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CITY UNIVERSITY OF HONG KONG
香港城市大學

**Mobile Headphone and
Technologically-Mediated Experience:
The Uses of Privacy**
流動耳機與科技中介經驗：個人隱私的應用

**Submitted to
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by

**Fan Ho Ki
范可琪**

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Abstract

Beginning with a brief review of the notion of human-technology relationships, this dissertation suggests a holistic approach toward understanding the complex connection between media technologies and the corresponding mediated experience. The dissertation positions the study on mediated experience among other existing research on the topic of human-technology relationships through an investigation of an established, familiar media device, namely the headphone. The headphone is one of the central components connected to various forms of media gadgets, ranging from personal stereos and mobile phones to virtual-reality systems and wearable technologies. It is symbolic of mediated experience, links areas of the human body and technologies to converge into a unity. Being wired with a headphone is a cultural phenomenon that has stormed into our everyday life, yet studies on the headphone are strangely absent from media studies and cultural research. To rediscover the significance of headphone use is one way to understand the variety of human involvement with technology, as well as to grasp the essence of auditory mediated experience.

This research offers an account of what is involved in the mediation, and presents a general theoretical landscape to help understand how various headphone uses define our contemporary life and leisure. It also explores the notion of privatization and emphasizes the complexities of the personalized listening practice as a cultural activity. Supported by a multi-method research strategy including a qualitative study with semi-structured interviews and a theoretical analysis on selected media artworks and innovative designs, this dissertation studies the actual

headphone experience through its routine use and the potentialities of headphone-listening through its applications within the new-media environment. Its primary goal is to understand the privatized auditory experience resulting from technological mediation and how it affects our operation of everyday life, and ultimately to discover new possible experiences and to perceive the world differently.

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Glossary and Abbreviations

Being-in-the-world	<i>In-der-Welt-sein</i> , a Heideggerian terminology signifying a unitary phenomenon of subject, object, consciousness, world. Martin Heidegger is a 20 th century German philosopher, who believes that the world is here, now and everywhere around us. It must be seen as a whole. A co-term is <i>Dasein</i> (see also Lifeworld)
Bluetooth	An industrial specification for wireless networking that currently works to connect and exchange information between devices such as mobile phones and laptops
Boom box	A unit combining a radio and a cassette player in stereo quality
Camcorder	Camera or video recorder
Cyberspace	A term coined by William Gibson to refer to the cyber-world created by the convergence and networking of computers, digital media and telecommunications
Cyborg:	Cybernetic Organism, a being that is neither human nor machine but rather a combination of the two
Determinism	The notion that something is so powerful that it is beyond human control

e.g.	<i>example gratia</i> , for example
et.al.	<i>Et alii</i> , and others
etc.	<i>et cetera</i> , and so forth
GPS	Global Positioning System, a geographical location-tracking system via satellite
Handheld	Referring to portable, pocket-sized devices that are small and light enough to be operated with one or two hands
Headphone	An electronic receiver consisting of a pair or one earpiece placed close to the users' ears, which suggests an individual, private listening experience.
Hi-fi	An electronic audio system for reproducing high-fidelity sound from radio or recordings
Holism	The concept that all the properties of a given system cannot be determined or explained by the sum of its component parts alone. Instead, each part can only be understood in terms of its relationship to the whole
i.e.	<i>id est</i> , that is
iPod	A brand of portable media players designed and marketed by Apple Computer

Interface	The material or system which both joins and separates two different entities, e.g. hardware and software, machine and organism
Lifeworld	<i>Lebenswelt</i> , a concept introduced by Edmund Husserl, referring to the world as lived prior to reflective representation or analysis (see also Being-in-the-world)
MP3	MPEG-1 Audio Layer 3, the standard digital audio encoding and compression format
p., pp.	Page(s)
Personal Stereo	Personal portable audio player, allows the listening of music through headphones while a person is mobile
Social determinism	Sees technology as expressing the priorities of the social elite who creates or utilizes the technology (see also Technological determinism)
Soundscape	Derived from “landscape”, an auditory environment within which a listener is immersed
Technological determinism	Technology constructed as being outside social control, determining future social development and direction (see also Social determinism)
Telecommunications	Communications at a distance, usually implying cable, satellite, broadcasting, etc.

URL	Uniform resource locator, the addressing system for the World Wide Web
Walkman	Personal audio device manufactured by Sony and launched in 1979

Chapter 1: General Introduction –

Headphone-listening and the Experience of Privatization

1.1 Background: The Notion of Technologically-Mediated Experience

The original interpretations of the idea of “mediated experience” originated from a divergence between direct and representative realism questioning whether perception is mediate or immediate¹. Some philosophers identified that human senses give us a direct awareness of the external world, while others advocated that our perceptual experience of the physical world is mediated by both senses and complex mental processes, thus the “mediated experience” was regarded as the natural way we perceive the physical world.

Today “mediated experience” generally refers to an experience made possible by media technologies. In our contemporary machine age, one’s experience no longer refers simply to human senses or mind processes; instead it is generated by, interacted with, or filtered through human-made technologies. This phenomenon challenges the traditional understanding of “mediated experience”. To be precise, “mediated experience” is the shortened version of the term “technologically-

¹ Direct realism is a philosophy that reflects a common-sense view of our perception. It advocates that the senses give us a direct awareness of the external world, which is immediate, without any psychological mediation. We perceive objects directly through our sense organs. For example, I see a green, rectangular book on my desk. This sense awareness is direct and immediate. It does not undergo any inference. There is no reasoning involved. Representative realism is to explain how we have a mental representation of the object. We do not perceive reality directly. We passively perceive the sensation through our sense organs, then the sensation is actively processed in our mind based on pre-existing background knowledge. In a nutshell, representative realists believe that we experience reality indirectly through perceptions that represent the real world. We do not see the object itself, but a representation of it. We experience internal representation of the external world. So, if I see a green, rectangular book, what I actually see is not the book itself but a representation of it. The sensation, or the sense-data, is processed in our minds to tell us that there is a green, rectangular book on the desk.

mediated experience”, which refers to an experience that can only exist through the mediation of a technological device. For example, broadcasting technology allows us to have a viewing experience of a live, real event happening at a remote location while we are having breakfast in a domestic environment. With the development of technology, we can perceive “the sound from distance” – i.e. a communication with people at a remote distance through the use of the telegraph, telephone, computing network or any telecommunication tool that suggests a shared virtual environment while we are situated in a different geographical space. We are also capable of hearing “the sound of the past” – i.e. recorded sound through the application of recording and playback techniques that capture and reproduce a past sonic event². The use of technology complicates the concept of “mediated experience” (i.e. “technologically-mediated experience”) and raises plenty of interesting questions at a new level. The discussion on the notion of mediated experience appears to be multi-disciplinary inasmuch as it is mentioned in many different fields of study, including philosophy, arts and humanities, information technology, computer science, etc. It is currently open to both artists and scientists in the quest for nature of presence, consciousness and identity.

² In his discussion on sonic environment, R. Murray Schafer (1977/1994) offers an account on mediated experience enabled by recording and playback technique: “Originally all sounds were originals. They occurred at one time in one place only. Sounds were then indissolubly tied to the mechanisms that produced them. The human voice traveled only as far as one could shout. Every sound was uncounterfeitable, unique... Since the invention of electro-acoustical equipment for the transmission and storage of sound, any sound, no matter how tiny, can be blown up and shot around the world, or packaged on tape or record for the generations of the future.” (Schafer 1977/1994: 90) According to Schafer, the splitting between an original sound and its electro-acoustic reproduction is “a schizophrenic experience”. He points out that use of electro acoustical equipment results in dislocation of sounds in time and space. For instance, vocal sound is “no longer tied to a hole in the head but is free to issue from anywhere in the landscape.” (Schafer 1977/1994: 90) We will return to this discussion in Chapters 4 and 5.

Though the notion of mediated experience is mentioned most regularly in recent studies, they are slightly interconnected in that their implications are largely dependent on the debate over how much technology does or does not condition social change. Such contributions elaborate on the impacts of technology and the human-technology relationship rather than launching a converging focus of interests on the essence of the mediated experience itself. As a result, this dissertation focused the discussion mainly on the technologically-mediated experience and positions the study of experience among other existing researches through an investigation of an established, familiar media device, namely the headphone.

1.2 Definition of Headphone

Being plugged into electronic devices through headphones marks a common cultural phenomenon in the ordinary experience of city-dwellers. It is not surprising that almost everyone walking down the street is wearing headphones, constantly “equipped with” media technologies. Such media devices range from traditional mobile phones, to highly sophisticated multimedia hybrids such as personal digital assistants (PDA), portable digital audio players (DAP, known as MP3 players), handheld game console Sony PlayStation Portables (PSP), portable movie players (PMP), handheld computers, or any mobile media devices and telecommunication technologies we can think of.

The headphone (also known as earphones, stereophones, headsets, or the slang terms cans or earbuds) is one or a pair of electro-acoustic transducers that

convert electric signals into audible sounds, enabling people to listen to sounds placed in *close proximity* to the ears without other people hearing. Headphones are normally detachable, using a jack plug, wired or wireless, held over or directly inserted into the ears. They come in two basic forms: binaural (two ears) and monaural (one ear). The binaural headphone consists of two round ear buds that wedge into one's ear canals, or two earpieces that are supported by a headband over the top of one's head or behind the neck. This category is normally used for music or other entertainment that requires a stereo effect. Another form, the monaural headphone, is a single-sided earpiece headset or earphone mostly used for teleconversation, for example, the headset with boom microphone used with internet telephony or voice recognition. The handheld telephone receiver can also be considered a monaural headphone. In short, the headphone is an electronic receiver consisting of a pair or one earpiece placed close to the users' ears, which suggests an individual, private listening experience.

In fact, the history of the headphone can be traced back to the 18th century. In The Audible Past, Sterne (2003) briefly surveys the development of the headphone. Following his analysis on audio culture, the stethoscope can be considered to be the ancestor of the headphone. It was first introduced in mediate auscultation in 1816³. However, the stethoscope is not recognized as a headphone in this dissertation because it does not involve any electronic component. The experience is mediated yet it is not technologically mediated. Consider the case of

³ The first stethoscope was invented by René Laennec in France in 1816, and his earliest models were monaural (physicians listened with only one ear). By the 1860s George Cammann designed the binaural model, which is the basic design used today.

the cup-and-string sound carrier, i.e. the string telephone made from paper cups. They can be regarded as an early model of the telephone. The cups themselves are part of a telephonic instrument and the early prototype of headphones, yet for our purposes they are also not considered headphones, as they transmit sound mechanically rather than electronically.

1.3 Reflections on the Uses of the Headphone

Why do we choose the headphone as our object of study among other electronic devices? Why do we research such an established, ordinary piece of audio equipment instead of addressing the new, latest, interactive media technologies? How can the headphone be a useful and important artifact with which to study mediated experience both in mundane uses and within the inhabitable virtual media space? The answers to these questions are as follows.

(1) Being-with-the-equipment

Our main reason for choosing the headphone as our object of study is that the connection between the headphone and the human body within the environment suggests the idea of *being-in-the-world with tools*⁴, *being-with-the-equipment*. Just as Martin Heidegger shows how our normal relationship to objects in the world is not that of unconnected items but as instruments that are relevant to ourselves. Our primary access to the world is through practical involvement (Dreyfus 1991). This ready-to-wear technology visibly demonstrates body-technology relations. This

⁴ Martin Heidegger developed his concept of “being-in-the-world” to signify a unitary phenomenon that must be seen as a whole. For more details, see Chapter 2.

relationship emphasizes the mediated experience of being wired to media gadgets rather than the impact produced from technological devices or media content (see Chapter 2).

(2) Accessibility

Although this research investigates the uses of one particular media device (the headphone), its primary objective is not merely to focus on *a* technology; rather it suggests a possible way to understand mediated experience through the uses of technologies. Due to its ordinary accessibility, the headphone is probably the best vehicle to study in order to understand the notion of mediated experience. While computer-based technological devices or interactive media require a certain level of a specialized knowledge, music listening or telecommunication through the use of the headphone – like watching television – requires little to no specialized knowledge or skills. It is also easier to collect more relevant information from actual users (see Chapter 4). Therefore, studying the features of mediated experience does not necessarily examine the latest advanced computing technologies. Conducting an investigation of an established technological instrument allows us to obtain a more accurate and more complex account of what is involved in the context of new media.

(3) Wide range of uses

The headphone has developed over the past century along with different media technologies. Conventionally the headphone is applied to telecommunication and listening to music. With the earliest inventions of technological instruments, such as

the phonograph and telephone, the electronic signals were so weak they could only be heard through a headphone. Later the development of radios and personal stereos advanced the use of headphones to an individual listening experience in both the public and domestic setting by pumping sound directly into our ears. Today the headphone usually accompanies mobile phones, portable digital media players and various media gadgets. More recently it is being attached to other static or mobile audiovisual technologies and used as the interface for telepresence systems that offer a complex experience in interactive environments such as virtual reality systems and wearable technologies.

(4) Lack of discussion

Given the headphone widespread use and extensive range of applications, it is noteworthy to conceptualize the headphone experience. Yet this experience has remained marginalized, strangely absent from media studies and sociological or cultural literature. Researchers have neglected and overlooked the importance of this technological device. At most, it has left a trace in the discussion as a supporting component in the studies of communications and entertainment media, or in surveys conducted by hearing specialists and audiologists, mainly regarding the potential risk of hearing loss associated with the use of such devices⁵. Despite the fact that contemporary city-dwellers are used to being wired and filter the external world through the use of this noise-canceling equipment, most researchers focus their

⁵ See recent surveys published in summer 2005, in which Australia's National Acoustic Laboratories found that about 25 percent of people using portable stereos were exposed to daily noise high enough to cause hearing damage. Further research by Britain's Royal National Institute for Deaf People determined that young people aged 18 to 24 were more likely than other adults to exceed safe listening limits, as reported by New York Reuters Health.

attention on the main bodies of the media gadgets to which the headphone is attached, e.g. mobile phones and personal stereos (see Bull 2000; du Gay, Hall, et al. 1997; Chambers 1994; Thibaud 2003). The headphone has often been represented only as a supporting unit to the connected media device, capable of transmitting audio content.

(5) An essential catalyst

As the headphone was not originally designed as an independent medium, it requires the support of other media gadgets or networking systems. However, its significance cannot be neglected or underestimated. For example, the first-of-its-kind personal stereo, namely the Sony Walkman⁶, has often been highly praised by researchers as an innovative media gadget, as it caused much debate about the privatization of public space and effectively turned the public-space activity into a private experience of music-listening. Conversely, the contribution of the headphone was totally overlooked. The headphone is most often considered a mere accessory, while the main media device is seen as the major contributory factor to the mediated experience. The body of the Walkman is a portable audiocassette player that can be wired to either loudspeakers or to a pair of headphones. Without the application of headphones, the Walkman is just a small boom box or ghetto-blaster, which is already associated with the feature of portability due to its compact size⁷. The

⁶ Sony Walkman, which is recognized as the first portable music device, has offered a mobile and private listening experience since 1979. It is the first-of-its-kind media technology to facilitate a mobile, individual listening experience.

⁷ A large part of the inspiration for William Gibson's vision of "cyberspace" in the early 1980s resulted from his first experience wearing a Sony Walkman in the summer of 1981 (Headlam 1999). He recognized that the Walkman had changed human perception through the immersive experience of walking around the city with a portable music device – the experience of listening through

Walkman itself offers listening on the move, yet this listening cannot be considered a private, immersive and individual experience unless it is achieved via the headphone. Similarly, mobile phone use has also disregarded the importance of the headphone. Undeniably, communicating at a distance while walking on the street is made possible by the telecommunications technology of the mobile phone, not the headphone itself. However the headphone provides a relatively improved auditory space that minimizes disturbance from the environment and allows for private conversation. If the headphone (either the traditional handheld receiver or the wireless hands-free device) is replaced with loudspeakers, it then functions as a walkie-talkie – a portable, bi-directional communication set. For this reason, the headphone is not only an important component but a crucial catalyst that confirms the essential nature of most media technologies. This essential nature implied by the use of the headphone is the experience of privatization.

1.4 The Experience of Privatization

Privatization is a vague concept usually used in the linguistic context of law, politics and social life (see Starr 1989). The notion of privatization in this dissertation refers not to any implication of political or economic individualism, but to “the experience of privatization”. The experience of privatization is one particular technologically-mediated experience achieved by the use of the headphone. The headphone’s design

headphones on the move was completely different from listening through loudspeakers at home. By the early 1970s, cars also began to come equipped with cassette players. This also achieved the needs of mobility and privacy, but the experience of listening in the car was still different to the headphone-listening experience, which is private, intimate and immersive. We can therefore argue that what made the Walkman so outstanding among audio technology inventions was precisely the successful use of headphones. Although the headphone is not independent from the Walkman, the intimacy of one’s listening cannot be achieved without its mediation. Thus, the headphone is not a mere accessory of media technologies, but a very essential catalyst.

is inherently private, as it enables the user to listen to sounds that other people cannot hear. It is associated with ideas of *intimacy*, *isolation*, *exclusively for one user*, despite the fact that some users may share the headphone with another person. In other words, here the term “privatization” refers to the personal, individual or “privatized experience”, which is gained exclusively from the technological mediation of the headphone.

Privatization is regarded by some as a form of personalized atomization, with a notable lack of social connections. But this privatized, individualized experience can be a personal choice. In the beginning of his article The Aural Walk, Chambers (1994) characterized the idea of privatization with a citation from Brian Hatton (1988) that makes an interesting distinction between isolation and solitude, based on the idea of preference:

“By solitude I do not mean isolation. Isolation is a state of nature; solitude is the work of culture. Isolation is an imposition, solitude a choice.” (Chambers 1994: 49)

This dissertation is not concerned with either distinction, as it disregards judgment on personal atomization. Instead it attempts to describe and understand the phenomenon. Indeed, the desire for privatization existed long before the introduction of the headphone. To fulfill this natural craving for peace and quiet, modern technology has provided each individual with a tool to create one’s own acoustic space (see Chapter 3). Hence, the headphone constitutes the ideal device with which to achieve and maintain a truly privatized experience of listening in any place.

The construction of acoustic space as private space is a necessity for other auditory experiences within natural and artificial, physical and virtual sonic spaces. The experience of privatization is intertwined with a number of auditory experiences exclusive to one individual. For example, it offers a conceptual boundary of private space filled with personal choice; it dislocates the sounds in geographical space and time; it multiplies and superimposes layers of auditory experience, etc. Wearing headphones, we are situated at the convergence of the inner and outer sonic universes; our auditory experience is positioned in the shifting relationships between human and technology, individual and society, presence and absence, mediate and immediate perception. Studying the use of audile technologies is one approach to understanding our privatized experience, our relation to sonic territories, our everyday management of space, and our response to interpersonal experiences in the social world.

1.5 Thesis Organization

As previously noted, studies on the headphone itself are relatively lacking in existing research. This dissertation attempts to rediscover the significance of headphone use and to sharpen the focus on the mediated experience. As mediated experience is not simply a sum of elements that can be listed and examined independently, our research embraces a holistic approach of the interrelationship between technology and the human experience (see Chapter 2). Although the study of the headphone-listening experience is not unique in origin, it is relatively uncommon as a study of

the technologically-mediated experience, in particular, the privatized auditory experience. This dissertation may still serve as an initial guide to understanding this phenomenon, as it attempts to explore the innate qualities and meanings that can be attached to the headphone's various uses. Much of the research will focus on the experience of privatization achieved through the analysis of both actual and potential uses of the headphone and the space and environments inhabited by the media users (where the event takes place). The objective is to understand the privatized auditory experience as technological mediation and its relation to our everyday life and social space. Hence we pose four main questions: What are the factors involved in the development of private listening and our desire for privatization in the use of media? What are the nature and influences of the auditory experience in our everyday lives through the use of the headphone? In what sense do we transform our auditory space and how do we respond to the filtered world? Can we explore new ways of using the headphone by applying it to more mundane operations, or to new media contexts? These questions will be addressed in the following chapters.

Chapter 2 is a discussion of research design in accordance with the key concept – the technologically-mediated experience, in particular, “headphone-listening”. The primary purpose of the following chapter is to position this research among existing research on the topic of human-technology relationships and suggest the perspective of being-with-the-equipment. Chapter 3 is the theoretical section that provides general information on the historical and social dimensions of the research questions. Since the study of the headphone experience is a fairly uncommon area of

study, there is no single discipline or theoretical framework that adequately encompasses the broad range of issues that are raised by the experience of privatization. It requires a brief examination on how the privatized experience is enabled by the use of media technologies and the hidden thoughts behind the privatization. The fourth and fifth sections of this dissertation discuss the typologies of headphone-listening. Chapter 4 is an analysis of actual uses of the headphone based on audience research, and Chapter 5 is an investigation of how the headphone device is applied in artworks and innovative media systems in the new-media environment. Case studies explore the headphone's value and potentiality. The dissertation concludes with suggested topics for further research and highlights the capacity for new experiences through the use of technologies. Headphone use is only one type of technology that has transcended our natural senses by introducing a new experience through technological mediation. Thanks to the many ways in which human beings *use* technologies, we not only expand our perception and understanding of the world, we alter the way we interact with our environment.

Chapter 2: Literature Review and Research Methods

2.1 The Influences of Technological Determinism

The previous section provided a preliminary framework of why the use of the headphone was chosen to be the object of study, and how the idea of privatization emerges through technological mediation. Most of our fantasies can be fulfilled through the uses of technologies, just as the use of the headphone expands and inspires our auditory experience and satisfies our desire for privatization. Undoubtedly, technology occupies a central role in human culture and society, and it is capable of enabling new experiences. However, the power of technology tends to be mythologized, as many people believe that technology is an independent force causing changes in society and taking control of our daily lives. A technological medium is often viewed as a self-generating artifact that autonomously shapes our ways of life. This is the view of technological determinism. Technological determinists see technologies capable of “changing” society. The most extreme believe that the entire architecture of society is determined by technology, i.e. that it has the power to transform society at every level, including institutions, social interactions and individuals. All manner of social and cultural phenomena would be shaped by technological determinism. Other factors such as social arrangements and human decisions would be secondary. From this perspective, the features of technology determined its use. To technological determinists, progressive society is merely a product of technological change.

The thesis of technological determinism has been widely attacked by cultural and social scientists. In opposition to the technological determinists, socio-cultural determinists present technology as a cultural product subordinate to social development or emphasize individual control over the tools. Instead of asking how technology shapes society, they ask how social and cultural factors such as human values and political choice shape technology. They particularly criticize the assumption that technology is in some way “autonomous” or must lead to inevitable results (Finnegan, Salaman, Thompson 1987: 3). Social determinism challenges technological determinism by positioning technology in a passive role: technology does not “act”; it is “acted upon”.

It is still true that some new experiences can only be achieved through technological mediation. Opposing the extreme view of technological determinism does not mean ignoring the significance of technology or scientific invention. Some scholars adopted another approach by offering an alternative to both views (see MacKenzie and Wajcman 1999, Williams 1983). On one hand, they propose that things develop as they do not merely for technological reasons; on the other hand, they deny simplistic social determinism by maintaining that technology does not emerge from a single social determinant. They emphasize that we should recognize the limitations of deterministic stances. Their critiques contribute to the debate by establishing a middle-ground between the two extremes.

This thesis makes no attempt to enter the fray over how far technology conditions social changes. Its primary purpose is not to take a stand in this ongoing controversy. It raises the above theoretical debates to remind us to rethink the common phenomenon of technology while performing this research. In this society of information and communication exchange, technology can no longer be considered an independent variable. It comes as no surprise that increasingly more cultural scholars and social scientists are focusing their attention on analyzing some of the social issues raised by the technological revolution. Unfortunately, in practice, there is a common tendency to separate the study of technological media from the study of user experience, as the former is related to scientific invention and the latter to social science. The misleading overall impression is that technology is on one end, and our experience of it on the other.

The study of technological media and our corresponding mediated experience should not fall into separate themes. The investigation should not decompose reality into discrete, independent elements. One of the important questions to pose in the postmodern age is: What medium am I using? This reflection constitutes a critical engagement with the fundamental nature of media. Raising the question is not to underline the effects of the medium or to support Marshall McLuhan's thesis on "the medium is the message" (1994, 2001). Rather, technology is a medium that affords human activities and social behaviors involving thought, expressiveness and perception, according to the perceptual psychologist James J. Gibson's reflection on the idea of affordance (1986). He points out that the

affordances of the environment are “what it offers the animals, what it provides or furnishes, either for good or ill.” (Gilson 1986: 127), referring to the actionable properties between the world and an actor. This idea suggests a relationship between an object in the world and the intentions, perceptions and capabilities of a person or animal. Donald A. Norman (1999) goes beyond the basic idea of affordance and calls attention to the design of everyday objects. To him, affordances “reflect the possible relationships among actors and objects” (Norman 1999: 42). For example, a couch affords the possibility of sitting down on it. A telephone affords the possibility of people in different spaces of having a conversation at a distance. In that sense, a pair of headphones affords the individual an exclusive listening experience. Just as Gilson concludes, affordances are properties taken with reference to the observer (Gilson 1986: 143). In summary, the medium is always described in relation to human perception.

2.2 The Conception of “Headphone-listening”

Like many wearable devices, the headphone fuses the human body with technology. It is a material component of a technique, a “medium”, an “interface” connecting the human body to technology that transforms our normal auditory experience. It is also a mediating factor in audience experience, human behavior and social change. Hence our understanding of a medium is a combination of material and immaterial characteristics. This hybrid feature suggests that a technological medium is not just a tool or a set of tools, but a conceptual and meaningful object, reacting to both the users and the content presented by the medium. Since technology mediates our

ordinary construction of social experience, the use of media technologies represents a way of *being-in-the-world* according to Heidegger⁸. In order to explain the role of media technologies in culture and in the user's experience, it is necessary to place technology within the everyday, the *lifeworld*. Wired to media devices, bodies are constantly forming relationships with machines. Ultimately, the human-technology relationship could evolve into the cyborg⁹, a human being whose physiological functions are aided by or dependent upon a mechanical or electronic device. Machines and human bodies fuse within media space. The use of the headphone "visibly" demonstrates the idea of this mediated experience. It links areas of the human body and converges different technologies into a single unit. In short, the technological medium is neither the cause of our experience, nor the result of our autonomous reaction. Our experience is engaged with the medium as a living totality of intertwined parts.

⁸ Martin Heidegger developed his philosophy focusing mainly on the ontological issue (what is being in the world). For Heidegger the world is here, now and everywhere around us. We are totally immersed in it, i.e. we are being *in* the world, not being *and* the world. He points out the problem that traditional epistemology considers the existence of two separate domains of phenomena: subject and external world. Some believe the mental domain must be connected with all behavior in the physical world, while others assume that the physical is just a collection of ideas, and thus only the mental truly exists, or they adopt the solipsist view that our only immediate knowledge is self-existence. These stances either do not explain explicitly how mind and matter interact, or simply resolve the dualism in favor of the subject by subordinating the material world to the individual mind. Heidegger rejects all these views. He refutes the separation of object and subject and argues that it is impossible for one to exist without the other. To re-establish how to approach the world, Heidegger believes that we must start where we are and recognize that our way of being is "being-in-the-world": a unitary phenomenon that must be considered as a whole.

⁹ Cyborg (cybernetic organism) is a being that is neither human nor machine but a hybrid of the two. The term was coined by Manfred E. Clynes and Nathan S. Kline in their article "Cyborgs and space" (1960), reprinted in Gray, Mentor and Figueroa-Sarriera, eds., *The Cyborg Handbook*, New York: Routledge, 1995, pp. 29-34. The term is often used in science-fiction films, such as *The Terminator*, *Robocop*, *eXistenZ*, etc. Examples of real living cyborgs in recent years include the Australian performance artist Sterlac, who experiments with his body by grafting artificial parts (www.stelarc.va.com.au); and the scientist Steve Mann (www.wearcam.org/mann.html), whose body is constantly integrated with digital computing and communication devices.

Accordingly, this research examines technologically-mediated experiences through a holistic study of the whole process (uses of technology and corresponding experiences within the media environment). The user experience is indeed a very complex phenomenon. Human beings and technological tools are intrinsically interconnected; thus our experience is essentially mediated. The word “experience” in this dissertation refers to the audience’s listening practices through uses of technology, hence the term “headphone-listening”. Merging these two words suggests the synthesis of a technological medium (i.e. the headphone) and the auditory experience (i.e. the sense of listening). This synthesis suggests that the human sense both characterizes the technological tool and is characterized by the tool.

2.3 Uncovering the Desire for Privatization

With this goal in mind, the issues addressed here are neither technologically nor socially determinist arguments. The study of the headphone experience is always formulated in terms of empirical evidences, based on the analysis of its actual and potential uses. Media technologies have undeniably suggested a new approach to the idea of the privatized experience. However, headphone technology is just one of numerous components which fulfill the desire for personalization, individualization and privatization, as many other factors are involved in the development of private listening. Therefore we will be better prepared to understand the changing media environment by adopting a historical framework, looking back to examine the thoughts behind the private experience. The significant increase of psychic

privatization begins with modern mass media in both geographical and symbolic means. To review audience practices under different circumstances in media history would give us a general picture of how privatized experience is achieved by engaging with media. Therefore, in the theoretical section (Chapter 3) we will retrace the privatized experience as it is constructed and shaped through the use of various technologies, from the earliest forms of mass media to portable electronics, with or without the aid of the headphone in order to gain a general idea on the connotations of privatization.

Privatization is generally associated with the concept of a “media wall”, a personal territory or protective shelter. Surrounding oneself by a wall of sound does not necessarily mean building a physical soundproof room or installing a noise-isolation system. Using a headphone is an option that produces a symbolic shield isolating the user and suggesting a new definition of “sound space”. In order to discuss sound space, we must first understand the concept of “soundscape”. The term soundscape was coined by R. Murray Schafer (1977/1994) in his book The Tuning of the World, where he referred to an acoustic environment or an environment created by sound, i.e. the space of sound. According to Schafer, sound also helps to define a space. He states that “the acoustic space of a sounding object is that volume of space in which the sound can be heard.” (Schafer 1994: 214)¹⁰

¹⁰ Schafer argues that we increasingly fail to listen to the natural sounds of the world, and he suggests that routinely taking a “soundwalk” (i.e. focused listening as one moves through an environment with complete attention to sound) would help people to refocus on hearing the natural sounds of our environment. As a music composer, Schafer’s intention is relatively prescriptive, aimed to promote the idea that the acoustic environment could and should be heard as a musical composition, and that we must acknowledge our own responsibility in its composition. This dissertation, however, has no particular intention to promote his thesis.

Headphone-listening suggests a soundscape that exists exclusively for one user. The user's perceptions of space are thereby transformed through the use of this tiny material device, thus redefining the user's sense of space. As we uncover and analyze the meanings of privatization in relation to public space and collective experience, we can hope to gain a general understanding of how the audience's experience is linked to the desire for privatization.

2.4 Making Audiences Visible

In order to provide a detailed account of what is involved in the urban headphone experience, it is indispensable to address the actual users. Conventional approaches to media theories have always been committed to three separate categories of analysis: production, texts and audiences. In practice it has too often been the case that the analysis of production and texts have been primary, while the interpretation of audience activities have been neglected (Livingstone 2003: 340). For example, in traditional film studies, researchers often have insightful readings of individual films, genres and directors, while the analysis of audience response has been comparatively less significant. Although increasingly more writings on people's use of media technologies (e.g. Stuart Hall and John Fiske) examine how information is mediated from the encoding to the decoding processes, they do not explore how the experience is actually mediated. Their primary focus is on the audience's interpretation of media texts, or on the impact of technology or media text on the audience.

However some traditions of user-based research did exist, such as market research for informed product development (e.g. Kuniavsky 2003). This type of user-centered research aims to discover what the customers want and need in order to help the manufacturers and engineers improve their product by either fitting it into the user experience or prescribing an experience to their end-users. It is *not* the goal of this dissertation. Although this paper is concerned with the headphone user's experience, it has no intention of proposing practical solutions for headphone design. Its goal is to describe the experience as an end in itself. The reason for conducting empirical research in this dissertation is to offer an account on how people are integrating their experience with media technologies into their everyday lives and how they respond to their own environment. This account will help us to understand the complexity of privatized experience.

It is also necessary to clarify that the dissertation will not focus on the media gadgets to which the headphone is connected. In this information age, increasingly more researchers have become interested in studying media technologies in general and portable electronics in particular. However, such studies neglect to define the role of the headphone, often relegating it to the role of electronic accessory. The study of the Walkman, for instance, often includes an investigation of the music-listening practice and the social impact of the device. Paul du Gay and Stuart Hall (1997) published a study titled Doing Cultural Studies: The Story of the Sony Walkman, which is positioned as a textbook in the Culture, Media and Identities series, where the Walkman is seen as a material cultural artifact. However the study

omitted any empirical investigation of actual personal-stereo user practices. This is perhaps due to the fact that, as noted previously, traditional emphasis is on the interpretation of media texts and media use. Their major concern is to explore the “circuit of culture”¹¹ process, mainly by decoding advertising images and the organizational decisions of Sony Corporation. Later in 2000, Michael Bull, a lecturer in media and culture at the University of Sussex in the United Kingdom, conducted an empirical research titled Sounding Out the City: Personal Stereos and the Management of Everyday Life. He studies the empirical experiences of Walkman users and analyzes their daily strategies, shedding light on the social construction based on critical theory. Bull interviewed the Walkman owners about how, when, where and why they use the device, and how it integrates into their daily lives. In some way his work and this dissertation share several similarities on the method and purpose of study – based on empirical data of user experiences¹². But our respective focuses are not identical. Bull’s study of personal stereos investigates the practice of music-listening offered by the technological devices (the personal stereos) and the impacts of that experience at an individual level. On the contrary, this research offers an account on the privatized auditory experience that is mediated through the technological devices (the headphones) and examines the user’s response to the unique soundtrack created within the urban or domestic space. In other words, the study of the headphone experience is quite different from the study of other media

¹¹ The circuit of culture is comprised of five major cultural processes: Representation, Identity, Production, Consumption and Regulation. A similar approach was developed by Richard Johnson, 1986. (See du Gay, Hall, et.al. 1997: 3)

¹² Similar to the use of personal stereos, headphone-listening in public connotes a kind of strategy against possibilities of intercommunication, which is also mentioned in Bull’s studies. Headphone-listening can therefore be used as a form of conversational preserve, setting up fences to ward off undesirable interlocutors, creating a symbolic private space. (See Chapter 4 for further discussion and empirical data.)

gadgets: the study of personal stereos might focus on their application to music and users' everyday listening in a public setting; the study of mobile phones might be more concerned with the concept of communication at a distance or telepresence; the study of radio or Internet systems might examine the transformation of the community from local to global. The study of the headphone is not about the technologies of communication or musical playback but about the experience of privatization and the uses of privacy.

As suggested, the relationship between the audience's experience and a particular type of technology is subject to the actual use of that technology. Media and cultural theories are inadequate to explain the significance of the actual experience. In the section on audience research (Chapter 4), a qualitative methodology involving small groups and individual interviews is used to gain insight into the actual uses of headphone-listening. Ten headphone users aged 20 to 35 were interviewed. Both individual and group interviews were conducted, in both unstructured and semi-structured formats, in order to vary the perspectives and levels of data collection. The structured interview formats with preset questions or multiple-choices leaves little room for variation in response, as it "aims at capturing precise data of a codable nature in order to explain behavior within pre-established categories". On the other hand, the unstructured interview is "used in an attempt to understand the complex behavior of members of society without imposing any a priori categorization that may limit the field of inquiry" (Fontana and Frey 1994: 366). The unstructured format has the advantage of diffusing any prior conceptions

held by the researcher and giving priority to the respondents' own perceptions of their experiences. Although this format of interview strategy lacks a specific focus and may require a greater length of time than a structured interview, it has the advantage of allowing the participants to raise new issues and concerns that the researcher may have overlooked. Therefore, we combined the advantages of unstructured interviewing with an intermediary format of semi-structured interviewing. Following these preliminary formalities, a few questions were asked during the interview in order to complement the lack of specific focus and give a rough direction to the respondents:

1. Please describe when and where you mostly use a headphone.
2. Why do you wear a headphone in this particular situation?
3. What types of media activities do you engage in, or to which kinds of media technologies is the headphone connected?
4. Please describe, in as much detail as possible, the auditory experience of headphone-listening, with particular emphasis on the surrounding events that have influenced your attention.

With the above four focused questions, the intention was to stimulate an open-ended interview process and capture ideas on how the privatized experience is enabled through mediation, how its use is integrated into respondents' daily lives, and how their auditory experience and sonic space are transformed. Most interviews were conducted in an informal setting, while others were casual conversations. This method aimed to establish a closer and friendlier interviewer-respondent relationship in order to *understand* rather than *explain* the headphone experience. Again this

dissertation disregards any moral judgment about headphone use; its research methodology aimed to discover what users really do with their headphone and how they feel about their experience.

The user-based research in this dissertation is a very initial guide to the study of mediated experience. Rather than provide a comprehensive overview of all possible uses, its aim is to explore very individual uses through empirical study.

2.5 Possibilities of the Headphone Experience

While empirical data provides a certain account of the typologies of actual uses as an everyday cultural practice, the analysis of media artworks and systems provides a wealth of information on the various possibilities of the headphone experience.

The headphone is associated with and attached to technologies ranging from medical examination to telecommunication, reproduction and simulation. Yet people seldom reflect profoundly on its inherent potentialities. It was typically applied as a technique to avoid disturbing others in a public setting. Today most headphone applications in artworks are still considered a strategy to maintain silence in the exhibition space, used as a substitute for loudspeakers, especially when several video displays with sound elements are competing for attention in a limited space. While not every artist considers the use of a headphone as an interface or medium in the new media environment, some artists have actively explored its potential. Thus it

is significant to examine artworks which employ the headphone as an intrinsic component in order to reveal its specific characteristics.

Here we will consider case studies of contemporary media artworks and systems while observing their particular typologies of headphone use. A total of eight cases will be examined, divided into four general categories. The first type of use emphasizes the dislocation of sound, creating a sense of space situated in a fixed location. Works include Akitsugu Maebayashi's *4 Pieces for Object, Sound, Space and Body – Radio, Window, Metronome, Darkness*, Nigel Helyer's *Sonic Landscapes* and Janet Cardiff's *Walks*. The second type suggests the application of the headphone to virtual simulation, as in Susan Collins' *AudioZone*. The third type focuses on the aural representation of direction and distance in space, addressing the dynamics and hybrid character of combining local listening and headphone mediation in urban space, as in Richard Etter's *Melodious Walkabout*. The final type explores the acoustic connections between perception and action and the relationship between listening and the environment. Works include Toshio Iwai's *Sound-Lens*, Christina Kubisch's *Electrical Walks*, and *Sonic City*, which was developed by the Viktoria Institute and RE:form. These selected works consider headphone-listening as a medium as well as an interface to map the boundaries between digital networks and the physical world.

Users are not simply consumers, but potential producers of new social values. Potential uses initially developed by media artists and scientists can be considered

the basis for understanding headphone-user practices and introduce media audiences/users to new possible experiences. This dissertation will conclude with a discussion of the convergence of two perspectives – the actual and the potential, while observing how people transform culture and how these headphone uses can create new values. We will also have a brief discussion on how these ideas can be applied to other perceptual experiences in order to explore the relationship between innovative technologies and user experiences in the face of an increasingly unstable technologically-mediated environment.

This research is positioned in the matrix of the user's auditory mediated experience, i.e. the sonic space around the user, and the privatized experience that the headphone suggests. In a world filled with noise, headphone use is one way of dealing with the cacophony of urban or domestic space. Isolating ourselves in a sound bubble enables us to filter our lives and overcome mundane daily routines. The various typologies of headphone use propose alternative organizations of everyday life and expand traditional horizons in an interdisciplinary context.

Chapter 3: Hidden Thoughts Behind the Experience of Privatization

3.1 Introduction

The headphone is often represented as a material artifact that affords privatized listening. One might wish to temporarily withdraw from the world into a “private bubble” of preferred soundtracks or other custom audio content. As suggested, one of the major technologically-mediated experiences granted by headphone use is the experience of privatization. But how can a material headphone or even a pair of tiny earphones form a personal space and suggest a personal experience? How can the symbolic dimension of territorial belonging be produced within the personal space of sound?

The term “privatization” denotes several specific meanings. When we speak of “privatization” in this dissertation, we normally refer to the individual, unique, personal experience that is suggested by the use of media technologies. Undoubtedly the initial technical design of the headphone has contributed a lot to individual privacy, as it is an innately private device that directs sounds that other people cannot hear proximately into one’s ears, and therefore is often associated with concerns of intimacy and isolation. However this does not mean that the invention of the headphone has technologically “created” the privatized experience. Indeed, the use of privacy emerged early in history, long before the discovery of headphone technology. This chapter aims to exemplify the fact that the desire for privatization

has certainly developed and intensified due to a series of social and technical reasons, without falling into a technologically determinist argument.

To explore the themes of the experience gained from headphone-listening, we must uncover the hidden thoughts behind the idea of privatization and outline the typologies of the privatized experience. The primary purpose of this chapter is to reveal the meanings of privatization as well as provide some theoretical background on the mediated experience, before entering a detailed enquiry on actual and potential headphone experiences. Given the lack of study on headphone use, we will touch upon several wider media theories and cite examples from the use of various media within the matrix of social practice, such as print media, movie theatres, broadcasting media and portable electronics.

3.2 Privatization as a Protection Shelter within Public Space

Privatization is generally associated with the idea of a protection shelter, which is a personal territory within public space. A shelter is a space that generally refers to something that covers or provides protection. Physically it can be a property, a place to hide, or other cover and protection from something, where a clear division is established to separate the external world or community from the internal private space. The sheltered space is secured by stones, walls, fences and any obstacle that is perceptible to the eye. We feel entitled to our own space, whether it is at home, in a room, in a car, or in a defined space around us over which we have some level of control. According to Nick Couldry and Anna McCarthy (2004) in the introduction

to MediaSpace: place, scale and culture in a media age, the notion of space is, in general, linked with the traditional concept of place. It contains both “the possibility of interiority, of wholeness, boundary and plenitude, and the possibility of remoteness, alienation. When we say that we ‘need our space’, we are saying simultaneously that we want to retreat to a place that is all our own and that we want to put some distance between ourselves and others.” (Couldry and McCarthy 2004: 3) In concrete terms, a shelter is a personal territory defined by a physically enclosed space.

Shelter is not only restricted to these physically bounded territories. Through the use of media technologies, a “media wall” can be built to contrast symbolically with the external world. A media wall is a representational shelter providing a safe and intimate space for the users. Media activities involving individuals localized in a public space construct symbolic barriers separating the users from their geographical environment in order to achieve privatization (see next chapter for more examples and descriptions). Users can remain inside a “private bubble” formed by images and sounds, hide away from the busy world and temporarily withdraw from interaction and/or communication with others. The crowded city offers few physical territories or divisions between individuals. The use of media is one way to constitute a sense of space at a more conceptual level. Today almost everybody uses some form of electronic media while they are traveling or at leisure, such as iPods, mobile phones or handheld games. This phenomenon can be traced back to the history of early rail travel. The activity of reading is one example that suggests the concept of personal

territory as defined by a media boundary. Wolfgang Schivelbusch (1986), who gave fascinating insight into the history of rail travel¹³ in his work, makes an interesting observation on the activity of reading in a public setting in the modern age:

“Fixing one’s eyes to a book or newspaper, one is able to avoid the stare of the person sitting across the aisle. The embarrassing nature of this silent situation remains largely unconscious: any insight into it will therefore appear only in hidden terms, hinted at ‘between the lines’.” (Schivelbusch 1986: 75)

Schivelbusch’s descriptive account clearly indicates that the activity of reading is more than purely reading. It can be considered a social act signaling one’s refusal to interact and communicate. Rail travelers used media to erect protective walls behind which they retreated back into their own shells. In his work *A History of Reading*, Alberto Manguel (1996), who gives a historical analysis of the activity of reading, points out that reading is a “highly intimate, physical, sensuous, and above all private activity” (1996: 244-245). Michael Bull (2004) offers a similar account on the habit of reading in his article “To Each Their Own Bubble”. He points out that in the past travelers found the activity of reading sufficient to create their “private bubble” (2004: 277). With the aid of printed media, including books, newspapers, periodical magazines, as well as electronic books (e-books), readers are more than

¹³ With the handy printed medium, the activity of reading can take place anywhere, e.g. at home, in public urban space or during travel. Schivelbusch points out that modern seating arrangements in train compartments put an end to conversation while traveling. He notes, “The face to face arrangement that had once institutionalized an existing need for communication now became unbearable because there no longer was a reason for such communication. The seating in the railroad compartment forced travelers into a relationship based no longer on living need but on embarrassment.” (1986: 74)

likely to hide inside a privatized space, avoiding eye-contact and unnecessary communication with other passengers.

Today the popularity of portable electronics points toward a desire to personalize the experience of public space with one's own private soundtrack. Considering the case of using a Walkman on the move¹⁴, the activity of listening is a mask that shelters the user from public space, all the while performing the activity in public. The co-existence of public and private was portrayed interestingly in Doing cultural studies : the story of the Sony Walkman. Du Gay, Hall and Janes (1997) point out that the use of a personal stereo gives one the chance to reflect upon the public world in solitude:

“A succession of developments, from the portable transistor radio to the car stereo, has made it possible to transport this inner landscape of sound with one wherever one goes, simultaneously taking the pleasure of private listening into the very heart of the public world and the qualities of public performance into the privacy of the inner ear. The Walkman stands at the outer limit of this revolution in ‘the culture of listening’.” (du Gay, Hall, et al., 1997: 21)

¹⁴ The Walkman, an electronic gadget introduced in the late 1970s, is iconic of the urban technology of privatization, allowing users to construct an individualized world wherever they go (Back and Bull 2003: 9). Chambers claimed that the Walkman is both a mask and a masque – it brings the external world into the interior design of identities, and also seems to signify a void of social life. It “serves to set one apart while simultaneously reaffirming individual contact to certain common, if shifting, measures.” (Chambers 1994: 50-51)

In Michael Bull's report (2000), Sounding Out the City: Personal Stereos and the Management of Everyday Life¹⁵, he also comments on the private/public relationship involved in media use. He notes,

“The use of a personal stereo ‘drowns out’ geographical space and places her [the interviewee] ‘into a room of her own’ by ‘closing her ears and shutting her eyes’ to the space occupied but not inhabited.” (Bull 2000: 52)

Bull offers a descriptive analysis of the urge to have one's own personal space and suggests the ambiguity of having a privatized experience in the public environment. Chambers (1994) also points out that it permits the possibility of “imposing your soundscape on the surrounding aural environment and thereby domesticating the external world.” (Chambers 1994: 51) It provides layers of privacy within public space, allows the listener to “retreat from the bustle and hassle of the ‘real world’” to “a ‘second world’, adjacent to but separate from the everyday one.” (du Gay, Hall, et al., 1997: 20)

So far we have a general understanding of one aspect of the idea of privatization, which is associated with the idea of a protective shelter. The use of media formulates the symbolic boundaries of conceptual space. Reading in public or using portable electronic media such as personal stereos are typical examples of achieving privatization in public space. The use of media in public not only blurs the dividing line between private and public, it also challenges what we understand from the concept of “privacy”. In the following sections we will touch upon several other

¹⁵ Michael Bull has embarked on a research project to study the social impact of personal stereo uses in urban culture, analyzed from the perspective of the Frankfurt School's critical theory, based on ethnographic interviews with users of personal stereos over 10 years.

examples of media uses in order to demonstrate the use of privacy within collective settings.

3.3 New Dimension of Privacy within the Collective Setting

Historically, audiences were formed by a crowd gathered together in a specific space and time to view or listen collectively. The theatre is an obvious example of a social place that supports a shared and collective experience. While hundreds or more strangers sit side by side, all simultaneously sharing the same images and sounds from the stage performance or movie screen, each member of the audience can still find a way to “build” his or her own personal territory within the inherently collective theatrical setting. The custom of remaining silent in the public theatre results in a symbolic private shelter that maintains the privatized experience. In this sense, the theatre is not simply a place for collective experience; rather it has developed into a place for individuals to get together while each having a privatized experience.

In the past, a theatre was above all a place for social interaction. It functioned as a medium of communication insofar as messages were passed through communication in those spaces. The audience was potentially collective, active as well as interactive with the performers. As described in The Making of American Audiences: From Stage to Television, Richard Butsch (2000) describes the theatre as a place where “fops sat on stage, interrupted performances, and even on occasion grabbed an actress... they too ate, smoked, drank, socialized and engaged in repartee

with actors.” (Butsch 2000: 4). Performances were always live, and performers, in return, demanded instant feedback from the audience. The behavior of the audience in early cinemas was more or less similar to audience behaviors during a stage performance. They were allowed to talk, applaud and shout during the show. From the time when the silent flickering images were first projected onto a screen in the late 19th century, the cinema was more like a club where people came together to share the visual and social experience. The low-price tickets, flexible time schedule and random composition of unconnected segments encouraged early cinemagoers to drop in anytime, and to sit there as long as they wanted. Going to the pictures meant participating in a collective event and becoming part of the “crowd”. Yuri Tsivian (1991) describes the early movie houses as open to almost everyone. Anyone could drop in anytime to enjoy the continuous sequences of films. He remarks,

“If you look into the auditorium, the composition of the audience will amaze you. Everyone is there – students and policemen, writers and prostitutes, officers and girl students, all kinds of bearded and bespectacled intellectuals, workers, shop assistants, tradesmen, society ladies, dressmakers, civil servants – in a word: everyone.” (Tsivian 1991: 34)

His observation indicates that early movie theatres were among the most important locations for social gatherings and collective activities.

In contrast to the audiences of such gregarious events as early cinema and theatrical performances, the 19th and 20th centuries appreciated the quiet and attentive audience. Theatrical audiences now tend to remain quiet in cinemas and

concert halls. They stop talking, sit properly, face front and concentrate on the large screen. They seldom interact with the stage performers. Butsch (2000) notes that in the late 18th century,

“The theatre audience stayed silently and without intervention, observed the lives of the characters behind the ‘fourth wall’ – the imaginary invisible wall at the front of the stage, which produces an audience-performer distinction... Performers were in the front of the room. They did all the talking and showing off, while the audience sat quietly, and applauded on cue.” (Butsch 2000).

As soon as the music begins, the audience remains seated and falls quiet. From a web log of the online magazine Stay Free, a reader responds with an interesting description of his experience in the theatre:

“Applause was the only noise held, however. The audience took the opportunity to cough, hack, clear throats, blow noses, and emit inhuman grunts. From every corner of Avery Fisher Hall arose a repulsive symphony.” (Posted by Jack Silbert¹⁶)

In this interpretation, once the program starts, audiences try best to keep silent. This is also true in movie theatres. Members of the audience usually try their best to minimize sounds made by munching on chips or popcorn. Regimented rows of seats hold a large audience in a fixed position, facing the huge screen in the dark, enveloped in multi-channel sound. Ritualistic conventions and discipline such as keeping silent, arriving and departing promptly have continued to influence our

¹⁶ See <http://blog.stayfreemagazine.org/2005/12/index.html>

viewing habits. The well-designed cinema setting intensifies the audience's concentration on the movie and discourages members from having conversations.

The established custom of keeping silent is now considered standard discipline in the theatre, which reinforces its institutionalization and even assumes that the audience is a passive receiver. Jonathan Sterne (2003) suggests that silence is associated with an absence of participation and communication:

“Where opera and concert audiences had been noisy and unruly, quieting down only for their favorite passages, they gradually became silent – individually contemplating the music that they had enshrined as autonomous art. We can see a similar trend with the gradual silencing of later audiences for vaudeville and film: as a form of expression becomes more legitimate and more prestigious, its audience quiets down. This quieting has the effect of atomizing an audience into individual listeners. As we are told today every time we go to the movie theatre, in ‘observing silence’ we respect other people’s ‘right’ to enjoy the film without being bothered by noisy fellow audience members. The premise behind the custom is that, in movie theaters (and a variety of other places), people are entitled to their private acoustic space and that others are not entitled to violate it.” (Sterne, 2003: 160-161)

Keeping silent in the theatre is undoubtedly a social institutionalization that rules over the audience. Audiences learn to “respect other people’s ‘right’” to private space and reserve a space for each person without intrusion. This convention is a way of raising personal boundaries in order to isolate one’s thinking and perception.

Michael Bull (2004) points out that the quieting environment can be seen as one of the key components through which a privatized experience is maintained in a public theatrical setting:

“Historically, the construction of a ‘private bubble’ of experience often required a level of silence, often institutionalized, as in prohibitions on talking loudly in library reading rooms or, more recently, in cinemas and concert halls.” (Bull, 2004: 277)

The silence, according to Bull, is undeniably a kind of social institutionalization embedded within the organization of collective viewing. The audience was educated, ruled and told to keep quiet while participating in theatrical shows. This institutionalization of silence originated perhaps from the producers’ intention to draw the audience into the immersive story worlds. Silence must be established in order to create a privatized and personal experience that is clearly separate from the noisy environment. As a result the audience stops talking, as if shut off from potential face-to-face interaction and communication, each member constructing his or her own sense of personal space as he or she enters the public theatre. To be precise, this cultural practice suggests a privatized experience on top of a collective experience – a new dimension of privacy.

While theatre was simultaneously considered a place for collective entertainment and a private experience, the development of home entertainment called attention to another new dimension of privatized experience with dispersed collectives. As David Hendy (2000) comments, the act of listening to the radio is in

some way similar to the experience of viewing in a theatrical setting, which is paradoxically positioned in between collective and private. He notes,

“The act of listening to the radio is (...) more personal, more intimate, more innately prone, at a cognitive level, to individual interpretation than the process of watching television or reading the newspaper. It is also, and simultaneously, an act which is replicated countless times among members of the wider audience. And the sense of this wider phenomenon is part of the individual experience.” (2000: 121)

The historical change important to collective action was the increased delivery of entertainment directly into the home. The concept of broadcast media audiences responding to radio and television was expanded to include individual or small group listening and viewing experiences at the same time, while viewers and listeners are localized in a different space. As media events are thus no longer restricted by geography, this new mode of media landscape has enabled a dramatic expansion in the range and nature of the audience experience.

A series of changes in technology and society have altered the nature of audiences, especially in terms of scale and form of reception. While audiences participate in a theatrical event or receive broadcast media, individuals seek both a collective experience and a privatized experience. Although theatre-goers sit side by side sharing the same images and sounds during a public event, they often remain isolated within their invisible personal territories. Radio and television audiences are widely dispersed, viewing and listening to the same program while being physically

located in different places; hence a new avenue in the search for privacy within the collective experience.

3.4 Conclusion

Without falling into a technologically determinist argument, this chapter traced paths towards exploring the use of privacy and the experience of privatization from several examples of media uses within social and historical contexts. The use of the headphone meets only the needs of portable public privacy. It fits the mediator role between private and public, private and collective. It preserves an auditory experience within the artificial auditory world not shared with others and thus enables a unique individual experience. The inherent features of headphone use guarantee a more intimate listening experience to fulfill people's natural desire for privatization in contemporary society.

Chapter 4: Headphone-Listening in Everyday Life

4.1 Introduction

The desire for privatized experience has been evident for some time in the history of media use. Headphone-listening was only one consequence of what had already been effectively imagined. The last chapter provided a framework for us to understand the experience of privatization. To explore and contextualize its everyday auditory experience, we must pursue the inquiry into its actual uses. This will be done with the help of the following empirical data with descriptive material collected from unstructured and semi-structured interviews. As previously mentioned, the objective of the audience research in this dissertation is not to provide a comprehensive review of all possible uses, but a very initial guide to introduce more diversity. Therefore, a limited sample of 10 respondents was selected to describe their individual experiences and everyday behavior regarding headphone use in relation to their own living environment, to others and to themselves. They also described their responses to the world through personal strategies for dealing with social space and social life, i.e. the way they navigate through their surroundings.

The headphone is still a technological component dependent on other media devices, in the same way as loudspeakers or a remote-control. It is unavoidable to study headphone-listening independent to the media gadgets to which the headphone is attached (e.g. personal stereos, including but not limited to Sony Walkman, iPod or other MP3 players, mobile or static phones, laptop or desktop computers). But

again, the study of headphone-listening differs considerably from the study of media technologies or portable electronics. For example, the study of personal stereos concerns the application of musical content. It examines the subject as a portable “mood maintainer” or “mood transformer” (Bull 2000: 48)¹⁷, or as a painkiller, a distraction from a boring occupation (ibid: 55-67). But the study of the headphone experience is not concerned with the content transmitted by the headphone, neither will it speculate on how the MP3 format suggests a new sharing community. This dissertation investigates how headphone-listening helps users to regain personal space, to facilitate personal auditory choices as they go about their daily lives, to change the nature of their perception within two simultaneous sonic worlds, and to enable them to successfully re-prioritize their sensory experience.

4.2 Private Space, Personal Choice

In Silence, John Cage (1961) pointed out that “there is no such thing as an empty space or an empty time. There is always something to see, something to hear. In fact, try as we may to make a silence, we cannot.” (Cage 1961: 8) Cage adds that it is desirable to have a so-called silent situation only for specific engineering purposes. But in reality, there is no such thing as a purely soundproof or echo-free room. Even in a chamber that claims to nullify all sounds, we still hear the rush of blood cells coursing through the capillaries in our ears. Fran Tonkiss (2003) also mentioned the difficulty of finding silence in urban life. She describes the “silence” in the city:

¹⁷ In his empirical study of the personal stereo, Bull notes that one of its uses is considered a mood maintainer, which allows users to relax or to enhance their emotions. Also, the continuation of mood from home to street is achieved by bridging these spaces with music. (See Bull 2000: 44-50)

“Mostly, though, even in muted hours, there is the background murmur of the city talking to itself... Night comes to the city not only with the lights going out, but with the sound going down. It never turns off; it is just that some things – the cadence of night voices, distant traffic – grow louder in the mix.” (Tonkiss 2003: 308)

In every sense, silence is illusory. Sound surrounds us all the time, waking and sleeping. No matter where we are and where we go, we are always accompanied by sound. In this noise-filled world, instead of longing for silence, headphone users demand their own “noise” to overcome the perceived noises of the city. People load their own sounds from their MP3 players, mobile phones or other stationary or portable equipment. Headphone technology has come to the aid of the ears. It can be seen as a technology of silence that technically cancels – or at least significantly reduces – environmental noise, thus creating invisible mobile shelters and autonomy within wider aural ecologies. Donning a pair of headphones effectively cuts off the outside world and blocks further unwanted sound. It allows the user to have a certain control over the temporal and spatial extent of particular acoustic territories, and prevents other people from hearing the user’s personal soundtrack or tele-conversation, either for the user’s privacy or to avoid disturbing the environment. Duncan Lee (interview number 08), a 30-year-old salesman, understands that there is no such silent situation. Therefore, he uses the headphone as a noise-canceling machine:

“I hate going out when I don’t have to work. There are so many people out there, especially on the weekends. I prefer to stay home and have some

silence. But I live in a big family with six family members including three younger sisters. They always make noise at home, for example singing karaoke. I can still hear their voices even when I lock myself in the bedroom. So I put on my headphone and spend the whole day listening to music or watching DVDs. I just want to live in a peaceful space.” (Duncan: interview number 08)

Retreating into his own personal soundtrack is one obvious way for the respondent to deal with his noisy surroundings and ward off disturbances. Although he cannot find true silence, he can filter out random outside noises and replace them with his chosen soundtracks.

Many contemporary city-dwellers have gradually withdrawn from public and family life into their own personal worlds. They are not simply seeking silence, but their very own personalized and private acoustic space. Enveloped in sound through the headphone, users have more control over their aural environment. Portable electronics are not just a technology to maintain a privatized experience; they have in fact given users the tools to *activate* more privatized space. Users could possess their own acoustic space by owning the material component of the technology that produces that auditory space (Sterne 2003:160). The invisible private bubble created by headphone-listening helps users to escape from any geographical soundscape they inhabit, allowing users to create their own privatized auditory experience. Most respondents reported that they enjoy staying inside their impenetrable personal media fortress. As Schafer (1977/1994) points out, “the radio was the first sound

wall, enclosing the individual within the familiar and excluding the enemy” (Schafer 1977/1994: 93). Subsequently, as Michael Bull describes, personal stereos also “appear to provide an invisible shell for the user within which the boundaries of both cognitive and physical space become reformulated.” (Bull 2000: 31) In fact, the effect of being protected by an invisible shell is suggested by the headphone itself. Similar to the experience of privatization formed by media walls such as printed books or other media technologies in any particular setting, the sound wall created by headphone-listening has become as much a fact as the wall in space:

“When I’m at home I stay in my bedroom listening to music. Normally I just let the sound come out of loudspeakers instead of headphones. If I already have a personal space, I will not wear the headphone. But when I have no physical space I use the headphone to build an ‘invisible wall’.” (Jessie: interview number 04)

The above response contextualizes the role of the headphone in helping the user to regain personal space. Her description clearly indicates that her daily privatized experience in the world is constructed by either physical barriers such as her bedroom walls or by conceptual enclosures such as the headphone. Another user also mentions a similar experience in the domestic setting. Instead of using loudspeakers to transmit sound and sharing the auditory experience with others, she attempted to create a personal sonic world by listening through headphones as she watched a movie:

“When I was young I lived with my family. I didn’t have any personal space. The sitting room was my bedroom. I preferred watching movies late after all

my family members went to sleep. Then I'd wear my headphone in order to summon an individual environment that is not shared with others. This experience granted me a sense of privacy and isolation." (Ron: interview number 05)

As this user had no physical territorial boundaries inside the home, she managed to transform the sitting room – a relatively “public” area in the domestic environment – into a private, and protective, personal space. With less distraction, she could immerse herself into her movie world through the use of a headphone at a particular time when the rest of her family was in bed. The invisible shell clearly provides a sense of privatization only available for the user to hide away from her actual geographical location. More than that, this unseen privatized shelter represents the feeling of being protected. It prevents people from invading each other's space. Sometimes we might want to have an even smaller private area to enhance the sense of protection:

“I always have my headphone on when I'm working, either in the office or at home. When I'm working in the office there are partitions to separate me from others. But at home I don't have this kind of divider to form a relatively smaller space for myself. Before I couldn't concentrate on my work, I looked around and daydreamed all the time. So I looked for something to facilitate a 'virtual space' that is not as fluid as the physical room. With the headphone on I can block out the television sound from the next room or traffic noise. Then all my attention is totally absorbed either on the computer screen or the music. I'm less distracted by my surroundings – except for a very pleasant

smell from kitchen or feeling too cold because of the air-conditioning!” (Ron: interview number 05)

While the semi-fixed partitions in the user’s workplace are designed to keep a certain distance between individuals, the headphone offers a conceptual zone suggesting a similar function as preventing intrusion. It maintains the space as a personal, protected region, cutting off any possible involvement with the outside and effectively keeping the sense of sight and hearing occupied. Similarly, the protected shield is also applicable to the headphone user studying in the public library:

“The library is not really a place of silence. It is much easier to hear noise in an open area I can always hear people walking or whispering. It is sometimes more disturbing than traffic noise. So I put on my earphones and keep myself concentrated on reading.” (Nick: interview number 09)

These are two examples of the headphone offering more control within an uncontrolled space. Far from distraction, the headphone forms a protective audio bubble, enabling the users to focus on their work.

Another key issue developed from the construction of personal territory and privatized experience is the activity of individual listening. The headphone is seen as an icon for individual entertainment. Unlike going to the theatre or watching television at home, which suggests a shared or group activity, headphone-listening represents an individual leisure. Users often reported that they only wear the headphone when they are alone, never when they go out with friends or family:

“I live in the continuous presence of my music. I normally put on my headphone when I leave home. I listen to music on the bus. I don’t take off the headphone until the moment I meet my friends at the final destination. Then I put the headphone back on again as soon as I’m alone.” (Kevin: interview number 10)

“Once I traveled with my friend and I suggested sharing the earphones to listen to music. But my friend refused. She preferred to chat. I am aware that headphone-listening is a very private, personal entertainment, not a group activity shared with others. You can play music from loudspeakers and still chat with your friend. But you wear headphones only if you are alone.” (Jessie: interview number 04)

“I never wear headphones when I’m going out with friends. It looks like I’m being rude to them.” (Coco: interview number 06)

The respondents’ descriptions of their experiences demonstrate that headphone-listening is an individual, personal activity. People seldom use the headphone when they go out with friends. Before, people might have shared their listening pleasure by giving one of the earphones to their partner, but this phenomenon is rarely seen today – probably due to the fact that increasingly more people have their own MP3 players, PDA, PSP or other equipment that supports personal listening. The original design of the first Sony Walkman model included two headphone jacks and a feature to allow listeners to push an orange talk button that would temporarily mute the

sound coming from the player to enable conversation between people listening to it. The reasoning behind this design was driven by the belief that “it would be considered rude or discourteous for one person to listen to music alone.” (du Gay, Hall, et al. 1997: 59) Therefore the feature was designed to enable users to talk without removing the headphones or lowering the sound volume. However, the Walkman was used “in a more personal, individualistic and less interactive way than was initially imagined.” (ibid) Consumers see their Walkman – like their headphone – as a personal entertainment.

The following interview excerpts further illustrate how headphone use creates a sense of privatization without having to compromise with others’ listening preferences:

“When I was young I always wore a headphone connected to my Walkman or radio. My brother played songs through speakers, but the music was not to my liking.” (Manda: interview number 03)

“I share a bedroom with my big sister. In order not to disturb her or other family members, I often listen to music through earphones, especially at night before I go to bed.” (Coco: interview number 06)

“I share an office with one of my colleagues. He listens to the radio on the Internet through speakers, so I use earphones to listen to my own music. If he’s not here, I use the speakers.” (Viola: interview number 07)

Users realize that using a headphone is a way to either create individual entertainment, maintain personal choice, or prevent others from listening. In all cases, headphone use is a way to form a personal territory and creates a privatized auditory bubble for the listener.

In this section, the headphone use can be considered as:

- a technology for making silence;
- a noise-canceling device which filters out unwanted noise;
- a means to escape from any geographical soundscape;
- an invisible shell enabling users to create intimate and manageable spaces;
- a privatized shelter with no physical boundary;
- an activity of individual listening;
- a way of preserving one's personal preferences without disturbing others.

People enjoy their personal sonic world as they gain a sense of protection and privatization. It therefore makes public space more habitable. It acts as a technique to transform the way the users respond to the outside world. So how do headphone users respond to other people when they are connected with this technological device? This act of isolation will be further investigated.

4.3 Do You Hear Me?

Headphone-listening not only suggests separation from the proximate auditory environment, it also implies a refusal to communicate. In Bull's study of personal-

stereo use, he borrows Erving Goffman's phrase "conversational preserve"¹⁸ to evoke a person's ability to exert some control over who talks in public and when. The respondents of his study described using the personal stereo "as a barrier to discourse in which the use of it represents a sign that the user is 'somewhere else' or 'fully occupied'. It performs the same role as a 'do not disturb' sign." (Bull 2000: 104) Similar comments appear in my findings, as Jessie Chung, a 32-year-old playwright, agrees:

"When I'm riding the bus all the people around me are strangers. I don't want to talk to them and in fact I don't have to. Wearing headphones tells people I'm listening to music – I'm occupied by something at the moment. An invisible wall is built. It's the 'do not disturb' sign. The activity of reading suggests the same effect." (Jessie: interview number 04)

Jessie either reads or listens to music while she is on her way to work. In this way the use of the headphone is a kind of response to the modern city as a place of strangers. It marks boundaries in crowded social spaces. The headphone is used to focus the user's gaze and listening on the provided source of absorption, resulting in immersion in a private bubble, engaged in an individual soundscape. The user does not have to experience the city as a shared or collective social space. She assumes that people around her will consider her to be out of acoustic reach, hence she can establish her own privatized area.

¹⁸ Conversational preserve, according to Goffman, is defined as including "the right of a set of individuals once engaged in talk to have their circle protected from entrance and overhearing by others" (Goffman 1971: 64). See Goffman, E. (1971), *Relations In Public: Microstudies of the Public Order*, Penguin, Harmondsworth

In her writing Aural Postcard, Fran Tonkiss (2003) introduces the concept of “social deafness”, which is an attitude that flattens perception in the aural as in the visual realm; it gives us the fiction that people who speak to you on the street cannot be heard. (Tonkiss 2003: 304) She follows Georg Simmel’s idea of blasé attitude¹⁹, a lack of social cohesiveness and describes the deafness as “the pretence that you do not hear – a common conspiracy of silence – in this way is a response, passing as lack of response, to the modern city as a place of strangers”. This is perhaps a description of the individual’s strategy of signifying a void of communication, a way to retreat from the chaotic world of sound. The use of the headphone realizes this logic of separation and indifference perfectly and offers the users urban freedom. Users often reported that headphone-listening is a form of conversational preserve showing that communication in this situation is not available. If they are not interested in conversing, they simply put on the headphone and turn back to the music:

“Wearing a headphone is a kind of visual signal to my colleagues. During office hours, it’s hanging a ‘do not disturb’ or ‘leave me alone’ sign above my desk. It signifies no communication. In fact I’m not even listening to the headphones, I just use them to block out unimportant communications.” (Ron: interview number 05)

The user, Ron Lam (interview number 05) is a 26-year-old editor, working for a monthly lifestyle magazine. Her narrative aptly expresses Tonkiss’ idea of

¹⁹ Blasé attitude is the distancing and indifference caused by urban life, as a consequence of the rapid and fast-changing pace of life in the metropolis and the money economy. See Simmel, G. (1903), *The Metropolis and Mental Life*, in D. Frisby and M. Featherstone (eds.) (1997), *Simmel on Culture*, London: Sage, pp. 174 -185

“conspiracy of silence”. She pretends to be deaf at the moment when she is working, giving others a “lack of response”. As a magazine editor, she often works under pressure to meet the deadline. She confesses that sometimes she even uses a headphone as a prop to fool her boss:

“Everybody in the office looks so busy but I’m still working slowly on my article. I just have no idea how to continue writing. I know my boss wants to rush me. So I pretend to be reading texts on the computer screen and listening to music, just pretending to be very concentrated. The headphone is just a prop indicating that I’m busy at the moment, as in ‘please do not disturb me’. But I’ll keep the volume low or even turn it off because I want to know what my boss or other colleagues are saying. Of course I pretend I can’t hear them. I believe many people use this strategy to eavesdrop on others’ conversations.” (Ron: interview number 05)

The user’s affecting to be enveloped by her own sonic world manifests her refusal of conversation and a way to avoid distraction. She knows that her supervisor and colleagues may simply pressure her without positive and practical support, so she refuses to be forced or hurried into finishing her article.

The headphone is quite often used as a prop in the workplace. Viola (interview number 07) is a 26-year-old teacher who pretends to be deaf in order to avoid disturbance:

“Yesterday I taught classes for 6 hours. During the one-hour lunch break, I locked my door, put on headphones and watched a DVD in the office.

Suddenly I heard someone knocking on my door. But I felt too tired and exhausted after the classes to answer it, and I really didn't want to deal with any more student matters. I just pretended I was completely wrapped up inside the headphone and couldn't hear the knocking. I know the student could see me clearly with my headphone on through the transparent window.” (Viola: interview number 07)

Sometimes physical barriers are not sufficient to build a defensive shield for the user, so the use of the headphone can intensify the effect of isolation, protected from intrusion. Some headphone users also pretend to be deaf at home. Kevin (interview number 10), a 20-year-old student who lives with his family, sometimes uses headphone-listening to avoid communication:

“We got a new vacuum cleaner last week. My mom keeps asking me how to use the new appliance. I have already showed her many times, but she still depends on me. So I put on my headphone or pick up my phone, pretending I can't hear her.” (Kevin: interview number 10)

Another respondent, Vivian (interview number 01), employs a similar tactic to avoid conversation:

“I won't join the conversation unless I find the topic interesting. Otherwise I'll just keep listening to music.” (Vivian: interview number 01)

Conversely, listening through only one earphone is a sign of allowing communication. Coco (interview number 06) started working as a junior art director in an advertising firm only one month ago. All her colleagues listen to music or radio through headphones, but she doesn't opt for the immersive experience because

she is too embarrassed to give the impression that she is not able to hear or unwilling to communicate:

“I listen to MP3s during office hours, but I take out one earphone. I think I should keep myself alert and ready all the time. It is quite impolite if you can’t hear people calling you, especially your boss. I don’t want to be fired so soon!” (Coco: interview number 06)

In addition to blocking unwanted sounds, headphone use is often seen as a refusal to interact and communicate. In this section we have shown that headphone-listening can be considered as:

- a “do not disturb” sign, i.e. a strategy to signify a void of communication;
- a prop to avoid distractions or to eavesdrop on others’ conversations;
- an anti-conversation deterrent.

Sometimes users pretend they are preoccupied with headphone-listening on the street, at work or at home. The refusal is not always a simple refusal to communicate; it can also be a prop for make-believe activities. Thus it alters and transforms the way we interact with each other.

4.4 Shifting Between Two Worlds

Most of the examples discussed up to now have demonstrated how people use the headphone to navigate through public or domestic spaces in isolation, or to deal with unwanted interruptions. The technological tool’s wrap-around effect seems to give the headphone user the impression that he or she is at the center of the universe. This

phenomenon tends towards solipsism as the user refigures the city as nonessential and peripheral to his or her individual centrality. Popular criticism of the headphone-listening activity often uses words or expressions such as unwillingness to communicate, egocentric, narcissistic, solipsistic, autistic, isolation, alienation, withdrawn, and so forth. It results in a distinction between the “out-there” and “in-here”, so that the auditory experience distinguishes itself from the city as an ambient soundscape, not a process that the user is also a part of. The user then becomes an external observer of the world he or she inhabits.

However these negative judgments do not always match up with the empirical findings of our audience research. Our study shows that the user’s imaginary inner world does not contrast negatively with the surrounding world, and that the notion of listening as a private, distinct sense is situated within the public space and the social world. The following analysis offers another perspective on the relationship between two worlds – “the world in the head of the user” and “the world in which this takes place.” (Bull 2000: 80)²⁰ Instead of blocking out all unwanted noise or avoiding any intrusion, headphone-listening transforms users’ auditory experience by superimposing their own familiar soundscape (e.g. the music) onto the unfamiliar soundscape (environmental sounds), which merges the two sonic worlds and forms a new soundscape. The users do not disconnect from the world; rather, they combine and overlap sounds from different sources, producing a multi-layered mixture. Alternatively, but not in contradiction to the previous observation, headphone users extend their discrete listening spaces to create an auditory field at the very intersection between the “inner” and “outer” sounds. On one hand, users

²⁰ Here I make no implication or referral to the philosophical definition of “World”.

perform the activity of listening or simply use the material artifact as a signal to refuse conversation; on the other hand, they keep their ears open to their surroundings:

“I just want to cancel out part of the traffic noise. I don’t want to be completely deaf to the world, so I keep the music quiet (...) in order to allow myself to switch between the inner world and the external world, that is, between the music and the location sound.” (Duncan: interview number 08)

Interestingly, most respondents admitted to switching their attention to sound from the outer world even while still wearing the headphone. Headphone mediation not only pumps sounds into the ears, replacing external sounds with internal sounds, it also mixes them together. Schönhammer’s investigation on the Walkman studies the senses by taking into account both the “outside” and the “inside” perspective (1989). Jean-Paul Thibaud (2003) also raises a question concerning the relationship between technologically-mediated experience and unmediated forms of direct experience. According to his analysis on walking through the city to the sound of music, headphone-listening allows us to map a unique overlapped auditory experience and to transcend space through the interference between internal and external sonic space, thereby developing an “interphonic knot”, i.e. the convergence of two sonic spaces:

“Listening to headphones creates powerful and complex links with the characteristics of the urban milieu. The walking listener enters into a relationship with the urban environment – sonic, built and visual – by

experiencing situations of interference, in other words, situations in which different types of space-time connect.” (2003: 335)

Thibaud (2003) notices the importance of the experience of interference and asserts the tactics applied by Walkman users within the urban milieu. He points out that “the listener voluntarily goes from listening to headphones to listening to the city by intentionally increasing the permeability of his earphones.” (2003: 335). This observation indicates that users are not entirely disconnected from the urban environment. Rather, a balance is created between what the user hears and the sounds the user walks through in the city. Although headphone users seem to be absorbed or enveloped by the inner sound of their Walkman or other equipment, they are in fact able to manage the auditory experience between different soundscapes:

“I might be concentrating on the music at this moment and shifting my attention to the environment at the next.” (Kevin: interview number 10)

The headphone may allow users to lose a certain degree of contact with the world, but it also allows them to transcend space through the transformation of the aural experience and interfere between internal and external sonic space, thus developing a new level of auditory experience. The simultaneous experience of shifting between two sonic worlds can be represented by the Gestalt theory concepts of “figure” versus “ground”. At one point the listener is conscious of the music as a figure against background noise, but at another point he shifts the ground to become figure. Thibaud refers this case to “sonic interchange” (Thibaud 2003: 334). He continues:

“Outside voices, perceived as sonic background, can suddenly mask the musical emission and show up in the foreground.” (ibid)

“I don’t pump the music up to an intense volume. I adjust it neither too loud nor too soft. Sometimes I’m relatively less concerned about my surroundings. But sometimes I consciously shift my attention to the external sound and just ignore the music.” (Coco: interview number 06)

Headphone listeners often admitted that they cannot give their full attention to the music while walking in the street. Instead they maintain it at a balanced volume so that they can continue shifting their attention from one sonic space to another, irregularly changing focus between the music and the environment. Therefore the figure-ground relationship can be voluntarily reversed at any moment.

We know that increasing the sound volume or using a better-quality headphone could greatly improve noise cancellation. Headphone listeners could simply live within their inner auditory world, individualistically and solipsistically. So why do users prefer to reduce the headphone effect of noise cancellation, and instead shift between the two sonic worlds of their superimposed soundscape?

One reason to keep both sonic worlds audible may be due to the feeling of insecurity and alienation in everyday life. Headphone use separates the sense of hearing from the other senses and therefore establishes a disjunction between the visible and the audible. Users often experience discomfort in being totally immersed in music in a public setting. Hence they prefer to only partially listen to the music:

“Things keep happening and changing. Blocking out the environment sound makes me feel unsafe. I always keep the music volume at a relatively low level so that I can still hear environmental sounds. I admit that it is fairly difficult to hear all the details of the sound at such a low volume, but I feel safer when I’m in a public, especially when I’m wandering along a busy street.” (Vivian: interview number 01)

People feel uncomfortable totally submerged their inner sonic world, especially when they are walking in a city of strangers. For these users, the city harbors an anonymous danger. They may even find it difficult to navigate a once-familiar space, which suddenly becomes surreal when they are acoustically separated from it. Headphone users’ strategy to deal with this sense of insecurity in daily life is to adjust the volume to a low level, in order to enable a voluntary change of focus between the two sonic worlds. Although they appear to be using the headphone to resist the noise of the city, they keep their ears open to the sounds of their environment. The “invisible wall” metaphor is indeed a “window” – an open ear to one’s surroundings in the geographical space of experience. If the inner soundscape produced by headphone-listening dominates and completely replaces their environmental soundscape, the ordinary experience they attribute to everyday life is de-familiarized, as visual and auditory signals no longer correspond. This disjunction of sound and vision in geographical space confuses the users’ perception of their surroundings. But meanwhile it results in another interesting phenomenon. Although wearing the headphone in public unbalances the relationship between vision and sound, it also produces new ways of experiencing the city. So what does

the world look like through this metaphoric window to the headphone-listener? One possible experience is expressed in the following excerpt from an interview with a female headphone user:

“Listening on the move creates a filmic experience. When I see things and when I have my headphone on, the visual information and the audio information seem to merge together like a movie scene with a musical soundtrack. Moreover, the external sound becomes part of the inner sound. I can hear the music from the earphones combined with the sound of walking in high-heeled shoes or the signal of the train doors closing. It somehow reminds me of Taiwanese films by Tsai Ming Liang.” (Ron: interview number 05)

This user’s description reflects an important aspect of the combination of inner and outer soundscape and the altered relationship between herself and the world around her. Headphone-listening results in a very different picture of the urban experience.

“When I have my headphone on I see things more colorfully and vividly. It has nothing to do with the type of music. Rather it comes from the mixture of music and noise that generates a new experience of city life. It frees me from ordinary physical engagement and contact with the social world.” (Coco: interview number 06)

Rather than degrading the auditory experience of the environment, headphone-listening mixes two sonic worlds and creates a new, superimposed soundscape that re-orientates the user’s experience of the world. The intersection of the “inner” and the “outer” modifies our connection to the world in an unfamiliar way, going beyond

the division between involved participation and detached observation. This mixed, superimposed sonic experience is created through the overlapping of different soundscapes.

In the previous section we examined the headphone as a technological artifact to block out unwanted sounds from the outside world and replace them with an alternative soundscape, which is more immediate and subject to greater personal control. The empirical data in this section indicates that its function is not simply a direct replacement. Although people do listen through headphones as a defense against environmental interruptions, they tend to keep their ears alert to ambient noise, opening a “window” in the “invisible wall”. As Thibaud (2003) observes, the listener “voluntarily goes from listening to headphones to listening to the city by intentionally increasing the permeability of his earphone” (2003: 335). The use of the headphone can be considered as:

- a generator to form new soundscapes by superimposing inner and outer sounds;
- a new way of transforming impressions of the urban environment, thereby developing an unnatural but fresh experience that gives new meaning to the familiar city;
- a control switch which allows users to shift between sonic worlds.

By only partially filtering out their geographic acoustic environment, users benefit from manifold layers of sound, living simultaneously in two sonic worlds.

4.5 Collaboration Between Senses

Besides lowering the sound volume, wearing a single earphone is another strategy to gain a similar effect of superposition, which suggests a collaborative sense of hearing through two individual ears. Manda (interview number 03) is a 24-year-old female who works as a hotel-room booking agent in Hong Kong. Her daily job duty is to answer phone calls from customers or travel agencies regarding hotel reservations. Due to the large number of phone enquiries, all booking officers wear a headset, which includes a single earphone plus a microphone connected to the static phone system. It allows the staff to work with both hands free during their tele-conversations. Because of this intensive use of a single earphone during office hours, approximately from 9am to 6pm every day for over four years, Manda and her colleagues are trained to divide their hearing in two – one focused on the phone conversation through the mono earphone, and the other listening to the environmental sound. As they have been trained to perceive sounds distinctly, Manda claims she can distinguish between sound sources coming from either her surroundings or the headphone, and she seldom confuses the two. This is undoubtedly the result of the acute attentiveness demanded by her profession:

“When I’m wearing my headset, I pay even more attention to my surroundings, for example, my colleagues might call my name. I become even more sensitive to environmental sound precisely because one of my ears is occupied by the headphone. On one side I concentrate on the tele-conversation and on the other I pay attention to what’s going on around me.”

(Manda: interview number 03)

Manda's experience is another empirical example of Thibaud's "interphonic knot" concerning the relationship between technologically-mediated experience and unmediated forms of direct experience. But her superposed auditory experience suggests an interesting and more complicated phenomenon of headphone-listening. Unlike the previous interview excerpts that suggest a fusion of two sonic worlds into one, Manda keeps the two sonic spaces clearly distinct. She does not simply merge or overlap her outer and inner auditory experience, because the sounds come from different sources and provide different information. In this case the headphone user is very conscious of the distinction between different soundscapes. Likewise, today some business people wear a Bluetooth headphone all the time, whether they are walking on the street or having a meeting in their office. Their headset and their body become one. Ivan Tong, a 35-year-old insurance agent, is always equipped with his wireless headphone on the move:

"I'm not wearing the headphone for music or for fashion. I don't even take it off when I'm not talking on the phone. It's just so convenient to have the headphone on all the time just to make sure that I don't miss a call." (Ivan Tong: interview number 02)

In the noisy city streets, it is not uncommon for people to miss incoming calls on their mobile phone because they couldn't hear it ring. Donning a headset is one way to stay connected. Switching the mobile phone to vibrating mode, thus converting the auditory sense to tactile sense, is another option for ensuring instant mobile connectivity anywhere, anytime. With the development of mobile phones equipped with Bluetooth technology, increasingly more users are wearing a wireless headset

on their ears during all their waking hours. Here the headphone is an interactive artifact designed to fit the human body as it moves about freely.

From Manda's response, she prefers not to be fully absorbed by headphone-listening. Her two ears are open to input from two different sound sources. She intends to keep a close contact with her environment, especially in the working place or even at home:

“When I listen to music at home, I prefer to keep one ear open to my surroundings, just like in the office. If I'm completely absorbed in the music, I can't respond to my family members. I don't want to isolate myself. I don't want to be alone.” (Manda: interview number 03)

Manda's headphone-listening habits also differ from criticism of personal music-listening as anti-social and self-isolating behavior in the domestic space. Even at home, Manda prefers to wear only one earphone so that she can still communicate with her family members. Alternatively, she sometimes wears stereo earphones when she listens to music in the city, because she desires to be completely deaf to the world:

“I sometimes prefer to pump up the volume to the maximum level when I'm listening to music in street or on the way to work because I hate city noise. But I have to make sure I can be reached anytime. So I first switch my mobile phone to vibrating mode, before immersing myself in my MP3 world. Then I don't have to care about anything.” (Manda: interview number 03)

She has the option to close the metaphoric window and complete the invisible wall, or to keep an ear open to the environment. The loud music allows her to successfully ignore her environmental soundscape, however she insists on staying connected by switching her mobile phone to vibrating mode. She replaces the ambient noise so as to make herself available only to her preferred signals: music and incoming phone calls. But as soon as she needs to be aware of her surroundings, she takes one headphone off to let the outer sound in:

“Although my ears are fully occupied by the music, I still keep my eyes open to cross the street. I try to judge the traffic with my sense of sight. But I will definitely pull one earphone out if necessary.” (Manda: interview number 03)

Even though she seems to be fully occupied by headphone-listening, she depends on her eyesight to be alert to her surroundings. Visual perception, according to the user, is another metaphoric window. The disjunction between sounds heard through headphones and the user’s perception of the real world can sometimes result in greater visual awareness. In other words, decreased sense of hearing is compensated by acute sense of sight.

“When my ears are covered by the headphone, I depend on my eyes to watch the traffic in the street.” (Nick: interview number 09)

Other respondents also believed that their sense of sight is heightened by their lowered sense of hearing, and that the senses do not all necessarily function at the same level. Yet another case study represents the contrary. Jessie Chung (interview number 04), a 32-year-old female who graduated from a drama school and currently works as a playwright, apprehends her surroundings through all her senses. From her

training in acting and writing, she has learned to keep all her senses open to her environment:

“I can’t just rely on my sight. I perceive the world with all my senses. If I turn up the sound volume while I’m on the move, I seem to lose all my senses.” (Jessie: interview number 04)

If she loses her sense of hearing, she feels as if all the other senses go with it. She believes that both visual and aural perception provide useful information for her to respond to her surroundings. She continues,

“When I’m in a fixed location such as on the bus, I turn the volume up a bit. But when I’m on the street I adjust the volume to a level where I’m able to hear the traffic. If I go to a place that I’m not familiar with, or a busy district like Mong Kok, I simply turn the music off.” (Jessie: interview number 04)

As previously noted, being enveloped by a pair of stereo headphones suggests a sense of insecurity due to a compromised sense of hearing. Users prefer to keep the volume low or even turn it off in order to allow external sounds to penetrate their sphere of hearing. They develop different skills and listening habits to deal with their unfamiliar relationship to the world.

The above comments suggest that different senses work together, not as independent systems. As a change in one type of sensory input affects the other senses, it is difficult to separate them. In a case study of the museum audio guide, respondents said that auditory sense helps them to see more:

“I wouldn’t just stand still staring at those ancient stones or paintings because I feel uncomfortable in a place that is so silent you can hear yourself

breathing. And I don't like reading the written description on a small caption. Normally I would spend just a few seconds on each display. Using the audio guide, I'll spend a longer time focusing on the exhibited works. It leads me to see them in chronological order, helps me to understand the historical background and even stories about the artworks, and directs me from one place to another. The auditory information provided by the audio guide helps me to see more." (Vivian: interview number 01)

Our sense of hearing always helps us to further investigate an area to which we have been alerted. The auditory experience is not only an experience of hearing, but a whole-body experience. Senses work together to tell our body about our environment.

Headphone-listening multiplies and complicates our auditory experience.

Headphone use can be considered as:

- a boost to reinforce the effect of disjunction between the visible and the audible;
- a training method that directs users to pay more attention to auditory experience as well as to perceive differently;
- a simulator which collaborates different senses;
- a guide to other senses.

The perceptive field of the headphone listener is varies according to the level of engagement, ranging from complete immersion in one's preferred sound to being one with the environment. Users can shift their attention from a distinct, occupied

sense of hearing to being attentive to their surroundings with a more holistic perception of all the senses.

4.6 Listening, or Not listening

Long before the headphone adventures of portable listening, hearing tubes were a common alternative to horns on the early phonograph, which intended to increase the volume of relatively quiet mechanical instruments and provide a better acoustic setting for the listeners. Stethoscopes, the hearing tubes in medical use, were a device that physicians used to concentrate their hearing on a particular place and de-emphasize other sounds. Clearly, one of the fundamental features of the headphone is focused listening:

“With the aid of the headphone I can hear the composition of the music and the lyrics better.” (Vivian: interview number 01)

“Once I borrowed the DVD movie ‘Rent’ from my friend. I went to the library and asked the librarian for a headphone and a key for the video player. It was my first experience using a headphone to watch a movie and I found it really made a difference in that quiet environment. I could hear the acoustic details very well. It was relatively easier to grasp the dialogues without subtitles.” (Jessie: interview number 04)

“I often use a headphone to listen to music before I go to bed. Usually I enjoy being enveloped by music at night. Within a relatively silent

environment, I can listen to all the details of my favorite songs. In the daytime I don't think I'm really listening to the songs while on the move.”

(Coco: interview number 06)

From the above accounts, we find that listening intentions depend on the place, purpose and atmosphere in which the headphone is used. Paradoxically, while the headphone is frequently used for private and separate listening, headphone users often do not really concentrate on the sound. Most respondents said that sometimes they are not really “listening” to the sound from the headphone. Meanwhile they do not shift their attention to the external world either. So what are they listening to?

Human ears are often portrayed as passive and indefensible. They accept every noise continuously and indiscriminately, “always in operation, unreflectively, accumulative, and naively open to even the most harmful or loud, high, or concussive sounds.” (Schwartz 2003: 487) Seemingly they lack the most rudimentary of defenses compared with other senses. It is easier and more effective to shut your eyes than it is to cover your ears. But our ears are not so vulnerable and helpless. In the beginning of his work Open Ears, Schafer stresses that “we have no ear lids. We are condemned to listen. But this does not mean our ears are always open.” (Schafer 2003: 25). Likewise, in The Indefensible Ear: A History, Schwartz advocates that the human ear “had to do active duty as bodyguard, herald, explorer and confidant” (2003: 493). As he asserts, it is an active agent. The effect of juxtaposition has already demonstrated that the human ear is capable of shifting its attention consciously from one soundscape to another or of voluntarily merging the

two sonic worlds. Some headphone users even push the auditory experience to the extreme: sound goes *unheard*.

“Most often my mind just goes a complete blank. I don’t think I’m really listening to the music. In fact I can hear nothing. I just have the headphone on and keep walking. I receive no information from the songs. I just cannot recall the melodies.” (Coco: interview number 06)

This user’s account suggests that one can listen without truly hearing. Sound is a kind of background to her. Some respondents say that they rarely “listen”, as sound is reduced to aural wallpaper, an accompaniment to other activities such as studying and reading, surfing the Internet, or doing household tasks. They are to a certain extent detached from the listening activity itself because headphone-listening becomes a habitual accessory to their everyday life:

“Just as when you walk home every day, you never take notice of your surroundings. You just keep walking and you don’t see or hear anything. Like a dummy, a walking body. All your senses just follow the routine activity, nothing more.” (Duncan: interview number 08)

Due to the portability and daily routine use of the headphone, users seldom give their full attention to their preferred inner sounds because the activity of headphone-listening has already become so mundane. They simply wear the headphone wherever they are:

“The activity of music-listening has become part of the daily behavior I take for granted. Wearing the headphone to fill my ears with music is simply something that I do every day. I don’t really concentrate on the content. I

only hear fragments, even though I've turned the volume to a certain level. I guess, most of the time I'm not listening to it." (Viola: interview number 07)

Music is heard, but no matter how clear it may be, the listener does not pay attention to the sound quality or details. The following excerpt from another respondent provides an interesting account on the unimportance of headphone sound quality in comparison with loudspeakers:

"I don't really care about the sound quality, as long as it is not so bad. When you buy a new hi-fi audio system, you usually care about the sound quality. The salesman will play loud music to demonstrate the sound quality and compare with other brands and models. But when you buy a new MP3 player, you're more concerned about the size of the player, its appearance and storage space. Most likely it's because you don't really care and you don't expect much sound quality from a pair of tiny earphones." (Ivan: interview number 02)

The unimportance of the sound quality reflects the true nature of headphone-listening as being simply routine. Of course some headphone users do buy large, high-quality headphones, but to most, sound quality is not essential:

"The sound quality of the headphone is not that important. So I don't mind using an iPod or a mobile phone to listen to music. It really doesn't matter." (Coco: interview number 06)

"In the past I used a rear-wear headphone. Now I use the tiny earphones. I didn't particularly choose this type of earphones, I just use them because

they come free with the iPod mini. I don't care about the sound quality, so I haven't thought about buying a new pair of headphones." (Viola: interview number 07)

The phenomenon of shifting between two sonic worlds implies the intentionality of listening. Headphone users can switch their attention from the inner soundscape to the outer one or mix the two into one; they can also just wear the headphone as a daily habit to shut the ears up. The headphone can thus be considered as:

- an aural wallpaper;
- a habitual companion.

Widely varying levels of engagement generate different typologies of headphone experiences.

4.7 Conclusion

Rather than standardizing a common theory on the use of technology from an analytical approach, these users' accounts of their daily uses of the headphone help us to understand and reconsider the headphone experience in nature as well as in culture. The headphone should not be reduced to the status of a simple detachable technological tool, as it seems to be a vehicle on which people depend in order to enrich their auditory experience or to retreat into their own "silence". It is more than a reliable remedy for the ear. Its innate ability to offer the experience of privatization was initially designed to form a focused, separate auditory experience and prevent,

avoid or mask unpleasant distractions. More than that, the headphone acts as a “primary earshell”²¹ that wraps up, controls, filters and generates sonic worlds. It transforms the way users respond to the world they live in. To sum up, the typologies of headphone uses are described in the following table:

1. Constructing personal space for oneself	<ul style="list-style-type: none"> ▪ Filtering out the noisy environment and generating a sense of silence; ▪ Formulating an invisible privatized shelter enabling users to create intimate and manageable spaces, as a means to escape from any geographical soundscape; ▪ Consisting of an individual activity or entertainment and providing a privatized space for personal auditory choices; ▪ Protecting others from disturbance.
2. Interacting with people	<ul style="list-style-type: none"> ▪ Deterring conversation, creating a void of communication; ▪ Using as a prop for make-believe activities; ▪ Intensifying the effect of isolation when physical barriers are not adequate to provide a protective shield for the user.
3. Interacting with the environment	<ul style="list-style-type: none"> ▪ Blocking out unwanted sounds while reserving a space for sounds of the environment;

²¹ Thibaud suggested the term “primary earshell” to describe headphones. He believes that the headphone is seen as an envelope that can be part of the passer-by’s listening condition, but can also be removed anytime. (Thibaud 2003: 340),

	<ul style="list-style-type: none"> ▪ Shifting between figure and ground, sonically interchangeable; ▪ Interchanging perceptual orientation from one sonic world to another; ▪ Merging multiple soundscapes into one and generating a superimposed mixture.
4. Collaborating with other senses	<ul style="list-style-type: none"> ▪ Establishing a disjunction between the visible and the audible; ▪ De-familiarizing the daily routine and adding new meanings to the environment; ▪ Training to be more attentive to other senses in compensation for reduced hearing of environment sound; ▪ Training to perceive different sound sources distinctly.
5. Accompanying everyday habits	<ul style="list-style-type: none"> ▪ Offering choices of listening; ▪ Listening as a routine practice, a habitual accompaniment in everyday life; ▪ Shifting attention modes, even if all sounds are ignored or unnoticed.

In this chapter the empirical data collected from interviews has exemplified the actual uses of the headphone in everyday life. The next chapter will focus on the

potential uses of the headphone as applied to media art works. Some artists have developed alternatives to already existing headphone uses, thereby facilitating and contributing to the creation of other possible headphone experiences in the new media environment.

Chapter 5: Potential Uses of the Headphone in the New Media Environment

5.1 Introduction

When British artist Susan Collins' artwork *AudioZone* was exhibited in Glasgow, the audience was asked to wear an infrared headphone as they walked around the exhibition space. However, "the desk staff who issued the headphones quickly noticed a common misconception among the audience, so carefully explained to each person that it was not 'a guide to the exhibition.'" (Graham and Cook 2001) Given the headphone's practical use in the exhibition space, the audience assumed that it was just "a guide to the exhibition."²² Actually Collins uses the headphone as an integral part of the artwork, taking advantage of its unique characteristic as a medium connecting physical and virtual space. Beryl Graham and Sarah Cook (2001) present some key information and debates regarding the curation of new media art, both on the Web and in conventional gallery spaces. They observe that "on seeing a piece of new technology in a gallery or museum, a member of the public is justifiably likely to assume that it is some kind of interpretative aid rather than an artwork in itself." (ibid) It is true that our preconceptions of the ordinary uses of technology often restrict us from exploring the broader range of experiences made possible by that device.

²² Ironically, the instructions for Collins' work were written and supplied by the company Acoustiguide, which produces taped guides for many museums and galleries.

The headphone has been developing over two centuries, from the early mediator of auscultation (as explained by Sterne in the use of the stethoscope in 1816) to today's telecommunication, reproduction and simulation. Yet it has often been regarded as a supporting element to accompany media gadgets. It is also considered a nonessential substitute for loudspeakers in existing works of art, especially when there are several video displays with sound elements sharing one limited exhibition space. We somehow neglect or overlook the headphone's potential.

So how can we free ourselves from our prejudices? How can we further explore the pioneering study of headphone-listening combined with its corresponding auditory experience? What new forms of action or interaction can be explored in the domain of new media? Looking at examples of artworks and innovative media systems is one way to reveal and understand the typologies of potential headphone uses in terms of privatized auditory experience in public gallery space as well as in the city. Instead of merely identifying what advanced technological gadget can be applied to art and technology, it is crucial to review the established technology and seriously reflect on its contribution to the new media environment. We should also examine how the headphone is actually transformed from an instrument that accompanies new technologies into the very centerpiece of the artwork, just as in Susan Collins' *AudioZone*.

The previous section investigated most applications of everyday headphone use. The following section highlights four major aspects of potential headphone uses in new media applications. In general, it emphasizes (1) the dislocation of sound, (2) pluralization of space, (3) exploration of sense of direction, and (4) analysis of the auditory experience as related to perception, action and environment.

5.2 Dislocation of Sound and Pluralization of Place

Sound design plays an important role in generating a sense or a simulation of space and place. In traditional media, for example in narrative cinema, sound is a carefully designed element that supports the visuals, sustains the atmosphere and contributes to a more holistic experience. By applying specific criteria to setting the volume of the space as well as the position of the sound source, hearing well-designed surround-sound in a dark auditorium with huge projections creates a shared, realistic experience of immersion. In this type of use, sound has a very strong connection to the visual images on the screen and reinforces the relationship between the audience and the projected virtual space. The immersive effect is accomplished by the synchronization²³ of video and audio, while a new mode of perception emerges from the disconnection of image and sound.

Sound can be manipulated to simulate another space that is not attached to the visual information situating the particular space and time. Before the advent of reproductive sound technology, our soundscape was composed of live, acoustic

²³ Here synchronization is not limited to dialogue, but also to music and sound effects synchronized to the images.

sounds. As we listened to the sounds around us in the real world, we could determine with relative accuracy the source of each signal. We were aware not only of the location of the sound sources, but also of the type of acoustic environment that surrounded us. Today, however, our soundscape is composed of, according to Schafer, “unnatural”, mechanical sounds²⁴. The “unnatural” soundscape mediated by technology replaces the user’s environmental soundscape. Sound is no longer attached to its source. Vocal sound is “no longer tied to a hole in the head but is free to issue from anywhere in the landscape,” instead played at another space and time (Schafer 1977/1994: 90). This split effect between an original sound and its electro-acoustic reproduction, according to Schafer, is called a “schizophonic experience”. Simple recording technology can achieve this effect by splitting sound objects from their original physical context and projecting them into another context. This effect can be better achieved with the support of stereo headphones, which further remove any perceptual reference to actual environmental sound, thus making it easier for us to extend our auditory field. We can hear a sound from the past or a sound from a distant place, so near and yet so far – so near because the headphone is physically connected to our ear, so far because the sound we hear comes from the past (recorded sound) or from another place (telephonic technologies). The headphone extends intimate listening across distances and thus abolishes the distance itself. It also demonstrates the concept of sound dislocation in space and time.

²⁴ Schafer notes that the three most revolutionary sound mechanisms of the electric revolution were telephony, phonography and radio. With these technologies, sound was no longer tied to its original point in space and time (1994: 89). In each case, sound is always in close proximity to the listener. His critiques are relatively unenthusiastic, focusing on the negative side of the situation. In contrast, I believe that the use of electro-acoustical equipment helps to advance and expand our auditory experience.

This detached, out-of-sync effect has often been applied to media-art installations in order to create another space parallel to the gallery space. The Japanese artist Akitsugu Maebayashi's *4 Pieces for Object, Sound, Space and Body – Radio, Window, Metronome, Darkness*²⁵ is one example (see fig. 1). The work consisted of a headphone that provided a three-dimensional world composed of pre-recorded sounds. As visitors entered the room, sat down and put on the headphones, they began to hear sounds from a live radio program, giving visitors the impression that the sound was coming from the radio that was on the table in front of them. But then they began to hear sounds of leaves rustling on the floor, of trees moving outside the room. The recorded sound was carefully designed to guide the visitor on a virtual trip to another space – a parallel universe to the gallery space where the visitor was physically located.

Maebayashi's work is a simple but obvious example to illustrate the use of dislocation of sound in the exhibition environment. The headphone was used to transmit 3D sound directly into the visitors' ears without interruption, resulting in a sense of precise spatial location. The separation of sound and source implied that "what you see is *not* what you hear". The installation offered visitors the possibility of feeling they were situated in a place defined by what they heard, a place that actually replaced the physical space of their geographical location. It clearly demonstrated the perception of simultaneously being in two spaces.

²⁵ Akitsugu Maebayashi's sound installation *4 Pieces for Object, Sound, Space and Body – Radio, Window, Metronome, Darkness* was exhibited at NTT ICC Museum in Tokyo in 2005.

While Maebayashi's work doubled the space and split the experience into a physical location and the unseen sonic space, Australian artist Nigel Helyer used the Global Positioning System (GPS) with a headphone to develop a project called *Sonic Landscapes*²⁶ that offers the possibility of mismatching sound and image to explore the idea of pluralizing space in a site-specific location. Instead of exhibiting the artwork in a gallery space, the piece was installed in St. Stephens's graveyard in Newtown, one of the oldest gothic graveyards in Sydney (see fig. 2). Using a number of 3D sound bytes mapped to the location of objects in the actual geographical space, Helyer's goal was to demonstrate a system that allowed a user to wander through physical space while experiencing an acoustic simulation of another environment. In *Sonic Landscapes*, 3D audio was site-specifically designed and employed to create a sense of virtual space juxtaposed onto the actual geographical location. On one hand it gave the impression that the sounds came from the physical space, as with the radio in Maebayashi's work; on the other hand it confused the auditory experience and injected additional sounds and meanings into their visit of the historical cemetery. The result was an intriguing uncertainty between the actual and the virtual. As described by the artist, "a plane flies overhead, yet there are no planes in the sky. A horse gallops by, but there is no horse. It becomes difficult to distinguish between what is real and what is part of the virtual audio world." The

²⁶ *Sonic Landscapes* (1999-2001) is an advanced research and development project conducted between Sydney artist Nigel Helyer and Lake Technology Ltd., with technical assistance from the University of New South Wales' Satellite Navigation and Positioning Group. See www.sonicobjects.com/index.php/projects/more/sonic_landscapes/

superposition of an extra soundscape can introduce new meaning to the physical environment.

Another site-specific project, *Walks*²⁷, a series of audio works developed by Canadian artist Janet Cardiff, is another example of using audio to create a virtual, fictional space in a particular location (see fig. 3). Cardiff is best known for her many site-specific audio and video works in which she uses pre-recorded sounds and images mixed with real locations to create an imaginary scene parallel to the actual world. Audiences are given a camcorder and a headphone, invited to view the video playback on a small screen and follow the artist's instructions through a particular site. Once the visitors arrive at the designated zones, they hear a carefully composed soundtrack through the headphone. Sounds such as voices, footsteps, gunshots, etc. make up a fictional narrative to accompany the actual walk. Visitors might hear someone running toward and past them, even though no such event is occurring in the physical space. Like *Sonic Landscapes*, Cardiff's *Walks* uses the binaural headphone's feature of sonic immersion to address the relationship between perception and reality.

While Maebayashi's work relies solely on sound to create a sense of space parallel to the actual location, *Sonic Landscapes* mixes artificial, "unnatural" sounds with ambient sound from the actual environment. The role of the headphone can be compared to that of an audiovisual mixer that assembles different inputs, including visual and aural data, from actual and virtual spaces, and then transmits the

²⁷ Janet Cardiff's series of audio walks is an ongoing project beginning with *The Forest Walk* in 1991.

synthesized output to the visitors' ears. Cardiff's *Walks* further investigates the fusion of real and unreal at an even higher level. Visitors not only deal with disembodied sounds reproduced via the binaural system, they actively engage with the complex mix resulting from their presence on site. The work explores the relationship between physical and virtual, presence and absence, perception and consciousness. The next section will further examine the use of the headphone to transmit 3D audio in order to generate a virtual environment.

5.3 Emphasis on the Aural Element in Virtual Simulation

Consisting of three video projectors, three sensors and eight sets of infrared wireless headphones, Susan Collins' *AudioZone*²⁸ can be considered to be a relatively primitive virtual-reality system in the gallery space. Three-dimensional audio is used to create a parallel universe inside the visitors' meads. As described at the beginning of this chapter, the headphone was often mistakenly regarded as a guide to the exhibition. Here the artist deliberately obfuscated and transformed the functionality of a common tool, making the ordinary use of the headphone a central component of her artwork within the exhibition space. Visitors were invited to collect the headphone at the entrance, listen to instructions given through the headphone and actively wander around the gallery in order to find the eight active zones. In one zone, the audio encouraged the visitor to sit down on the bench. Once the visitor was seated, a video-projected hand proceeded to caress the visitor's thighs, accompanied by surround-sounds of kissing. The visitor's body being caressed by the virtual hand

²⁸ *AudioZone* was originally commissioned by FACT (Foundation for Art and Creative Technologies), first exhibited in 1994 and subsequently shown in 1996. See www.susan-collins.net. Video documentation can be found at www.susan-collins.net/azone.mov

was then integrated into the projected image (see fig. 4 and 5). In another zone, a computer control button was projected enlarged onto the wall. The audio instruction invited visitors to press the button, which would then morph into a mouth, nipple or navel.

In the following paragraphs we will analyze Collins' work in several aspects: (1) the creation of auditory virtual reality; (2) the individual sonic world within the shared gallery space; (3) the dislocation of sound versus the connection of sounds and projected images; (4) the doubling of media space.

First, Collins' work follows Paul Sermon's famous telematic series of works²⁹, which explore the interaction between the visitor and the projected image, resulting in the remarkably intimate action of touching the projected body. While Sermon employs a teleconference mechanism and focuses on the quality of the video projection, Collins uses relatively simple and rough video clips but emphasizes the realistic simulation of 3D audio through the headphone experience. Traditionally virtual reality has been dominated by visual considerations mainly through graphic development. Perhaps video projection is typically adopted to map a virtual space to an actual location. Collins' project attempts to extend the concept of virtual space to the auditory realm. As previously noted, sound plays an important role in generating a sense or a simulation of space and place. 3D audio, further supported by an infrared headphone (instead of loudspeakers), was directly transmitted to visitors'

²⁹ Paul Sermon's works are live telematic video-conference installations linking remote participants together in a shared telepresent environment. Works include *Telematic Dreaming* (1992), *Telematic Vision* (1993) and *Telematic Séance* (1993).

ears to facilitate their privatized auditory experience within the public space. Furthermore, Collins' work was spread throughout several areas of the gallery. Visitors were required to wander through the exhibition space in search of specific areas, guided only by the wireless headphone, as opposed to the traditionally static relationship between audience and artwork in a fixed exhibition room. It also amplified the fluidity of the virtual place. This newly created parallel universe beyond the physical location succeeded in pluralizing space as well as experiences.

Second, *AudioZone* introduced audile technology that plays with the dynamic between private experience and public presence in the traditional environment of an art museum. As museums or galleries are generally considered public places for collective viewing, how can the audience's experience be broadened to include both privatized and shared experiences? The use of headphone-listening is one obvious attempt to address this question. While the video was projected on the gallery wall for all visitors to see, the audio was transmitted only to those visitors who had put the headphone on. Without the use of loudspeakers, only visitors wearing a headphone could hear the pre-recorded sounds of spoken instructions and sound effects such as kissing and breathing. They were expected to gather information from both audio and visual elements and conceive the full picture of the artwork accordingly. In short, visitors wearing a headphone experienced a plural environment, navigating between the private bubble of headphone-listening and the shared gallery exhibition, between virtual and real spaces.

Third, the sound in Collins' work was detached from its original source but maintained a strong connection to the projected images. The artist employed both images and 3D sounds to recreate the location and distance of the sound in a coherent acoustic environment. In one zone the visitor could pass the image of a female hand projected onto the ground, accompanied by seductive voices saying, "Don't step on it." As Schafer's "splitting experience" suggests, the voice was "no longer tied to a hole in the head", it was a recorded sound. Already the 3D audio of kissing and breathing was unquestionably no longer attached to its original sources. But the 3D audio transmitted by the headphone was capable of giving the sound a spatial location and offering an intimate, immersive auditory experience. According to Collins (2001), "the nature of 3D audio is such that the viewer may really feel the audio (e.g. the sound of breathing) as an apparently firsthand experience, and was used here with the intention of creating an audio trompe l'oeil, an illusion of a parallel reality." (Collins 2001: 25) The recorded 3D sound was realistic enough to trick people into thinking that the sounds were really there. The headphone transmission of sounds representing their original sources and corresponding to video projections suggested a more complex sense of space and pluralized audience experience.

Fourth, this privatized, separate listening facilitated visitors' co-presence in both the exhibition space and their personal sonic world. Paddy Scannell (1996), who presents an interesting analysis on the concept of media space, recognizes that in broadcasting technology, space is multiplied and pluralized. He terms this concept

“the doubling of place” – split into the geographical space of the users’ physical location and the space created by the technologically-mediated event. Shaun Moore (2004)³⁰ follows Scannell’s concept of the possibility of being simultaneously in two places and applies his model in the broader context of electronic media, from the telephone to the Internet. He notes that in the whole range of electronic media, space is pluralized in a sense that suggests the co-presence of two “theres.” In *AudioZone*, Collins brings this notion into the exhibition space. Enclosed into individually owned auditory fields, visitors simultaneously engaged with: the people and objects in the immediate physical environment, i.e. the actual gallery space, and the virtual world formed by the 3D audio and video projection. For example, in one zone the viewer was asked to sit on a bench while a video projection of a hand “touched” the viewer’s thighs to a soundtrack of 3D kissing sounds. Visitors heard sounds from a virtual sonic world transmitted via headphone while they responded to a hand caressing their bodies in the physical space of the room where they were sitting. This overlapping effect made their bodies part of the artwork, transforming the role of the visitors from observers to observed. As the 3D sound elements in Collins’ work were pre-recorded, visitors had very little control over the virtual space, unlike other sound installations that allow the participants to record sound, such as Theodore Watson’s *Audio Space*³¹ and Lalya Gaye and Margot Jacobs’ *Audiotag*³². In

³⁰ While accepting Scannell’s idea of “the doubling of place”, Moore (2004) draws critically on Joshua Meyrowitz’s thesis that television leaves us with “no sense of place”, emphasizing social roles and hierarchies. He believes that physical boundaries can be transcended by mediated communication (see Meyrowitz 1985).

³¹ *Audio Space* allows visitors to leave messages in specific locations within the gallery. Wearing a headset equipped with earphones and a microphone, visitors can hear the previous messages or record messages as an aural mark for others to discover. See www.muonics.net/site_docs/section.php?section=1&id=15

AudioZone, even though visitors could not contribute to the content of the images or sounds, the 3D audio gave the exhibition space a different meaning and transformed the gallery space into the stage of the work. For Collins, visitors could “orchestrate their own compositions” and “perform the work” (2001). They were both observers and performers.

In general, Collins’ work suggests the pluralizing of place, contributes to an increased transgression between collective and private, reality and virtual simulation. She manipulates the headphone to play a crucial role in enhancing the immersive effects of being in an imaginary world. It provides a means to conceptualize sonic spaces within the gallery that go beyond the actual geographical location. Nevertheless, the artist highlights the importance of auditory experience in the design of a virtual environment and introduces the possibility of pluralizing spaces and places. The next section will examine another potential use of headphone-listening in collaboration with 3D audio to navigate through space.

5.4 Navigating the City

For a long while our sense of sight has predominated in areas such as our everyday life, academic study and artistic creation, while the nature of the auditory experience tends to be overlooked by most commentators. Although the most revolutionary technological developments in the 18th and 19th centuries were keenly applied to audio use, such as the telephone, gramophone, radio, etc., our sense of hearing was

³² *Audio Tags* are left at hidden places in public spaces. Personal messages that have been previously recorded are whispered to passers-by as they lean toward it. People can also leave their own voice message recorded through a small microphone. See www.tii.se/reform/projects/pps/tejp/proto1.html

still perceived as relatively inferior to our visual experience. Most theoretical works on urban experience focus mainly on our sense of sight, for example in the works of Georg Simmel and Walter Benjamin. We are told by cultural critics and historians that the urban experience has been marked more visually than aurally in the hierarchy of the senses, especially in screen-based entertainment ranging from television to computer games. The virtual-reality system, as previously noted, has been dominated by visual considerations through the development of high-quality graphics. Even music is transcribed in musical notes, composed as a visual diagram. In this regard, it seems the sense of sight always takes priority over other senses.

Given the persistent visual bias in Western culture, our understanding of the world relies mainly on our visual sense; not only in the way we think in everyday situations, but also in the methods we deploy to communicate while navigating through the city. Generally we use a compass and map to find out where we are. With GPS technology we can track our position and direction through the use of any portable navigation device. The interface of the system is primarily composed of visual images: maps, routes, symbols such as arrows and dots, graphical representations or photos of landmarks, etc. All the information is communicated through the traditional Graphical User Interface (GUI), i.e. images appear on the color display. As suggested by Simon Holland, David R. Morse and Henrik Gedenryd, distance and direction are always the key information to navigate a person from one place to another, and this information is always represented in visual form:

“When using a GPS system for navigation, there are generally two essential pieces of information that have to be communicated to the user. First, the distance to the destination (or intermediate waypoint). Secondly, the direction in which the destination lies, relative to the current direction of movement or relative to the direction in which the user is facing. With a graphical user interface, the distance typically would be displayed numerically and the direction would be displayed by a compass bearing or arrow.” (Holland, Morse, Gedenryd. 2002: 254-255)

When visitors participated in Collins’ work, they followed instructions to search for specific zones. These instructions basically consisted of spoken words guiding the visitors to move toward the zones in order to perform specific tasks. Speech is perhaps the most evident solution to navigation, yet precise spoken instructions also require a high degree of attention. (Etter and Specht 2005: 43) Nevertheless, the spoken information still referred to the visual appearance of the signs and landmarks in the gallery space. The dominant mode of navigation remains visually based.

Therefore the visual-based navigation system is the most common in guiding people from one place to another. However, it has often been challenged as inappropriate in the dynamic mobile context of the city, as users must keep their eyes on both the device and the road ahead. (See Etter and Specht 2005; Holland, Morse, Gedenryd 2002) Using sound could be a novel navigational approach to overcome some of the drawbacks of the visual system. AudioGPS³³ is one prototype aimed primarily at visually-disabled users to navigate the city by sound. Using

³³ AudioGPS is a prototype audio user interface for GPS. Using a simple form of non-speech, spatial audio, the system allows mobile-computer users to perform a location task. See Holland, Morse, Gedenryd 2002.

neither visual information nor speech to communicate instructions, distance is indicated by the number of sonic pulses, and direction is indicated by a panning sound source. Since this scheme may not be so attractive to the average user, Richard Etter developed a wearable work called *Melodious Walkabout*³⁴ (see fig. 6), an auditory navigation system complemented by the AudioGPS concept. In comparison with AudioGPS, one important feature of Etter's work is that it employed the already familiar personal stereo, i.e. the navigation system could be used with any audio content. Etter aimed to explore ways in which one's own choice of music could be treated as a representation of direction and distance. He used headphone-listening under the guidance of spatial audio and non-speech navigation cues to represent the destination on the stereo sound stage. Without distracting their attention to maps, instructions, signs, landmarks, etc., users could simply continue moving toward the general direction of the perceived musical source. The volume of the sound would decrease towards zero as the user approached the destination.

Echoing the use of headphone-listening in everyday life, this system suggests a mediated and spatial auditory experience based on users' routine movement through the city at any geographical location. It allows users to listen to their own favorite music while "reading" the direction and distance of the destination. Since the system creates the illusion of the sound source reaching the user from the direction of the destination, the representation of direction and distance are mapped

³⁴ *Melodious Walkabout* consists of a Bluetooth GPS-receiver, PDA installed with Geographical Information System that calculates the direction and distance to the destination, and a stereo headphone. See www.richardetter.net/thesis.php. A similar idea can be found in Jones, Bradley, et al. [Navigation-by-Music for Pedestrians: an Initial Prototype and Evaluation](#), which also mentions *Melodious Walkabout*. See www.cs.swan.ac.uk/~csmatt/JonesetalMSIEv2.pdf

to the sound itself. The sound transmitted through the headphone is thus not mere audio content but a direct representation of the user's geographical context.

Melodious Walkabout also employs spatial audio through headphone-listening. It was not intended to create a sense of space; instead it creates a sense of direction while on the move. Users are surrounded by their personal soundtracks and guided by stereo effects transmitted through the binaural headphone. Other audile technology such as loudspeakers could not replace the use of the headphone, which offers an intimate auditory experience, assigning a specific directional context to each individual's personal soundtrack in order to guide them through space.

The examples discussed so far focus mainly on one of the dominant uses of the headphone in cooperation with spatial audio. The following examples have nothing to do with spatial audio. Segueing from Etter's attempt to replace the traditionally visual-based system with an aural one, the next cases continue to highlight the relationship between the two senses and further develop coordination between different perceptions and actions within the environment.

5.5 Listening with the Body

Senses are not independent systems. As mentioned briefly in the previous chapter compiling audience experiences, a change in one type of sensory input could affect another sense. The auditory experience is not only the experience of hearing, but also a holistic bodily experience, as explained by the examples below. The

interactive sound instrument *Sound-Lens*³⁵ developed by Toshio Iwai emphasizes privatized listening in response to physical motion and re-focuses the auditory experience among other senses (see fig. 7). *Sound-Lens* is a portable device consisting of a Walkman-like receiver and a stereo headphone that transforms visual information into audible sounds. As in Collins' *AudioZone*, the *Sound-Lens* installation was spread throughout the gallery space. Visitors were given the devices and invited to wander around the maze-like exhibition of corridors and rooms, where various frequencies of light sources were fixed to the walls and ceilings. When the receiver lens was held up to the lights, an assortment of sounds was transmitted through the headphone. Through a process of *sonification* – transforming sound to visual data, or converting inaudible, visual elements into audible sound, *Sound-Lens* translated various frequencies of light into real-time sound output for an unusual and inspiring sensorial experience. The work can be analyzed from the following perspectives: (1) re-prioritizing the sense of hearing and suggesting a fusion of senses; and (2) reaffirming the links between perception, action and environment.

First, Iwai's *Sound-Lens* helped us to re-emphasize our auditory experience within the visual culture. It was a fundamental challenge to the conventional superiority of vision. By converting the visual data into audible sounds, the audience "listened" to different regions of the exhibition's visual composition. However the installation did not neglect the significance of the visual experience. The artist's original intention was not to replace the sense of sight but to call attention to the

³⁵ *Sound-Lens* was developed in 2001. See www2.gol.com/users/iwai/PS1data/SOUND-LENS.html

artistic fusion of light and sound, i.e. to integrate the two senses of sight and sound. *Sound-Lens* proposed a different way of understanding the world through the collaboration of the senses. Furthermore, the artwork suggests that if our eyes and ears were able to perceive ultrasounds and electric waves, it would open up a whole other world of perception. When we listen to light through the mediation of *Sound-Lens*, our sensory organs enter another dimension, allowing us to experience the world from a totally different perspective.

Second, *Sound-Lens* is not limited to simply reintroducing audio to our visual experience. Visitors' perception of the work relies not only on seeing and hearing, but also on the physical movement of the body. Instead of listening to pre-recorded music or other audio content, visitors are invited to use the handheld device to actively discover different soundscapes within the exhibition space. In this way, visitors interact with the soundscape through their physical motions. The action of holding up the device to a light source triggers the composition of a new piece of music. In this sense, the device and the specific lighting installed in the gallery can be considered part of a musical instrument. The physical action of triggering unexpected sounds from the sonification of lights can be seen as a way of playing music. This exploration of mobile interaction for music creation is in turn similar to another work called *Sonic City*.

Inspired by Iwai's *Sound-Lens*, *Sonic City* is a wearable system developed by the Viktoria Institute and RE:form in Sweden (see fig. 8). It translates mundane

activities such as walking and interacting with the city into audible data, as a way to compose electronic music and transmit it via headphone in real time. The work consists of a range of sensors connected to a small laptop running the music software, a microphone to capture sound, and essentially, the headphone for intimate and instantaneous listening. It is presented as a musical interface combined with a portable music player that involves personal engagement. The use of this wearable technology has two significant implications: (1) it breaks out of the traditional context of music creation to explore creative possibilities within local surroundings and common activities; (2) it highlights the connection between action and perception, individual and environment.

Unlike the Walkman or iPod, the *Sonic City* device transmits audio content that constitutes a sonic experience in terms of both music consumption and music creation (Gaye and Mazé 2003: 2). And unlike the traditional process of musical composition, *Sonic City* requires no specialized musical knowledge. Any daily routine activity such as walking can become a creative composition, producing a highly intimate sonic experience by combining the audible elements of physical actions and the urban environment from sensor inputs. These elements include voluntary and involuntary actions, visible and imperceptible, expected and unexpected events³⁶. As a result, the city becomes an intuitive platform for music

³⁶ Types of input involve a range of body-related functions such as heart rate, arm movement, speed, pace, compass heading, ascension/descent, proximity to others/objects, stopping and starting; environment-related conditions such as light level, noise level, pollution level, temperature, electromagnetic activity, enclosure, slope, presence of metal (Gaye and Mazé 2003: 3). Detailed structure of design can be found at www.viktoria.se/fal/projects/soniccity/design.html

creation. The sounds of actions and environmental conditions become the musical score of a personalized soundscape.

Second, the system enhances perception and encourages new interpretations of the urban landscape. As Chambers (1994) suggests, “with the Walkman there is simultaneously a concentration of the auditory environment and an extension of our individual bodies.” (1994: 49) *Sonic City* called attention not only to the auditory environment and the perception of the body, but also to the actions of the body and its living environment, as the audio content transmitted by the system is a simultaneous musical composition based on where the user is situated and what the user is doing, i.e. how the user engages with physical space. It also raises a greater awareness of simultaneous corporal movement and/or environmental behavior as a musical instrument, as the system processes the information and feeds the sonified composition into the user’s ears in real time. As individual behavior in urban space involves very personal habits, thoughts, emotions and perceptions as well as corporal reactions to the surroundings (ibid: 1-2), the sound resulting from this complex input can be perceived as a very personal image of the city. In this sense, the device appropriates public space for individual expression. Simple walking might become an “inner” expressive act – “inner” because it is an act of personal music composition that is not manifest to other people on the street. Only the one who makes the music can hear it through the headphone.

*Electrical Walks*³⁷ is another example that illustrates the use of the headphone as an integral part of the intersection between sound, space and body (see fig. 9). *Electrical Walks* is an ongoing project initiated by Christina Kubisch, a Berlin-based sound artist. Similar to the design of the aforementioned works, this project can only be experienced with custom-made headphones that are able to receive inaudible electro-magnetic signals from the environment and then convert and amplify them into audible sound. These electro-magnetic signals are undetectable frequencies emitted by electrical systems such as those found in traffic-light security systems, ATMs, etc. The headphone collects and interprets the signals in order to present a new experience of the urban city. In an interview Kubisch remarks that “the listener is like a mixer, who composes by his body movements.”³⁸ Kubisch’s work focuses the body as a site of experience and also furthers the possibilities of our auditory experience, uncovering hidden soundscapes inside our daily living environment. Through the use of the headphone and electric field sensors, this work opens up new auditory experiences and introduces new perceptions of our familiar world.

All of these works re-focus the auditory experience without denying the significance of other senses, generating new ways of perceiving the world through a holistically modified and personalized soundscape. The headphone supports this

³⁷ *Electrical Walks* is part of *Her Noise*, an exhibition featuring five sound installations at the South London Gallery in 2005.

³⁸ Interview: September 2004, “Mobile Listening - Electrical Walks”, Christina Kubisch in Conversation with Sabine Breitsameter, http://www.swr.de/swr2/audiospace/engl_version/interview/kubisch.html

privatized, personalized listening and transforms the ear into an enhanced organ to interface the relationships between perception, action and environment.

5.6 Conclusion

Headphone-listening not only enables contemporary urban users to enjoy a mediated privatized experience during their everyday movements at any geographical location, it also expands and inspires the sensorial experience in any possible space. The above examples of media artworks and wearable systems have demonstrated a variety of experiences attached to headphone use. In summary, the headphone can be potentially used for:

1. Pluralizing space	<ul style="list-style-type: none"> ▪ Creating a parallel universe to the place inhabited by the users; ▪ Suggesting a virtual journey to another space; ▪ Mixing and confusing perception and reality; ▪ Doubling, pluralizing and transcending space and place.
2. Constructing a sense of virtual space	<ul style="list-style-type: none"> ▪ Formulating virtual reality and realistic simulation; ▪ Developing the idea of sonic territories and showing how the auditory sense defines space in the context of virtual simulation; ▪ Establishing a sense of simultaneous co-presence in two spaces; ▪ Challenging the conventional concept of cyberspace and

	<p>virtual reality as visual screen-based systems;</p> <ul style="list-style-type: none"> ▪ Forming an individual sonic world within the public exhibition space in response to the notion of privatized experience in shared space.
<p>3. Constructing a sense of position and direction</p>	<ul style="list-style-type: none"> ▪ Challenging conventional visual-based navigation systems through spatial-audio representation; ▪ Mapping sound to a particular context; ▪ Establishing new ways to navigate the city with directional information and audio spatial cues.
<p>4. Integrating senses within the environment</p>	<ul style="list-style-type: none"> ▪ Linking the relationship between perception and action, individual and environment; ▪ Transforming inaudible signals into audible sound; ▪ Transforming everyday activities into music; ▪ Integrating different senses; ▪ Re-prioritizing the sense of hearing; ▪ Merging the outside world with the user's inner world and reaffirming body; ▪ Exploring new ways to perceive the world.

While the mundane use of the headphone in conjunction with media devices such as mobile phones and personal stereos has already brought privatized experience to the public domain, its use in the context of media arts offers users privileged forms of auditory experiences in a shared environment. The audience experience in the context of new media is an intrinsically privatized experience, as each visitor has a unique experience according to his or her actions and interactions with the environment. The relationship between our privatized auditory experience and our involvement in space (including public environment, personal room or virtual space) is one of the ultimate issues for us to rethink.

Chapter 6: Conclusion, Discussion and Recommendation

6.1 Summary

Beginning with a brief review of the notion of human-technology relationships, the primary purpose of this dissertation is to suggest a holistic approach toward understanding the complex connection between media technologies and the corresponding mediated experience. By investigating a case study, namely the headphone, this dissertation intends to study the actual experience through its everyday routine use and the potentialities of headphone-listening through its applications within the new media environment. The headphone is not merely considered as the conventionally perceived icon of isolation and solipsism. The previous sections have already revealed manifold ways of headphone-listening at different levels. The descriptive empirical data and subsequent analysis of media artworks have already suggested various typologies of headphone experiences.

This dissertation offers an account of what is involved in the mediation, and presents a general theoretical landscape to understand how the uses of the headphone define our contemporary life and leisure, while emphasizing the complexities of the personalized listening practice as a cultural activity. The theoretical section on the experience of privatization introduces new perspectives on the use of privacy within public space and collective experience. The 21st century has seen the concept of audience evolve from groups to individuals. People surround themselves with their preferred vision and sound, shut themselves off from the outside world, and create

their own private territories within domestic and public areas. Public space is less clearly defined, while the symbolic privatized shelter is clearly formulated. Uses of media technologies redefine the human-environment relationship. Headphone-listening is perfectly suited to the mediator role of enabling various possible types of auditory experiences, just as it allows the transmission of unique audio content to individual listeners. The ultimate goal of this research is to expand our limits of perceiving and understanding the world we inhabit, as well as to encourage a deeper exploration of ourselves by rediscovering our senses through our personal interaction with technology inside our own environment.

6.2 Theoretical and Practical Implications

By exploring the case study of headphone-listening, this paper highlights three key implications: (1) re-focus on the study of experience, (2) re-prioritization of the auditory experience, and (3) integration of senses and exploration of possible experiences.

(1) Focus on Mediated Experience

The study of the human-technology relationship is no longer a new topic in the context of media studies. But the existing studies have in common the debate over how much technology does and does not condition social change. For example, the controversy continues over how communication via mobile phone modifies our social interactions and relationships, or how the word processor impacts on our writing habits, or how television rules our daily routine. By dwelling on such

questions, the concern is on how much technology affects our lives and how individuals react to these impacts. As a result, the study of actual mediated experience is neglected and overwhelmed by the debate.

This dispute results from the tendency, widespread among scholars, to divide technology and experience into two separate fields of study. Too often the study of the technological tool is separated from the study of the user experience, because the former relates to scientific invention while the latter is considered social science. From this perspective, the studies of technological media and of our corresponding mediated experience always fall into separate themes. Among other existing research on the human-technology relationship, this dissertation adopts a holistic view of the topic and positions the study on the experience itself, which is characterized by both the technological tool and our own sensory perception. The choice of case study, i.e. the headphone, is symbolic of a mediated experience that links the human body and media technologies into a synthesized cyborg. To acquire facts on the mediated experience, this dissertation conducted a qualitative research of empirical descriptions in order to reflect the actual typologies of headphone uses. This empirical data is key to grasping the essence of the mundane auditory experience.

(2) Re-prioritize Auditory Experience

Historically the dominant mode of understanding society has been through our visual senses. As most data presentation techniques have been based on data

visualization, researchers have developed a visual representation of data spaces. Software designers and engineers have even transformed analog audio files into more convenient digital wave forms for sound mixing or editing systems. Furthermore, as mentioned in the previous chapter, virtual reality has traditionally been dominated by visual considerations through the development of graphics. Researchers and artists make efforts to produce high-resolution images, as their focus is primarily on realistic simulation of visual elements.

However there are still many scholars, researchers, scientists and artists who resist the conventionally perceived inferiority of the sense of hearing and promote a re-prioritization of the auditory experience. Michael Bull (2000) emphasizes that studies on sound are relatively absent from academic literature on the urban space. Visually based paradigms are used to explain the nature of all urban experiences. The urban subject is typically situated within theories of the gaze and the spectacle. Sound, as opposed to vision, challenges the sufficiency of visually orientated explanations of urban behavior (Bull 2000: 3-4). In the introduction of The Auditory Culture, Les Back and Michael Bull advance that the concept of “visually based epistemology” is not only insufficient but often erroneous in its description, analysis, observation and understanding of the world (Back & Bull 2003: 3). Jonathan-Ernest Berendt also argues that the dominance of the eye limits our imagination; he suggests “a democracy of the senses” (Berendt 1985: 32). As Bruce R. Smith (2003) states, “knowing the world through sound is fundamentally different from knowing the world through vision” (2003: 129). He questions why sound is so overlooked

until it demands attention as noise or music. (2003: 129). In view of the fact that human ears are innately defenseless and constantly open, in most cases sound continues to go unnoticed until it is too loud. The headphone challenges this perceived inferiority of hearing by enhancing our auditory experience, playing and amplifying preferred audio content directly into our ears. As suggested by the empirical data collected from audience interviews, most users are more sensitive to hearing while wearing a headphone in both their personal environment or in public urban space.

It is perhaps easier and more convenient to communicate through visual aids, as we have been trained to interpret graphical interfaces. But what if everyday behavior was conditioned by auditory experience? How would we define the concept of time and space in terms of sound? As demonstrated by Richard Etter's *Melodious Walkabout*, AudioGPS is a very functional alternative to visual maps and street signs. Re-orientating our sense of hearing and re-locating our perception of the world through our auditory experience would radically alter existing theories on daily life experiences. We would have to completely re-evaluate our understanding of the spatial-temporal experience. It would be an entirely new area of research in urban studies and philosophy. The relationship between auditory experience and our perception of the world is another crucial issue for us to rethink.

(3) Integrate Senses to Explore Possible Experiences

When we suggest re-prioritizing the auditory experience, it does not mean placing the sense of hearing disproportionately above the other senses; rather it reminds us to bring our senses of perception to act together as a whole. As the interview respondents reported in Chapter 4, even when their hearing is completely absorbed in their preferred soundtrack, their other senses are still alert to the environment. Toshio Iwai's *Sound-Lens* also integrated visual sense and auditory experience in order to suggest a new urban experience through the process of sonification. Christina Kubisch's *Electrical Walks* emphasizes the integration of sound, body and space, inviting us to rediscover the real world by collecting and converting inaudible electro-magnetic signals into audible sound. As we take our mundane use of the headphone for granted, we tend not to experiment with other possible experiences in perceiving the world around us. Hopefully the examples and analyses of this study will inspire us to integrate and expand our senses to perceive the world differently.

6.3 Suggestions for Further Research

The investigation initiated in this paper can be furthered in two areas: (1) possible auditory experiences resulting from the interaction between the headphone and other media technologies, and (2) a wider discussion that includes the other senses, e.g. the visual experience, using a similar approach.

(1) Investigate Possible Auditory Experiences

As the headphone was not originally designed as a singular medium of entertainment or art, it always requires support from other media gadgets or networking systems.

In this paper, the actual use of the headphone refers mainly to experiences with mobile and static phones, as well as personal stereos such as the Walkman and MP3 players. Associated with new technologies such as navigation systems and mobile communications, it offers countless new opportunities for listening and sharing, beginning with the examples of AudioGPS virtual 3D audio. Due to the scope of this dissertation, the discussions deal with the innate quality of the headphone-listening experience as privatized and personalized, while the headphone can also be associated with other properties such as portability and detachability. Here a few questions are open to discussion: How can we push forward the already successful combination of mobility and detachability with individual, privatized entertainment? What new forms of action or interaction can be merged into new forms of everyday experiences? These are interesting issues for further research.

(2) For a Wider Discussion on other Senses

The recent introduction of third-generation (3G) mobile phones enables more users to view movie clips or play video games on the go. It becomes as popular as listening to music on Walkmans and MP3 players. Comparisons between portable audio entertainment and visual entertainment are therefore to be expected. While music can be considered a companion to users traveling around the city, visually demanding video is not as easily adopted by pedestrians in motion. One reason why preferred soundtracks are well suited to accompany city-dwellers is that they allow a plurality of auditory fields. As discussed earlier in this paper, headphone-listening multiplies the layers of auditory experience. Users can shift between the “outer” and

the “inner” world, or listen to both at the same time. Indeed, the superimposed effect is not restricted to the auditory experience, as we can also experience overlapping visual layers. Steve Mann’s wearable technology is a possible model of the portable media player³⁹.

Steve Mann, who puts wearable computing and cybernetic concepts into practice, has been experimenting with wearable computers for more than 10 years. One of his ongoing projects, *EyeTap*, is a device resembling eyeglasses that is attached directly onto one of his eyes, allowing the eye itself to function as both a display and a camera. Similar to the superimposing experience suggested by headphone-listening, Mann’s device enables dual perception: half of his world is computer information while the other half is reality. He can switch his visual attention between the “outer” world – the geographical space that he physically inhabits – and the “inner” world of his information-filled computing system, or he can choose to view both at once. To be precise, the device simultaneously displays computer information and mediates what he actually sees in his environment. It maps a virtual space to an actual geographical location.

Mann’s research not only inspires a study on embodiment and the cyborg, it shows us another way to explore and experiment with the potential uses of technologies, their relationship to the human body, and most importantly, the

³⁹ Steve Mann (1962-) is a living cyborg and the inventor of the wearable computer. He develops methods of exporting his field of vision, originally at the Wearable Computing Project, MIT Media Laboratory (<http://www.media.mit.edu/wearables>) and now at the University of Toronto Humanistic Intelligence Lab.

technologically-mediated experience. Furthermore, his model can be regarded as a prototype of the current portable media player. It is another starting point for extended research on multi-layered experiences of the visual sense.

6.4 Conclusion

Headphone-listening is only one example of media technologies that transcend normal senses by examining a less familiar auditory experience. Many more possible experiences enabled by any technological device remain to be explored. For example, a webcam is not only a video camera that delivers images and allows users to video-conference with others via broadband connection, it can also serve as a barcode scanner when employed with other software. Some users even use it to take their own snapshot photos, and artists might use it as a receiver for motion-tracking projects. If we examine the full spectrum of features and the whole environmental context of the device, we are bound to find hundreds of possible applications beyond its ordinary use. And every one of these applications suggests a potential new user/audience experience. Such discoveries not only expand our perceptive boundaries, they alter the way we live in and interact with our environment.

This paper has discussed the technologically-mediated experience through the case study of the headphone. It re-focuses our sense of hearing in space, highlights the relationship between privatized experience and our involvement with our immediate environment, and discusses how new experiences are constructed through the use of technological mediation. Its primary goal is to study the mediated

experience through human interaction with technologies, to suggest a holistic view on the human-technology relationship, and ultimately to prepare ourselves for discovering and exploring as yet unknown experiences.

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Appendix A: Interview Summary

Ref #	Name	Gender	Age	Occupation
01	Vivian Cheung	Female	28	Freelance writer/editor
02	Ivan Tong	Male	35	Insurance agent
03	Manda Chu	Female	24	Reservation officer
04	Jessie Chung	Female	32	Playwright
05	Ron Lam	Female	26	Lifestyle Magazine Editor
06	Coco Ho	Female	25	Junior Art Director
07	Viola Shum	Female	26	Teaching Associate
08	Duncan Lee	Male	30	Salesman
09	Nick	Male	22	University student
10	Kevin Cheng	Male	20	University student

Appendix B: Figures

Fig. 1: Akitsugu Maebayashi's *4 Pieces for Object, Sound, Space and Body – Radio, Window, Metronome, Darkness*



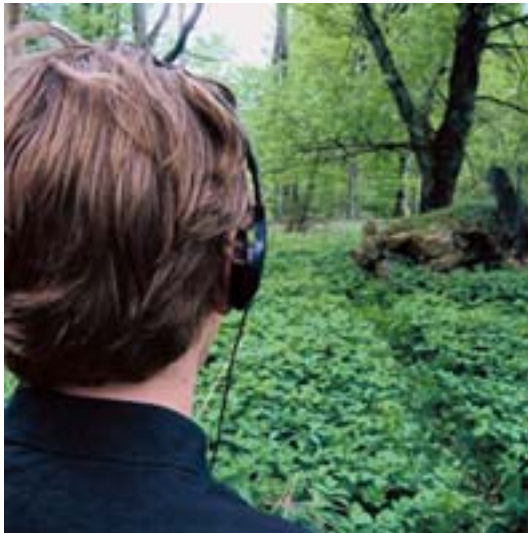
(Source: <http://www2.gol.com/users/m8/installation.html>)

Fig. 2: *Sonic Landscape* by Nigel Helyer



(Source: http://www.gmat.unsw.edu.au/snap/new/sonic_demo.htm)

Fig. 3: Janet Cardiff's on-going project *Walks*



(Source: <http://netzspannung.org/media-art/topics/explore-information/?currentpage=6&lang=de>)

Fig. 4: *Audio Zone* by Susan Collins



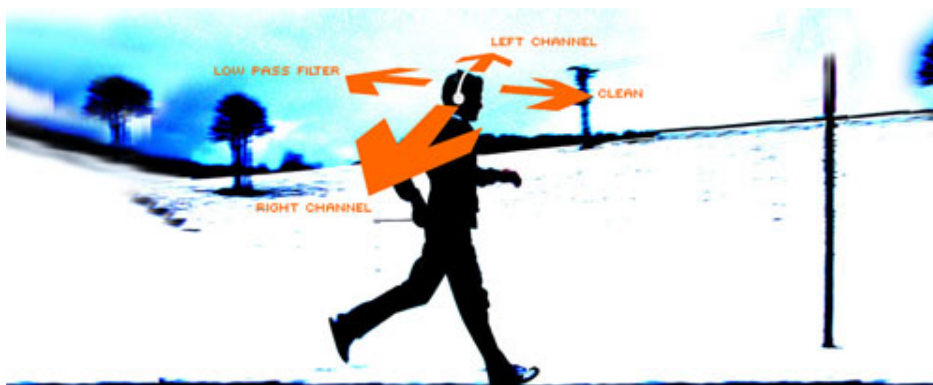
(Source: Screen captured from Susan Collins' video documentation)

Fig. 5: *Audio Zone* by Susan Collins



(Source: Screen captured from Susan Collins' video documentation)

Fig. 6: *Melodious Walkabout* by Richard Etter



(Source: <http://www.richardetter.net/thesis.php>)

Fig. 7: *Sound-Lens* by Toshio Iwai



(Source: <http://www2.gol.com/users/iwai/PS1data/SOUND-LENS.html>)

Fig. 8: *Sonic City* by Viktoria Institute and RE:form in Sweden



(Source: http://www.tii.se/reform/projects/pps/soniccity/index_publications.html)

Fig. 9: *Electrical Walks* by Christina Kubisch

