

Extension of auditory perception: Sound transmission tendency in audiobooks

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Abstract: *Since the 20th century, visuals and images have played an increasingly important role in communication. However, with the continuous progress of media technology, people began to realize that there are some disadvantages of the visual turn, and gradually emerged a new form of cultural communication - "auditory turn". Audiobooks are flourishing as a form of auditory media, and the information they carry and the connections they establish between authors and readers are expanding. Based on McLuhan's media theory, this article provides an overview of the development of audiobooks in the context of the "auditory turn" and the rise of auditory culture. At the same time, based on the theory of "acoustic space", it analyzes and reflects on the preference of auditory culture transmission in audiobook reading, and studies its role as a medium of auditory extension.*

Keywords: *audiobooks; McLuhan; auditory extension*

1. Introduction

The rise of the Internet has contributed to the rapid rise of the audio reading industry in China, with the emergence of a variety of audio content, such as audiobooks, radio dramas, and paid knowledge courses. Meanwhile, comprehensive platforms such as Himalaya and Lychee, as well as audiobook reading platforms represented by podcasts and personal radio stations, have also been emerging. In addition, with the introduction of acoustic products such as noise-canceling headphones, smart speakers and IoT voice assistants, people have begun to pay more and more attention to hearing as a sensory medium. The modern mass production, distribution and consumption of acoustic products have attracted attention and become a natural "auditory orientation". In recent years, technological progress and social development have accelerated the role of acoustic products in everyday life.

Nowadays, with the continuous progress of science and technology and the advent of the digital era, various media such as TV, computer, cell phone and movies have become an indispensable part of daily life. These media have enriched the modes of perception and enhanced the quality of audiovisual experience, making it easier for people to access information and enjoy entertainment. While media were once thought of as intermediaries between people and the world, they have permeated all aspects of human existence and have become indispensable components of intelligent ecosystems. Especially under the trend of "auditory turn", the importance of auditory space and sound media for the whole ecosystem is beginning to be realized. Against the backdrop of the rapid development of digital technology, breakthroughs in the fields of Virtual Reality (VR) and Augmented Reality (AR) have made it possible to create more immersive and realistic listening experiences through advanced technological means. In short, the "auditory turn" is changing the way media and digital ecosystems are understood, and is driving a reconfiguration of auditory space and its associated culture. As technology continues to evolve, more innovative products and services based on sound and auditory experiences will emerge in the digital age, further enriching and improving the quality of people's daily lives.

McLuhan's viewpoint triggered an in-depth consideration of acoustic space. He believed that media is an extension of human senses, and acoustic space is a dynamic spherical space that is open, synchronously perceived, and has no boundaries or centers based on the spatialization ability of sound. In the past, visual space was considered closed, static and fragmented, and information was conveyed mainly through words. However, with the advent of electronically mediated technologies such as television, auditory space has begun to be reintegrated and interact with visual space. This has led to people no longer relying on visual perception alone for information, but engaging with it through multiple senses together.

Since the late 1960s, electronic media such as radio and television have gradually become the

dominant means of communication. These media not only strengthened the visual space, but to some extent also suppressed other senses such as hearing and other non-verbal communication methods. However, the arrival of the mobile communication era has not only changed the pattern of communication in terms of technology, but also profoundly affected people's lifestyles and social interactions. As the media continues to evolve, people are beginning to reclaim their sense of hearing and integrate it into their daily lives. New auditory media have rapidly integrated into people's daily lives and reshaped their listening environment and space. However, in the era of mobile communication, a large number of new auditory media such as audio apps, web radio platforms, and voice assistants have emerged. These media attract more and more users by virtue of their convenience, personalized recommendations, and interactivity. Through the use of mobile auditory media, people can choose the sound content they are interested in for consumption based on their interests.

"Voice" is no longer limited to spoken expression or a single traditional medium of influence. For example, various types of audio content creation and sharing (e.g., audiobooks) have emerged on online platforms, allowing more people to freely express themselves and communicate with others. Whether it is subscribing to audiobooks, subscribing to professional knowledge programs or listening to emotional stories or light-hearted comedy programs, it can meet the diversified needs of different groups for sound products. In addition, in the era of mobile communication, "audiobooks" have gradually become a unique and popular form of culture. Compared with paper books or e-books, enjoying audio reading on cell phones or other devices with the help of headphones brings people a more immersive and immersive reading experience. Whether in a public place or private space, you only need to put on the headset to enjoy the text into real sound and read out by a good actor to bring a pleasant feeling. At the same time, in the era of mobile communication, "audiobook reading" also promotes closer integration and fusion between literature and other art forms. For example, masterpieces such as Romance of the Three Kingdoms have been adapted into colorful and tense soundtracks, and famous writers have been turned into highly visual and expressive "video novels", making the art of writing cross-border and embracing a wider range of fields. In the era of mobile communication, new types of auditory media have given audiences new and rich consumption choices, and redefined their perceptions and expectations of "audiobooks".

2. Sensory Imbalance in the Reading Media and the Call for Auditory Returns

McLuhan put forward the idea of "back to hearing" in his book "Understanding the Medium - On the Extension of Man"^[1], which aroused widespread concern about the issue of hearing. He divided the development of human society into three stages: tribal age, detribalization and return to tribal age. In the "tribal era", people mainly rely on spoken language for communication and rely on auditory communication. This stage emphasized the importance of sound and oral expression, as writing was not yet widely used. As civilization progressed into the "de-tribal era", writing became the primary means of communication and visual communication began to dominate. Through writing and reading, information could be more accurately recorded and transmitted to future generations. However, with the rapid development of modern electronic communication technology, "back to the tribal era" is quietly emerging. McLuhan argues that electronic communication has brought about new changes that have caused audiences to once again favor auditory methods of communication. The era of "back to hearing" means that sound has become an indispensable element in communication and exchange. Today, with the prevalence of digitalization, networking and multimedia, a large amount of information is received on devices such as cell phones and tablets and perceived in the form of sound (through headphones or loudspeakers). Applications ranging from telephone calls to online video conferencing and voice assistants are all based on sound as a central medium for interaction and communication.

Returning means having been far away. In the era of oral communication before the advent of writing, listening was the archetypal mode of perceiving information from the outside world, connecting and communicating with others and forming an understanding of the world through the sense of hearing. However, with the development of technology and society, the invention of writing and the printing press brought about a culture centered on visual communication and gradually replaced the traditional auditory-driven approach. Along with the development of modern culture since the 1960s, visual reading methods have overwhelmingly dominated existence and become the primary mediated sense. This shift has led to an increased reliance on the eyes for information and understanding of the world. From newspapers and magazines to television and the Internet to today's highly pervasive mobile devices, we are increasingly using our eyes to view text, images, and video content. Inevitably, however, the important sense of hearing has been neglected in this process. While technological advances have made it easy for audiences to access a wide range of images and videos, sight alone cannot fully satisfy the

need for communication and access to information. In fact, in some cases, the sense of hearing is even more advantageous than vision. Therefore, in today's digital era, it is particularly important to refocus on and balance the media senses. The development of tools or platforms that make better use of auditory resources for communication and learning should be actively promoted through the use of advanced technologies.

However, in today's information explosion and multimedia development, "return" has once again attracted widespread attention. More and more scholars have begun to rethink and call for the return of auditory space. The "return" is not to replace the visual mode of communication, but to refer to a mode of sensory balance, mutual integration, and joint transmission and reception of information. In addition to relying on the eyes to see things, in daily life, we can also listen to sound, music and language through the ears; smell the aroma through the nose; feel the temperature and texture through the skin and so on. Only by fully utilizing all the senses can we perceive the world in a more comprehensive way. The "return" also means that we need to emphasize the cultivation of students' multi-sensory ability. In addition to cultivating good reading habits, audiences should be encouraged to actively participate in activities such as music and theater performances, and be provided with opportunities to experience various sounds and smells in the natural environment. "Return" can also be understood as the use of new technological means to restore attention to the auditory space. For example, virtual reality technology can help us create realistic and detailed sound environments; smart devices can provide more intelligent and personalized services. The "return" does not only emphasize that one sense or aspect replaces another or other aspects, but also requires us to maintain a balanced attitude in acquiring information, and to use all organs to perceive the world in a comprehensive manner, so as to more accurately and deeply understand the surrounding environment and the contents contained therein. Only in this way can we have a more complete and comprehensive three-dimensional cognition.

In today's information-explosive society, people are faced with an onslaught of textual and audio information. Textual information is conveyed to us visually and requires active reception and a high degree of concentration to understand its meaning. In contrast, audiobooks utilize the ability of hearing to act on the human being, and in contrast, do not require a high degree of concentration, and can be easily listened to in the accompaniment. In 1985, linguists Nagy, Herman, and Anderson put forward the theory of "Accompanying Vocabulary Acquisition", which was further supplemented by Krashen. Nagy pointed out that learning in context is one of the advantages of accompanied vocabulary acquisition. According to Krashen, "An hour of enjoyable reading is better than half an hour of mechanical drill." There are other effective ways of reading besides reading. In the field of media reception, the theory of "concomitant acquisition" is also important. Nowadays, "concomitant learning" has become one of the main ways for people to acquire information. Whether through television, radio, the Internet and other media channels, or browsing articles and blogs on social media platforms, readers are able to obtain various forms of information through these media. It is particularly noteworthy that audiobooks provide the basis for "concomitant learning" in transforming text into audio and making it accessible to the audience. For example, on book-listening apps or online education platforms, users have the option of presenting the content of a book in audio form and disseminating it by reading it aloud or dubbing it. This approach not only enables people who like listening to books but are not good at reading to better enjoy literary works and knowledge information, but also meets the diversified pursuit of information acquisition under the changing demands of the accelerated pace of modern life and increased fragmented time. In addition, audio reading is a kind of reading practice that interacts with books through hearing, which has unique characteristics. Compared with traditional visual reading, audiobooks allow listeners to "experience" the storyline in an immersive way, so as to achieve the effect of direct contact between the senses and the information in order to obtain a real scene^[2]. In addition to the text itself, the audiobook also contains the emotions, good and bad, etc. expressed by the speaker to the characters or storyline. These elements give the listener a deeper understanding and experience of the story and add to the artistry and entertainment. Success in the audiobook market is not only dependent on the author's influence and fan following behind a best-selling book or hit movie or TV show, but also requires other factors to come together to reproduce the success. The production of excellent audiobooks needs to take into account the professional level of audio technology and the creativity shown by the performer when adapting and optimizing the original content form and sequence; at the same time, it is also important to pay attention to the overall production team's design of the sound effects, the choice of background music, etc. Whether it is in line with the audience's tastes and accurately conveys the expression of the original author's desire to bring an immersive experience to the reader. In conclusion, in today's fast-paced life, more and more people tend to acquire knowledge and enjoy literary artifacts through listening. With the advancement of technology and the development of digitalization, audiobooks will become an inevitable and growing part of future reading styles.

3. Audiobooks as an extension of listening

Viewing the medium as a perceptual environment means focusing on the physiological functions and roles of the senses. Hearing is one of the important media for human beings to receive information and communicate. Through hearing, not only can we perceive sounds in the external environment, but we can also access a rich variety of information. A variety of different frequencies and intensities of sound waves lingering in the ear, after complex and sophisticated auditory system processing into the shape of the object, size, distance and other aspects of the characteristics of the information. In addition to helping to determine the location and distance of things, hearing can also identify the identity of the person who issued the sound source, and through the analysis of verbal expression to infer the other party's inner thoughts and feelings. In addition, in a physiological sense, the sense of hearing also carries the role of connecting the mind and emotions. Beautifully moving or inspiring music resonates with the heart and generates pleasure or excitement; soft and quiet background music relieves stress and anxiety; and even the absence of any sound may cause a person to fall into a state of isolation and generate negative emotions such as fear or depression. In short, the idea of "considering the media as a perceptual environment" makes us pay more attention to the rich and colorful world hidden behind the large amount of information conveyed to us by the media itself. "As one of the most important tools that accompanied and influenced the evolution of human beings from the earliest times, the sense of hearing has shown great value and significance in its wide application in social interaction and individual cognition.

Auditory media play an increasingly important role in everyday life. As the main symbol, sound has become one of the important ways for people to acquire knowledge and communicate. In the Internet era, audiobook reading presents a unique charm as a new type of auditory media. It transforms words into sounds and spreads them through online platforms. This form not only meets the needs of those who prefer listening to reading, but also provides a convenient and flexible way of learning.

As a medium of auditory extension, audiobook reading provides rich and diverse perceptual materials through its inherent symbols and structures, and has a profound impact on the audience's reading scene, habits and cognition. Driven by technological factors, new technologies continue to create new media, changing the way people think and perceive the world. Audiobook reading mainly relies on sound as a symbol to convey information and construct social reality. People receive the sounds transmitted by audiobooks through their ears and integrate into the media environment constructed by these sound symbols. Especially in the era of mobile communication, audiobooks and "mobility" are more closely integrated. In addition to retaining the essential features of auditory symbols, auditory products and auditory reception, many new forms and carriers have emerged in the era of mobile communication, forming "mobile auditory media". These new forms of reading include application software running independently on terminal equipment and application software attached to mobile smart terminals. For example, independent terminal equipment such as car-carrying listening devices and smart speakers; application software dependent on mobile intelligent terminals such as Himalaya FM, "Get" APP and NetEase Cloud Music; and mobile clients launched by major radio stations.

Table 1: Classification of mobile auditory media

Categorization	Key feature	Representative media
Mobile radio	Built on traditional radio stations, offering a wide range of products including radio programs	China Radio App, Listen FM, Archimedes FM, Instant Messenger, etc.
Vertical application	Focusing on a certain niche, providing professional hearing products, emphasizing precision and personalized service	Lazy listening, Netflix, Listening, Snail Sleep, etc.
Audio Aggregation Platform	Provide multiple types of auditory products in various fields with greater openness and interactivity	Himalaya FM, Dragonfly FM, Lychee FM, etc.
Other categories	With audio service function	WeChat, QQ, etc.

As early as 2009, China Mobile set up a base in Zhejiang specializing in the development and promotion of audio reading, which was considered one of the early forms of audio reading. Subsequently, after 2010, it began to attract attention and develop rapidly, with the emergence of audio aggregation platforms such as Douban FM. The period from 2012 to 2014 was a period of rapid development of mobile audio media, during which a large number of excellent and popular mobile audio applications such as Himalaya FM, Lazy Listening Book, and Koala FM emerged, and the scale of users grew rapidly. At the same time, many audio vendors received financial support during this period, and the capital

market boosted the development of the entire mobile audio market. From 2015 to the present, however, the mobile audio media and its market have shown steady growth, with user growth stabilizing and the market gradually regaining its composure, as individual media develop differentiated development strategies. They can be categorized into three groups based on different characteristics and product offerings:

Mobile radio, vertical mobile listening platforms and audio aggregation platforms, but also other mobile media with audio services. (Table 1)

4. Auditory cultural communication tendency in audio-reading

With the continuous development of science and technology, people pay more and more attention to sound communication. Under the background of digitization and deep mediatization, various forms of sound communication are emerging, such as advertisements, movies, music and so on. These modes of sound communication have brought people a more colorful life experience by expanding the space of auditory cultural imagination. At the same time, "visual cultural hegemony" has become a common problem in modern society. People tend to overemphasize visual sensory stimulation and neglect the importance of other senses. However, sound, as a unique and important sense, also plays a crucial role in shaping contemporary lifestyles. By limiting the spread of "visual culture", expand the form and content of its spread.

4.1. Perceptual tendency in sound transmission: sensory tendency from auditory extension

In ancient tribal times, people could only perceive their physical surroundings. However, with the advent of writing and the print media, the visual senses of mankind were expanded. The introduction of the telephone and radio further broadened the range of auditory senses. As McLuhan said, each new technology created a new environment. Each new medium would have an impact not only on people's daily lives and ways of thinking, but also on their senses. In the history of media development, "radio" and "silent movies" were briefly prevalent for a period of time before they were replaced by visual media such as television; however, in contrast to "silent movies," "radio" has become more popular with the advent of "silent movies," and "silent movies" have become more popular with the advent of "silent movies," as well as with the advent of "radio. However, in contrast to silent movies, "radio" survived with the development of digital technology, which indirectly shows that human beings can adapt to the sensory mode of "hearing without seeing", but not to the sensory mode of "seeing without hearing". This indirectly shows that human beings can adapt to the sensory mode of "hearing without seeing" but not "seeing without hearing".

According to McLuhan, auditory space is an integrated space experienced through the synchronized interaction of all senses. In this centerless and borderless space, communication technology, means and channels are constantly changing, which will trigger the trend of "re-tribalization" of the world.^[3] With the advancement of science and technology and the promotion of globalization, people have become more closely and frequently connected with each other. First of all, in the context of the information age, new media platforms such as social networks and video-sharing websites are rapidly emerging as important tools for people to obtain information and communicate. These platforms provide a variety of convenient ways to express themselves and interact with others. By displaying content in the form of text, pictures, audio and video, the sense of hearing is integrated into a wider, three-dimensional perceptual space. Second, in the digital age, emerging technologies such as virtual reality (VR) and augmented reality (AR) are changing the way audiences perceive auditory space. By wearing head-mounted displays or smart glasses and other devices to participate in virtual scenes, and stereo sound effects to create a realistic immersive listening experience. Such technologies offer unprecedented audiovisual feasts and highlight the dominant role of hearing in the perception of space. In addition, at a time when global cultural diversity is on the rise, "re-tribalization" also means that people are beginning to form small communities or online communities based on shared interests or values. These tribes unite like-minded people and deepen their emotional ties by sharing music, language, stories, and so on. Therefore, hearing plays a crucial role in this process as one of the most powerful mediums for connecting people across language barriers and with emotional resonance.

In the Internet era, the media form of long and short video communication once occupied people's visual attention in the form of video, while auditory symbols often became auxiliary and secondary accompanying tools. With the emergence of mobile audio and sound media gradually emphasized in the context of various sound editing techniques, reproduction and dissemination. Mobile audio has played a

role in resisting visual hegemony through factors such as accompaniment and fragmentation. While the current environment dominated by visual symbols is gradually tilting towards the auditory senses, mobile audio, especially audiobooks, creates immersive auditory spaces and expands the auditory senses of the audience and creates immersive auditory spaces in a youthful manner. Unlike other forms of media, audiobooks emphasize a strong connection to human emotions in addition to information. This warm media form makes sound communication two-way, and enhances the sound media effect and sensory preference in content production modes such as UGC and PUGC, and interactive forms such as community sharing, liking and commenting.

In short, "re-tribalization" will stimulate the exploration of innovative ideas in terms of multiculturalism and individuality, and prompt audiobooks to focus on the use of various means of communication to break down the time and geographical restrictions, so that each individual can obtain a new perceptual experience in the vast and boundless, but interconnected auditory space.

4.2. Spatial and temporal tendency of sound propagation: spatial tendency and scenario tendency

Innes argues that civilizations that rely on temporal media emphasize traditional morality and social cohesion, while spatially tendencyed civilizations focus on the control of the periphery by the center and the prevalence of individualism. The medium of mobile convenience is better suited to horizontal spatial dissemination, and audiobooks, as a form of mass popularization, are popular for grassroots content production and encourage individual expression. In the age of the Internet of Things, "auditory space" is a dynamic space in a state of flux, where sound can be freely extended to various objects and expand the range of hearing.

Meyrowitz's media contextualism argues that emerging media create entirely new environments and have an impact on people's behavior. As a unique way of sound communication, audio reading not only creates a new mode of information transmission, but also builds a new form of scene communication. First of all, under the development of high technology, the channels of sound transmission have expanded from online to offline, and the popularization has promoted the transformation of a large number of listening scenes. Secondly, people's demand for knowledge continues to grow in the face of information overload and inward-looking anxiety.^[4] Audiobooks provide rich and diversified information resources to meet the demand for personalized learning. Finally, in the auditory space shaped by sound, listeners can communicate and interact and establish emotional connections and personal identities; they are immersed in it to break the boundaries between the virtual and the real. This interactive nature strengthens the network of user relationships and facilitates the generation of more exciting content. Audiobook as a new form of scene communication plays an important role in modern society, which provides rich and diversified contents to meet the users' needs for knowledge and information resources in different scenes through the combination of offline and online.

5. Paper Reading and Audio Reading: Heterogeneous Complementarity of Media Ecological Positions

Audiobook reading is an emerging way of reading that not only meets the needs for self-knowledge and construction in a fast-paced, highly competitive and interactive social environment, but also meets the needs for emotional expression and stress release. With the development of digital existence, reading is stripping away political, economic and cultural burdens. Although on the surface it may seem that reading is disappearing into explicit culture, it will actually be reborn from the world of the hidden spirit. This is because reading has always been an intimate cultural activity and is now returning to its essence. Textual content presented in various forms, such as audiobooks, delivers knowledge and information while bringing readers a deeper and more colorful inner experience. In addition, in today's information explosion era, a large amount of fragmented information has caused us a lot of trouble. Deep thinking in the form of audiobooks can help readers resist fragmented thinking and improve their personal literacy. Therefore, in the digital age, "listening" to books has become a very popular and necessary choice. In short, paper books, electronic books, and audio books all have their own unique advantages, and can satisfy people's pursuit and exploration of knowledge acquisition and inner experience. In examining the human and social changes triggered by technology, it is unrealistic and difficult to analyze them in a way that transcends the relationship between human beings and technology. When analyzing the static characteristics of the audio-reading medium, it is important to look at the emerging audio-reading medium positively and optimistically, starting from the objective attributes of the medium and taking into account its overall direction of development. This medium may bring about a degree of change and

provide options for improving current deficiencies. Audiobook reading provides people with a new way of choosing and injects new vitality into traditional reading behavior. It is only through choice that we can realize the possibilities and escape the awkward situation of paper reading drifting away from the lives of the masses.

6. Conclusion

The co-prosperity of the old and new media not only provides publishers and creators with new space and perspectives, but also brings readers a wider range of choices and convenience. In the era of digitalization, a "heterogeneous and complementary" relationship has been formed between sound media and paper media. Sound media transforms text into auditory information through reading and narration, making reading more intuitive and vivid. Paper media, on the other hand, retains the physicality and unique flavor of traditional books, and gives people a pleasant feeling when touching and turning pages. From the perspective of publishers and creators, the medium of audiobooks provides them with wider distribution channels and market opportunities. Whether it is e-books or audiobooks, they can spread rapidly and attract a large number of readers on the online platform. At the same time, audiobooks can also enrich the form of expression of works by adding soundtracks, background sound effects and other means, and realize interactive reading experience with the help of technical means. For readers, it is no longer important to choose what form of reading in the digital era. What is important is to understand the impact of different reading media and their derivatives, and flexibly choose to read in-depth or browse according to their own needs. Whether it's exploring the richness of ideas and emotions in a paper book, enjoying the pleasure of a beautiful tone in an audio book, or accessing knowledge and information anytime, anywhere on an electronic device - each has its own unique value. Therefore, in the digital environment, we should treat digital reading media and paper reading media in a complementary ecological relationship, and take into account their respective advantages and limitations. Only in this way can the two forms of cultural heritage, knowledge popularization and other aspects of complementary, complementary role, and guide the audio reading towards a new and practical trend.

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