Audiobooks as Perceptual Environments: Interpreting Media Technology for New Reading Models

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Abstract: *With the continuous development of digital media technology, the traditional way of reading is undergoing a new transformation. Reading is no longer limited to books and paper, but interactive communication on electronic screens. This change in reading carriers not only affects the form of books, but also changes the way people read silently and has an impact on the social behaviors derived from traditional paper reading. This paper takes the theoretical framework of media environmentalism as the root and vein of the discussion, starting from the history of reading, discusses the multi-sensory intertwined perception of the digital reading medium, and in this way discusses the viewpoint that the audio reading medium and the reading subject are in tension with each other, and are constructed in both directions.*

Keywords: *audiobook reading; media environmentalism; listening*

1. Introduction

Reading, as a unique cultural behavior of human beings, not only carries the development of human civilization, but also is an important way to improve the cognitive and thinking ability of individuals. With the advancement of science and technology and the arrival of the digital era, new media such as e-books and online articles have become mainstream, and traditional paper books can no longer meet the fast-paced and diversified needs of modern society. In the era of digital reading, users can easily access a rich variety of books, periodicals and other information, and customize their choices according to their interests and realize cross-platform synchronous use. Audiobook reading, as an emerging form, has advantages in intuition and vividness, interactivity and visibility, and can help listeners relax and relieve stress, and enhance their understanding and memory of educational knowledge or literary works.

Audiobooks not only meet specific educational needs and the needs of people with visual and reading disabilities, but have also become a form of reading for all. Compared with traditional physical audiobooks, audiobooks utilize digital technology to present a more diversified form and a richer variety of content. Whether it is fiction, history, popular science or self-help and other areas can be found in the corresponding audio books. This allows people to listen to books for knowledge and entertainment, saving time and increasing efficiency in their busy lives.

However, as audiobooks have gained popularity, they have also triggered a series of controversies and discussions. One of the main issues is whether it will lead to impatience, fragmentation and entertainment. Compared to traditional paper books, which require concentration, listening to a book may lead to distraction or focusing on surface information to the exclusion of deeper thinking. In addition, it also involves the weakening of cognitive ability, the loss of identity and the decline of traditional authority. As listening to books is characterized by voice expression, in some cases it may affect the individual's understanding of the text and the cultivation of thinking ability; at the same time, in the era of information flooding, choosing which genre or author to listen to will also directly or indirectly shape the individual's values and aesthetic orientation; and as for the decline in the status of the traditional authority, this stems from the competition brought about by the fact that many users can easily upload and share their own creations or interpretations on the Internet. The decline of traditional authority stems from the competitive pressure of the many users on the Internet who can easily upload and share their own interpretations.

Taking the media technology of audiobook reading as the entry point, this paper takes audiobook reading as the research object and analyzes its static characteristics from the theoretical perspective of media environmentalism. At the same time, it examines audiobook reading from the perspective of media

humanization evolution and regards it as a new stage in the integrated development of print communication, electronic communication and network communication. In this dissertation, the author combines the philosophy of technology with media environmentalism to explore how people rationally choose and control the evolutionary development of media technology, and points out that this evolution has an impact on people's cognition and behavior.

2. Dynamic evolution of the medium of audiobook reading

Exploring the development of audiobook reading must begin with traditional reading. As the medium of reading has evolved, so has traditional book reading. From oracle bone, salvia to silk, bamboo, and then to paper and electronic storage, reading carriers have revolutionized many times, making it easier for people to access the text. With the progress and development of communication media, audiobook reading, as an emerging form, has gradually come into the public's view and has shown a booming trend. Audiobooks add sound elements on the basis of retaining the content of the original work by converting the text into speech and recording it or having it recited by a professional dubbing artist. This approach meets the needs of those who like to listen to stories or cannot concentrate on reading paper books for a long time, and provides an immersive sensory experience. Compared to traditional book reading, products such as audiobooks offer many advantages: convenience (only a cell phone or other mobile device is needed), selectivity (various topics and styles), and interactive and space-saving features. The development of audiobook reading cannot be separated from the borrowing and combination of traditional cultural accumulation and the power of innovative thinking. Programs such as "audiobook libraries" and "online lectures" have begun to emerge and have received widespread attention and support. The rise of audiobooks has brought enormous opportunities for readers to acquire and consume knowledge in a whole new field, and has prompted a re-examination of the definition and meaning of "reading".

2.1. Reading in the age of handwriting: minority readers and performative recitation

In his book The History of Reading, Steven Roger Fisher defines reading as "decoding mnemonics (memory aids) and iconography (graphic displays)."[1] Beginning with cavemen and modern homo sapiens decoding bone indentations, rock caves are rich with information about hunting and date counting, which is considered reading in the primitive sense of the word.

Early reading was not an active behavior, but more akin to an occupational activity. Around 3200 B.C., the Mesopotamians used palm-sized clay tablets as a writing medium, on which they inscribed cuneiform characters to record various social activities. Such writing enabled the coordinated functioning of social life. At that time, writing skills were not fully mastered by the ruling class of the society alone, but rather through the vocational skills possessed by professional scribes trained in specific schools. In addition to the recording of public affairs, professional scribes also became one of the earliest readers. In addition to recording and reading public affairs, professional clerks also took on the role of readers and writers when the nobles were unable to read and write. They were responsible for reading personal letters and official documents to the nobility and were paid for doing so. It can be said that in ancient society, "letter readers" had an important status and function. They not only helped the nobles to solve the problem of illiteracy, but also promoted the transmission and exchange of information. At the same time, the existence of "letter readers" also promoted the widespread development of writing and its application in ancient societies. Over time, "letter readers" evolved to specialize in performing art forms such as storytelling and became one of the most popular and respected roles in entertainment settings.

From the point of view of reading behavior, early reading was not based on vocalizing and reciting aloud, but on reciting one's own work within the family or in small groups. In the public reading that gradually flourished in Greece, a close link was maintained between oral and written literature. Over time, this type of recitation evolved into a form of public event, the recital or "book club" in the modern sense of the word. In such an event, the author reads his or her writing aloud to an audience and interacts with them. The audience not only understands and feels the author's message more deeply by listening to the author's explanation and interpretation of the emotions and thoughts behind the words, but at the same time, the "listening as reading" approach has not disappeared completely in this kind of recital. Although modern people have become accustomed to reading written materials silently and independently, there are still many who are willing to participate in activities that are more collective, social, and emphasize communication and sharing of experiences. By listening to others analyze and comment on the content of the same book or article, they can broaden their horizons, increase their

knowledge, and draw inspiration and insight from others.

Early reading is authoritative in terms of its impact. In performative "reading", each individual takes on the role of both reader and reciter and leaves an authoritative imprint on existing interpretations through tone, structure, emotion, gesture, and so on. Such reading rituals carry with them the power of hierarchy in public life, depriving the listener of some of the freedom of choice inherent in the reading process. Over time, this behavior made the ear subservient to the voices of others and facilitated the establishment of a class system.

2.2. Reading in the Age of Print: The Expanding Reader and the Rise of Silent Reading

In 1450, Johann Gutenberg's technology of casting type and the invention of the printing press had a profound impact on the society of the time. This technology enabled paper to become the medium for mass printing, which led to the rapid development of the book printing industry. Until then, manual transcription was the only viable way to reproduce books, which was not only time-consuming and labor-intensive, but also limited the number of books and their dissemination. With the introduction of movable type printing technology, paper books became popular and gradually replaced the expensive and scarce parchment. This shift dramatically lowered the price of books and made it possible for more people to own their own book collections. The possibility of owning books led to the emergence of "silent" individual reading. Compared to traditional oral reading, individuals can focus more on the content of the text itself in silent reading. They can choose reading materials according to their own pace and interests, and quietly nurture new ideas and opinions within themselves. This active participation in the reading process frees the individual mind and promotes a series of values associated with the concept of independent thinking and values different from those of authority, and in the early 19th century, the rise of "humanism" further emphasized and promoted the important role of individual behavior in reading. Ideas forbidden or unexpressed in "silent reading" began to emerge and change the psycho-social state. Through silent reading, each individual had the opportunity to self-reflect, explore his or her inner world, and mature. Thus, the era of "passive listening and reading" was dying out after the introduction of Gutenberg's casting technology and the movable type printing press. "Silent reading" as a truly active participation in reading behavior has replaced the oral tradition of the boundaries of the one-way mode of receiving information. "Silent reading gives each individual more choices and improves the efficiency of knowledge acquisition, enabling everyone to enjoy the benefits of extensive and in-depth learning in various fields of knowledge.

2.3. Reading in the digital age: the widest audience and personalized reading

With the development of new media technology, reading has evolved from traditional plane paper reading to various forms such as e-reading, network reading, cell phone reading and social reading. However, whether it is e-reading, network reading or social reading, they have their own emphasis on reading type, content tendency and interactive function, but in the final analysis, they all stem from the transformation of the nature of the media. As a result, the act of "looking" is no longer limited to visual perception, and access to information is no longer restricted to the paper medium. Nowadays, "reading" is broadly defined as the process of acquiring the meaning of information through visual, auditory, tactile and other sensory channels.

The development of audiobook reading has gone through a number of periods and forms, which are not gradually replacing the old ways, but are superimposed on each other. On the whole, initially, audio reading was mainly based on online reading, and after the widespread popularization of smartphones and the combination of mobile Internet technology, mobile reading has become an important form of digital reading and has surpassed traditional paper media such as books, newspapers and periodicals to become the main reading channel for the general public.

Audiobooks further emphasize the development of the auditory senses in digital reading. When driving, taking the subway or bus, engaging in household activities, taking a walk, traveling or even working, in the case of not suitable for visual reading, the use of listening to books makes reading free both eyes, anytime and anywhere in the audio world to experience the beauty of books. Since 2012, listening software has developed rapidly and become an emerging field that can not be ignored in the field of mobile e-books. A number of popular applications such as Lazy Listening Book, Oxygen Listening Book and Himalaya Listening Book have been launched one after another.

Readers can choose audiobooks that are suitable for oral reading and no longer rely on visual reading. Professional readers and ordinary netizens have uploaded a large number of literary masterpieces,

audiobooks, music and opera, famous author's commentaries, children's literature, foreign language learning materials, current affairs news, funny paragraphs and health and wellness guides, and other rich and diversified audiobook resources for users to download. In addition, the audiobook application has been simplified and designed with a more concise interface and operation level. Users can share their favorite books through social software such as WeChat and Weibo and post comments while listening. They are also able to upload comments via voice to interact and discuss with other listeners, and realize instant online exchange of feedback with book anchors.

3. The media research path of audiobook reading

3.1. Logical starting point: the two-way construction of human and media

From the perspective of "cultural and technological symbiosis", the relationship between technology and culture is one of co-prosperity and mutual construction. This argument starts from the premise that both technology and human beings are undefined, or rather that they do not have essential attributes, but are in a state of fluid flux, and are proponents of anti-essentialism. In this context, both can influence and shape each other, producing constructions in response to various external relations of influence and their own internal forces of interaction.

From a media-environmentalist perspective, the influence of media on people is constructive. McLuhan once said, "We shape the tools, and then the tools shape us." This means extending ourselves through the creation and use of various tools and technologies, and these tools and technologies also change our way of thinking, behavioral habits, and social structures without us even realizing it. Technology, as part of human extension, not only empowers the individual, but also becomes an externalized form of expression of humanity. Through the use of technology, people can realize a more efficient, convenient, and comfortable lifestyle and transform their inner pursuits into reality.

Thus, in understanding technology itself, one is also understanding and recognizing the act of reading itself. McLuhan did not offer a clear solution to the dilemma of extreme obsession or fanaticism, such as technological supremacy, but he believed that if everyone could perceive their own reflection in technology, they would gain a new attitude. This requires a rethinking of the development of media technology and an understanding of the basic needs of the individual. In terms of overall media trends, human beings play an active and constructive role in media development. Paul Levinson, on the other hand, puts forward the concept of "humanized evolution", believing that over time, the media will come infinitely closer to meeting the growing and diversified needs of individuals, and that the state of the "pre-technological era" may be redefined and restored.

3.2. Research path: from static analysis and dynamic evolution of the media to impact studies of the media

The study of the media environment of audiobook reading is centered on exploring the medium of audiobook reading, aiming to reveal the multiple issues and controversies currently facing audiobook reading. The fact that this paper targets its research on the medium of audiobook reading does not mean that it ignores the importance of factors such as the subject, content, reading environment and occasion of audiobook reading. On the contrary, most of the existing related studies are limited to a superficial description of the subject and specific aspects of audiobook reading, and lack an exploration of its underlying causes and possible far-reaching effects. Therefore, in this paper, based on the theory of media environmentalism and rejecting the technological determinism, adhering to the position of cultural and technological symbiosis theory and recognizing the process of mutual shaping between human beings and media technology, this is the logical starting point of this research.

Past studies have focused on three aspects of the media environment: static analysis, dynamic evolution and impact, but rarely have they synthesized these three aspects for a specific medium. Chen Lidan summarizes in "The Process and Social Context of Media Environmentalism in China" that "analyzing the idea of media environmentalism in close connection with the reality of communication phenomena, and drawing new insights or conclusions" is the trend of media environmentalism research nowadays, but nowadays research focuses on the form of the technology, the characteristics themselves, and more than one aspect of the media environment, which is the most important aspect of media environmentalism. "However, today's research mostly focuses on the technological forms and qualities themselves, mostly quoting a passage from McLuhan or Levinson, and then applying the corresponding technological characteristics of the new media, and then giving a few examples, summarizing the role of

the new media, and then responding to a few points of view of the media environmental studies, and then concluding. And there is no particular concern for the social impact of the new medium, which is the center of gravity of the study of media environmentalism."[2]

This paper examines the pathways through which the medium of digital reading has an impact on society, exploring the medium level. Unlike empirical studies, this paper digs deeper into the indirect causal links of digital reading media on social change. As reading is an individual social behavior, it involves a variety of factors and aspects.

The characteristics of what is categorized as a digital reading medium need to be clarified in terms of whether they actually fit into that categorization and whether they have unique attributes that are unrelated to other perceptual experiences. In addition, the digital reading medium should be considered in the context of the evolution of the reading medium as a whole, as an evolution and development of traditional paper-based reading. However, evolution does not imply that there are necessarily advantages and disadvantages, but is only the result of adaptive change in a specific social condition environment. Therefore, value judgments should be discarded when evaluating the advantages and disadvantages of digital reading and paper reading. The research path adopted in this paper is the human-media technology-human behavior model: human beings choose and control the development of media technology through rationality; at the same time, the development and structure of media technology will also have an impact on human cognition and behavior. This paper not only emphasizes the various psychological, sensory, social, political and cultural influences caused by the inherent bias of the symbolic structure and material form of the media in audiobook reading; but also does not neglect the rational choice and control of human beings over the development of media technology, and adheres to the position of symbiosis theory between culture and technology, affirming the interdependent and interactive relationship between human beings and technology, or the media.

Early studies on the cognitive psychology of reading showed that reading cognition is a composite act involving visual, tactile and auditory senses, and that readers tend to transform sensations and experiences into audio-visual feelings and thought processes, mobilizing the consciousness and the psyche to activate symbols encoded in the text, from which meanings are generated. In short, reading is the activation and synthesis of basic human sensory behaviors (visual, tactile, and auditory) that lead to the formation of thinking processes in the mind.

In traditional reading, readers often cannot ignore the involvement of the visual senses. According to Wolfe in Proust and the Squid, the human brain has areas dedicated to object recognition, categorizing and identifying objects by shape, spatial location, and other factors. However, there are no specific circuits that are innately used for reading to link recognized objects to specific meanings. In order to adapt to the demands of reading, the human brain has created an entirely new circuitry to support reading by coordinating neural organization in different regions (e.g., spoken language, motor coordination, and visual services). Whether the Sumerians used cuneiform or the Chinese used hieroglyphics, people relied on their visual senses to recognize text lines, curves, and spatial arrangements. Thus, in traditional reading, the visual senses are considered the basic sensory starting point. Although the auditory senses are not prominent in traditional reading, their involvement is still crucial. Even when an individual reads silently with seemingly no sound production and no auditory involvement, the situation is different from that of a normal "reading" of a book. In the traditional reading mode, when written text stimulates the eyes, the optical signals are converted into neural activity and sent from the retina to the visual processing areas of the brain. Subsequently, it is partially and automatically converted into auditory information in the language processing area to obtain a spoken interpretation, which is ultimately transmitted from the auditory system to the memory system for comprehension and memorization functions.... This can be described as a process of self-recitation, of listening to the content of the information and processing it by oneself; even high levels of silent reading fall into this category, except that the external behavior is better controlled. Thus, when reading (using traditional methods), the reader is actually "reading aloud" rather than actually "browsing" the book.

In traditional reading, the tactile senses are involved in the reading process in an indirect way. According to Andrews in Out of Touch-E-reading isn't reading, there is a strong connection between the hand and the book in the reading process. The "reading" of a book by the hand is firstly reflected in the graspability of the book. The reader holds the book in his or her hand and feels the spine, pages, binding, boards and folds that make up the book's unique form and make it suitable for holding in the hand. Since humans rely on the uprightness of the body to create a sense of uniqueness, it can be said that books are fundamentally "spinal". As readers walk between beautifully bound paper books, they touch the textured paper with their fingers and follow the flow of words as they move their fingers. Paper books are carefully arranged and printed so that when reading, you can feel the ink and paper texture with your fingertips;

you can flatten or fold a page; you can feel your fingertips rotate along the edges of the paper as you turn the pages; and you can use notes to record or underline and highlight the best phrases as you read, with the ink permanently altering the paper's chemical composition. This sense of touch constitutes the role of the "hand" within the full perceptual range of the tactile senses in traditional reading, where the tactile senses are involved in the reading process in an indirect way. It subverts the state of inactivity of the sense of touch in traditional reading and gives readers a new reading experience.

4. Virtuous Ecological Construction of Audio Reading

Throughout the history of human reading, it has been impossible to ignore the relationship between the reading medium and the reader. This paper tries to avoid the overly extreme view of technological determinism and points out the lack of practical constructive problems of technological neutrality. It insists on the symbiosis theory of culture and technology and analyzes the problem from a constructivist perspective. From this perspective, digital media and readers form a relationship that interacts, influences and shapes each other. When exploring the impact of media technology on human beings, we can start from the impact that technology has on human beings, and observe how the digital reading environment shapes and constructs people's reading behaviors and ways of thinking by taking the medium as a perspective. It is important to note that media not only play the function of disseminating information or information carriers, but also have inherent characteristics in terms of material form and symbolic attributes, and fundamentally have a prescriptive impact on the writer, the created text, and the reader. It is for this reason that a unique, complex and diverse digital reading environment has emerged in the context of the digital era. As the properties of the digital media themselves give rise to various tendencies, multiple factors such as perceptual, spatial and temporal, political and social tendencies also begin to emerge. These structural biases gradually penetrate into the masses of people who create texts, who are created into texts, and who participate in decoding and understanding activities, and have the effect of regulating, guiding, and subconsciously influencing their behaviors and modes of thinking.

Audiobooks are changing the way information is perceived in traditional reading styles. Audiobooks provide more symbolic displays, allowing knowledge and information to be presented in various forms and transformed into symbolic encoding from the individual's mind, and ultimately delivered to the reader's brain through the process of "reading". In digital reading, attention, perceptual ability, memory, thinking and problem solving ability, language and imaginative ability are all significantly improved; however, in audio reading, memory ability is not significantly enhanced; on the contrary, the accumulation of a large number of fragmented shallow information destroys the cognitive stability and textual coherence, which leads to difficulties in the formation of a complete and systematic cognitive structure and in-depth thinking framework. At the same time, in the digital reading era, the role setting has changed and the hierarchical relationship of authority has been affected. In the era of audio reading, there is no longer a scarcity of resources, information in the form of multimedia to achieve instant communication and interactive communication, linear reading mode is replaced by a user-centered stream of consciousness network diffusion of reading, and also provides a writing platform for the user to become an author on the network. Based on this background, the textual authority, authorial authority and cultural authority shaped by paper media are gradually deconstructed, and a new type of authority is generated under the environment of audio communication; on the other hand, the emerging digital reading culture is more and more inclined to the culture of surface consumerism rather than the disappearance of textual mystery and authority to bring about in-depth thinking.

In exploring the relationship between technology and human, it can be viewed from another perspective, that is, the role of human in guiding technology. Digital media, as a new stage in the development of reading media, has evolved under the leadership of human beings and follows the law of humanized evolution of media. It continues to develop and grow through the two driving forces of transcending time and space limitations and simulating the original information state. With the theoretical support of media evolution theory and the study of literature related to the history of reading, it can be revealed that the germination and development of digital reading media are in line with the laws of media evolution and have rationality. In other words, the medium of audio reading maximizes the progress of information simulation, information preservation and instant interactive dialogue, and meets the needs of humanized development in information dissemination.

5. Conclusions

To summarize, there is an interactive relationship between the audio-reading medium and the reading

subject. Firstly, in terms of cognitive approach, the audiobook medium positively influences listeners' comprehension and memory ability through the presentation of elements such as voice and rhythm; secondly, at the level of identity, different types of audiobook content may trigger listeners' resonance or sense of identification with a specific group or cultural background; finally, at the level of authority construction, as audiobooks are usually recited or interpreted by professionals and edited and produced before release, to some extent, they shape listeners' trust and respect for authors, speakers and experts in related fields. edited and produced for release, it somehow shapes the listener's trust and respect for the author, speaker, and experts in the relevant field. On the other hand, in this interaction, the reading subject plays a dominant tendency. With technological progress and social change, people's demand for textual static reading of traditional paper books has gradually changed to a more diverse and dynamic demand. In short, the relationship of "mutual tension and two-way construction" implies that balance and interaction need to be maintained from the point of view of both traditional paper books and various audio products in the digital era, as well as from the point of view of consumer demand.

Acknowledgements

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