthy, Trans.). Beacon Press.

Heidegger, M. (1993). The question concerning technology. In D. F. Krell (Ed.), Basic writings (pp. 307-342). HarperCollins.

Hu, Y., & Wang, M. (2023). Aging and media studies: Modern society transformation and disciplinary turning for the future. Global Media Journal.

Ihde, D. (2001). The technological lifeworld. In P. T. Durbin (Ed.), American philosophy of technology: The empirical turn (pp. 119-146). Indiana University Press.

Lai, N. (2025). Technological alienation and its resolution in the era of digital capitalism. Yixin Publisher.

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford University Press.

Lévi-Strauss, C. (1961). Tristes tropiques (J. Russell, Trans.). Hutchinson. (Original work published 1955)

Lu, P., & Jiang, Y. N. (2023). Research on age-friendly design of APP interactive interface based on visual symbol theory. Packaging Engineering, 44(12), 189-212.

Mannheim, I., Schwartz, E., Xi, W., Buttigieg, S. C., McDonnell-Naughton, M., Wouters, E. J., & Van Zaalen, Y. (2019). Inclusion of older adults in the research and design of digital technology. International Journal of Environmental Research and Public Health, 16(19), Article 3718. https://doi.org/10.3390/

ijerph16193718

Marcuse, H. (2013). One-dimensional man: Studies in the ideology of advanced industrial society. Routledge. (Original work published 1964)

Merleau-Ponty, M. (2012). The phenomenology of perception (D. A. Landes, Trans.). Routledge. (Original work published 1945)

Nimrod, G. (2020). Aging well in the digital age: Technology in processes of selective optimization with compensation. The Journals of Gerontology: Series B, 75(9), 2008-2017. https://doi.org/10.1093/geronb/gbz111

Niu, H. (2023). The effect of intelligent tour guide system based on attraction positioning and recommendation to improve the experience of tourists visiting scenic spots. Intelligent Systems with Applications, 19, Article 200263. https://doi.org/10.1016/j.iswa.2023.200263

Nora, P. (1996). Realms of memory: Conflicts and divisions (L. D. Kritzman, Ed.; Vol. 1). Columbia University Press.

Pei, X. (2009). Society's support for the aged in China: A cultural perspective. Social Sciences in China, 30(4), 149-159.

Polanyi, M. (1960). Personal knowledge: Towards a post-critical philosophy. University of Chicago Press.

Postman, N. (2011). Technopoly: The surrender of culture to technology. Vintage Books. (Original work published 1992)

Proust, M. (2011). In search of lost time: Volume I: Swann's way. Modern Library. (Original work published 1913)

Rawls, J. (2001). Justice as fairness: A restatement. Harvard University Press.

Ricoeur, P. (2004). Memory, history, forgetting. University of Chicago Press.

Ruijie, Z. H. A. O., & Shan, W. A. N. G. (2024). Analysis on the research progress of design for healthy ageing (HA). Academic Frontiers Publishing Group.

Schön, D. A. (2017). The reflective practitioner: How professionals think in action. Routledge. (Original work published 1983)

Sen, A. (1999). Development as freedom. Oxford University Press.

Simonsen, J., & Robertson, T. (Eds.). (2013). Routledge international handbook of participatory design. Routledge.

Taylor, C. (1989). Sources of the self: The making of the modern identity. Harvard University Press.

Turner, V. (2017). The ritual process: Structure and anti-structure. Routledge. (Original work published 1969)

Van Gennep, A. (2019). The rites of passage. University of Chicago Press. (Original work published 1909)

Wang, W. (2021). Practice research on the inheritance and innovation of traditional culture from the perspective of new media. International Conference on Cyber Security Intelligence and Analytics, 543-548.

Xulong Dai. (2024). Advantages of marketing communication in the development of a tourism brand. Journal of Advanced Academic Research and Studies, 1(5),

Yu, N., Deng, Y., Wang, J., & Wang, H. (2024). Research on universal design of smart home interface

navigation based on visual interaction. International Journal of Human–Computer Interaction, 41(18), 7842-7853. https://doi.org/10.1080/10447318.2024.2331876