

Ears Wide Shut:  
Headphones and Moral Design

by

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## ABSTRACT

Over the last thirty-five years, headphones have been linked to a range of worrisome listening trends: from ostensibly encouraging antisocial behaviour, to putting listeners at risk of permanent hearing loss, to increasing otherwise avoidable pedestrian injuries and deaths. Efforts to address these issues have typically fallen into one of two categories. One approach has been to lobby for the strict regulation or banning of headphones in environments where they might pose a heightened risk. A second approach has been to advocate better public education on the potential dangers involved. Yet neither approach — blaming technology or blaming behaviour — has been particularly effective in developing long-term solutions to these problems. According to recent studies, instances of headphone-relating hearing loss and pedestrian accidents continue to be on the rise, and the cultural stereotype of headphone listening as a quintessentially “antisocial” listening practice remains as strong as ever.

Drawing on Peter-Paul Verbeek’s (2005; 2006; 2011) post-humanist moral philosophy of technology, this dissertation develops a different framework: namely, a design-oriented approach to what I call “the moral problem of headphones.” My premise is that in order to address the problem of headphones in a meaningful way we must begin, not by isolating technology or behaviour and treating them as underlying “causes,” but by forging a deeper understanding of how headphone-related devices, listening strategies, and moral values are mutually shaped. By examining three historical moments in which headphones took on clear moral significance — (1) the introduction of broadcast radio in the 1920s, (2) the proliferation of television and hi-fi in the 1950s and 1960s, and (3) the

rise of the “personal stereo” in the early 1980s — this thesis demonstrates that headphone-related technologies, listening practices, and moralities are not immutable but have changed over time. It does so in service of a greater argument that our ability to make headphone listening safer and more responsible depends not on our ability to commit more strongly to, or oscillate more freely between, “bad technology” and “bad behaviour” perspectives, but to better engineer good headphone–listener “relations” through smarter moral design.

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# INTRODUCTION

## Headphones and Moral Design

So ubiquitous is headphone culture today that it has become a sort of cultural shorthand — often for a spoiled, selfish generation who lack civic values. ... But the most visceral concern is that the iPod is making people anti-social.

— Tom de Castella, *BBC News Magazine*, 2011

The number of teenagers with hearing loss — from slight to severe — has jumped 33 percent since 1994. ... [M]any researchers attribute this widespread hearing loss to exposure to sound played loudly and regularly through headphones. ... Maybe the danger of digital culture to young people is not that they have hummingbird attention spans but that they are going deaf.

— Virginia Heffernan, *New York Times*, 2011

Anna Marie Stickel never heard the train coming... An Amtrak train traveling south along the stretch of track in Maryland's Middle River struck her from behind, instantly killing the high school freshman on Jan. 5, 2010. Anna's tragic story sparked a national study examining the dangers associated with pedestrian use of headphones... The verdict: Wearing headphones while walking on roads can be a fatal distraction.

— Sevil Omer, *MSNBC.com*, 2012

It seems we have a situation on our ears. Since the Sony Walkman made its debut thirty-five years ago, headphones have been linked to a wide range of worrisome listening trends: from encouraging solipsistic and antisocial behaviour, to putting listeners at risk of permanent hearing loss, to dramatically increasing otherwise avoidable pedestrian injuries and deaths. Efforts to address these issues have typically fallen into one of two categories. One approach has been to lobby for the strict regulation or outright banning of headphones in environments where they might pose a heightened risk. In locating the root of the problem in “bad technology,” those favouring this approach have felt the only way to ensure safe and socially responsible listening behaviour is by removing headphones from the equation. A second approach has been to advocate better public education on the potential risks involved in headphone listening. In locating the root of the problem in

“bad behaviour,” those favouring this approach have felt that the best way to address the situation is by teaching the public how to operate headphone-related listening devices in safe and responsible ways.

Yet neither approach — blaming technology nor blaming behaviour — has been particularly effective in developing long-term solutions to what we might call the moral problem of headphones. Attempts to ban headphones in urban environments, for example, have typically failed to drum up much public support, and questions have often been raised as to how such bans might be adequately enforced even if they did become more prevalent. On the other hand, public health-and-safety campaigns, while useful in raising awareness of the dangers posed by headphone listening, have failed to address what is arguably the biggest challenge facing headphone users today: that many headphone designs make it difficult to listen enjoyably (that is, with adequate volume and quality of sound) and listen morally (that is, safely and responsibly) at the same time.

My premise, by contrast, is that if we are truly going to resolve these issues we must begin, not by isolating technology or behaviour and treating them as underlying “causes,” but by forging a deeper understanding of how headphone-related devices, listening strategies, and moral values are mutually shaped. Rather than advocating a stronger commitment to, or freer oscillation between “bad technology” and “bad behaviour” perspectives, this thesis argues for a better engineering of good headphone–listener “relations” through smarter moral design. In doing so, it makes a contribution to contemporary efforts to resolve the problem of headphones writ large, while also furthering philosophical efforts to understand the active moral dimension of technology

in a manner that is resolutely present-minded and historically-informed.

The need for such a perspective is perhaps most apparent in the contemporary moment, in which iPods have come to symbolize a “selfish generation who lack civic values” (Castella, 2011) and headphones represent not only a “danger” to hearing (Heffemen, 2011) but a potentially “fatal distraction” (Omer, 2012).<sup>1</sup> Yet these and similar accounts often suffer from a kind of cultural amnesia: the problem of headphones is not new. In fact, a general uneasiness surrounding “direct-to-ear” technologies and listening practices is part of the cultural origins of sound reproduction (Sterne, 2003; Feaster, 2007; Mills, 2008). We also know that moral frameworks are only legible in the context of large-scale epistemological formations that themselves change over time (Foucault, 1977a; 1977b; 1978). As such, one way to better understand the ideology and the stakes of the present moment is to understand, over a longer timespan, how headphones and morality have been articulated together, in specific ways and specific moments. As such, while the politics of this thesis are aimed at contemporary designers, in order to provide a robust ground for critique my mode of inquiry is fundamentally historical.

As I will outline in further detail below, each chapter of this thesis takes as its focus one of three historical “events” (Foucault, 1981) in which headphones took on clear moral significance in the North American context prior to the digital audio “revolution” of early 2000s: the introduction of broadcast radio in the 1920s, the simultaneous

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<sup>1</sup> For more on social concerns about headphone listening, see Shapiro, 1982; Bloom, 1987; Sullivan, 2005; Pitt, 2008. For more on the connection between headphones and hearing loss see Elkins, 2007; Blue, 2008; Heffernan, 2011; Phillips, 2011; Gurley, 2011; Kalish, 2013; Weinberg & Fishman, 2013. For more on headphone-related injuries and deaths see Allen, 1982; Schanberg, 1982; Bloom, 1988; Myers, 2010; Saulny & Richtel, 2011; Kaiser, 2012; Hope, 2012; Mogg, 2012; Lichenstein et al., 2012.

proliferation of television and hi-fi in the 1950s and 1960s, and the rise of the personal stereo in the early 1980s. Following Foucault, I use the term “events” to underline my interest in “making visible a *singularity* at places where there is a tendency to invoke a historical constant, an immediate anthropological trait, or an obviousness which imposes itself uniformly onto all” (Foucault, 1981, p. 76; original emphasis). In other words, my goal is not to try and assess whether sound reproduction technologies and listening practices have “improved” or “worsened” over time, but to demonstrate how they functioned and meant differently at distinct historical moments. At the same time, each chapter attempts to uncover a relatively circumscribed set of strategies that users and designers mobilized in order to effectively address headphone-related moral concerns. And so while on a historiographical level each “event” must be understood discretely (rather than as part of a teleological “moral history of headphones” as such), on a more conceptual level each offers insight into how headphone-related controversies can be settled by “materializing morality” in specific ways (Verbeek, 2011).

This introductory chapter is organized into four main sections. First, I review the existing scholarly literature on headphones in order to clarify how my conceptual framework — *moral mediation* — differs from existing work in sound and media studies. Next, I develop a detailed account of the moral mediation approach in its theoretical and “applied” form, the latter of which I call *moral design*. Third, I outline my methodology, and suggest how a resolutely historical approach to the contemporary problem of headphones can help forge an epistemological break with existing cultural stereotypes and assumptions about this technology. Finally, I offer a chapter outline, sketching my

chosen three historical “events” and explaining how each can shed light on how moral issues can be — and historically *have* been — effectively dealt with at the level of moral design.<sup>2</sup>

## **Morality and Headphones**

The relationship between morality and headphones has not yet garnered much explicit philosophical attention in existing research. However it is possible to discern, at some level of generality, four approaches to the subject latent within this work. Over the next few pages I will offer a brief overview and critique of each of these approaches — which I have labelled *critical*, *progressive*, *dialectical*, and *positivist* — before introducing a fifth approach: *moral mediation*.

Reminiscent of the “bad technology” perspective described above, the *critical approach* is defined by a belief that headphones and headphone-related listening practices constitute a threat to the greater public good. While issues of hearing loss and risk of bodily harm occasionally surface within this literature, the critical approach’s primary focus to this point has been on highlighting their apparently negative social “impact.”<sup>3</sup> In an early essay on the Sony Walkman, for example, Judith Williamson refers to the device

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<sup>2</sup> To clarify, my interest in morality throughout this thesis should be read in the small-m rather than large-M sense: I am not interested in larger “Moral” questions concerning the capacity to “do good” or live a “good life,” but in smaller “moral” questions concerning how ideas of good and bad behaviour manifest themselves in the everyday interactions between people and technology. Similarly the question of ethics, as I approach it, is always a question of how technology can be designed to help make good decisions easier to make (as defined by the people struggling through these issues), rather than of assessing the moral quality of those decisions in a larger meta-philosophical sense. So while in one sense my concern is resolutely normative (I am interested in how technology can be used to “guide” moral behaviour), it is best understood as a kind of “relational” normativity (as my focus is also on how technologies must also be adapted — and *adaptable* — to new moral and material contexts).

<sup>3</sup> cf. Williamson, 1984; Bloom, 1987; Rosen, 2005; Pitt, 2008.

as “primarily a way of escaping from a *shared* experience or environment. . . . a weapon of the individual against the communal” (1984, n.p.; original emphasis). This articulation of the problem of headphones seems to suggest that no matter who the listener is, their reason for listening — and the social effect of the technology — remains the same. This perspective has also undergirded more recent critical writing on the use of iPods and other mobile digital music listening devices. Christine Rosen, for example, has decried mobile headphone listeners for “practicing ‘absent presence’ in public spaces, paying little or no attention to the world immediately around them” (2005, p. 66). Others have framed the problem in more dramatic terms. Joseph Pitt has called the iPod “one of the pernicious developments of recent technological innovation” suggesting that its ubiquity “may be one of the final nails in the coffin of social skills” (2008, pp. 162-3), and Andrew Sullivan has gone so far as to equate the rise of mobile headphone listening with the “death” of society itself. “Human beings have never lived like this before,” he writes. “Yes, we have always had homes, retreats or places where we went to relax, unwind or shut out the world. But we didn’t walk around the world like hermit crabs with our isolation surgically attached” (2005, p. 2).

The critical approach has been important for a number of reasons. By drawing attention to the fact that headphones have moral significance above and beyond their functional use value, this literature has provided an important counter-narrative to the claims made by advertisers and media pundits who have often been outspoken in their belief that headphone-related listening technologies are unequivocally “good” (cf. Jones, 2005; Kahney, 2005; Levy, 2006). The problem, however, is that this work has rarely left

us with any practical suggestions for how we might go about answering to the moral objections it raises about the ostensibly antisocial “nature” of headphones. As a result, this approach has done more to fuel moral panics than offer realistic solutions for how we might deal with these issues in a productive way.

If the critical approach is defined by its resistance to headphones, its antithesis is the *progressive approach*. Far from viewing headphones as a threat to humanity, adopters of this approach have focused on the potential of this technology to make life better — aesthetically, experientially, and civically — for individuals and society alike.<sup>4</sup> Shuhei Hosokawa, for example, has described the Walkman positively in terms of its ability to “construct and/or deconstruct the network of urban meaning” (1984, p. 178) by aestheticizing the experience of urban movement in deeply personal, but not necessarily asocial ways.<sup>5</sup> Iain Chambers has shared Hosokawa’s positive interpretation of the deconstructionist potentials of mobile headphone technology by suggesting that it “participates in rewriting the conditions of representation: where ‘representation’ clearly indicates both the semiotic dimensions of the everyday *and* potential participation in a political community” (1994, p. 52; original emphasis).<sup>6</sup> More recently, scholars like David Beer have argued that, in order to better understand the social impact of headphone listening, researchers need to “look beyond a rhetoric of isolation, withdrawal and the

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<sup>4</sup> cf. Hosokawa, 1984; Chambers, 1994; Moebius & Michel-Annen, 1994; Thibaud, 2003; Bull, 2004a; Bull, 2006a; Bull, 2006b; Beer, 2007; Weber, 2009; Weber, 2010; Kaye, 2013.

<sup>5</sup> Underscoring his antithetical position with respect to the critical approach, Hosokawa even goes so far as to chastize those “cultural moralists” whom, he claims, “cannot explain clearly the socio-cultural change brought about by something new, or more typically, they simply fear and refuse any attempt at clarification” (p. 165).

<sup>6</sup> Others such as Jean-Paul Thibaud have made a similar deCerteauian (1984) move in celebrating how “New sonic territories are composed in the course of this mobile listening experience. As the body moves in sync to the music, the listener transforms the public scene and provides a new tonality to the city street” (Thibaud, 2003, p. 329).

control of time and space in understanding these devices and their use” (2007, p. 862).

The common theme in this writing has been an attempt to come to terms with the apparent benefits offered by headphones to those who use them, and to mobilize this user-centred interpretation into an assessment of their potential public good.

In many ways, this approach has offered a productive space for thinking positively about the potential moral impact of headphones. However, these authors have shown little interest in engaging with some of the more negative aspects of what can be a highly dangerous material practice. As a result, they have offered few insights as to how we might better *amplify* or *extend* the positive aspects of headphone listening while also *mitigating* the potential risks involved.

Situated between the critical and progressive approaches lies what I call the *dialectical approach*. Those working within this approach have tended to avoid firm stances on whether headphones are good or bad, and have instead explored the complexities that emerge when both sides are held in balance.<sup>7</sup> Rainer Schonhammer (1989), for example, has attempted to cultivate an even-handed understanding of the moral meaning of the Walkman by trying to account for both “inside” and “outside” — that is, user and non-user — perspectives at once. Upon interviewing those on both sides (and experimenting further with the technology himself), he comes to see equal merit in each approach. Coming at the problem from a cultural studies perspective, Paul DuGay et al. (1997) have explored the issue by contrasting “production of consumption”

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<sup>7</sup> cf. Schonhammer, 1989; Du Gay et al., 1997; Bull, 2000; 2001; 2004b; 2007; 2010; 2012; Ferguson, 2006; Williams, 2007; Gunn & Hall, 2008; Simun, 2009; Walsh, 2009; Burns & Sawyer, 2010; Hagoood, 2011; Dibben & Haake, 2013.

approaches to this technology (i.e. Bloom, 1987) with what they call “populist” approaches (i.e. Chambers, 1994). Rejecting either extreme, they call for a more “measured” approach to dealing with the many questions raised by this technology, yet in their conclusion leave the question of goodness and badness open to interpretation. Using Frankfurt School cultural theory — and in particular Adorno’s notion of “we-ness” — Michael Bull (2000) has sought to forge an even more explicit dialectic tension in the everyday experience of Walkman listening, in his case a tension between the “freedom” to listen in new ways and the “dependance” on the products of the culture industry necessary to realize this freedom. His approach has similarly stressed the importance of critiquing these practices, while also making clear the many benefits this technology offers to listeners in the context of their everyday lives.

As with the critical perspective, these authors have often acknowledged that there are indeed variations and flexibilities, risks and trade-offs associated with headphone listening. And like those of the progressive mindset, they have also recognized the many positive contributions this technology can make with respect to improving human comfort and happiness. Yet if the upside of this approach has been its ability to draw our attention to the many tensions, even paradoxes, in the moral politics of headphone listening, the downside is that it has failed to offer advice on to how we might go about actually *resolving* those tensions in a meaningful way. Indeed, much of the work in this tradition is content to conclude with vague statements on how headphone-related research “becomes an investigation of how we increasingly bring the auditory world closer to us ‘spatially’ and hopefully, humanely” (Bull, 2007, p. 160) without offering any practical

guidance as to how we might achieve this latter goal.

In many ways, the most solution-oriented of the four approaches has been the *positivist approach*. What sets this work apart from the previous three is its commitment to empirically assessing, rather than simply theorizing or describing, claims that headphone technology might promote or facilitate dangerous listening. The strength of this approach lies in its practical orientation: these authors listen to concerns expressed by the public; they develop empirical studies aimed at testing the merit of those concerns; and they offer clear, if tentative, suggestions for the mitigation of potential risks.<sup>8</sup> Meyer-Bisch (1996), for example, suggests that given the risks associated with high-volume listening, measures to “conserve young people’s hearing must include a reduction of sound levels, the education of music and entertainment professionals, and making PCP [personal stereo cassette] users better informed” (p. 121). McCormick and Matusitz (2010) introduce other potential solutions to the problem, such as “raising the bass (lower frequency) levels on PMPs [personal music players, which] has the effect of making the music seem louder, yet at significantly reduced volume levels that would lower the risk of MIHL [music-induced hearing loss]” (p. 137). Writing specifically on the dangers of mobile listening, Walker et al. (2012) suggest further that “companies who develop the devices may wish to look into headphones that have the option of automatically adapting their volume to just under the level of environmental noise, giving those listening to PMDs (personal music devices) while walking a chance to create a more complete picture

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<sup>8</sup> cf. Kuras & Findlay, 1974; Katz et al., 1982; Catalano & Levin, 1985; Rice et al., 1987; Meyer-Bisch, 1996; Fligor & Cox, 2004; Hammershoi et al., 2008; Hodgetts et al., 2009; Lloyd et al., 2009; Epstein et al., 2010; McCormick & Matusitz, 2010; Lichenstein et al., 2012; Walker et al., 2012.

of their surroundings” (p. 128). Through practical suggestions such as these, positivist scholars express an interest not only in empirically verifying headphone-related risks, but also suggesting ways to potentially mitigate them — often at the level of design.

From the perspective of this thesis, however, the positivist approach has three main drawbacks. First, it is almost always reactionary, in that it focuses on things that are already identified as problematic, with little concern as to how or why these issues arose in the first place. Second, its limited understanding of the cultural aspects of the listening practices they describe often leads them to propose straightforward technical solutions that have little likelihood of being adopted by actual technology designers or users. Finally, it fails to take into account how new designs might also produce *new* moral dilemmas, or reflect on the kinds of moral preconceptions it itself brings to the table when attempting to frame “good” and “bad” listening in particular ways. So while this approach is valuable for its commitment to offering suggestions for how to resolve existing headphone-related issues, it has not been particularly effective in transferring its insights directly into the world of actual design and use.

In an effort to move beyond the limitations of each of these four approaches, I introduce in the next section a *moral mediation approach*. Like the progressive approach, moral mediation is attentive to the ways in which headphones can improve certain aspects of daily life. And like the critical, dialectical, and positivist approaches, it is also concerned with the potentially dangerous effects of headphone listening. However, unlike the other four, this approach aims to address these issues in a way that considers headphone technologies and listening behaviours as mutually contingent, rather than

mutually exclusive elements, in the constitution of headphone listening as a specific kind of moral practice. In doing so, it also paves the way for thinking about how moral issues involving headphones might be better resolved relationally through the design of morally mediating technologies.

## **Moral Mediation**

Moral mediation is a design-oriented approach to ethics, rooted in a post-humanist understanding of social experience as thoroughly “technological” (humans live in and through technology) and technological design as thoroughly “social” (technology is made for and by people). Most fully developed by Verbeek in his book *Moralizing Technology* (2011), this approach represents an integration of two recent “turns” in the philosophy of technology: the *empirical turn* (1980s and 1990s) and the *ethical turn* (2000s). I will briefly outline each before returning to the concept of moral mediation below.

As Verbeek explains, pre-1980s philosophy of technology was less concerned with “addressing specific ethical problems related to actual technological developments” than “criticizing the phenomenon of ‘Technology’ itself” (2011, p. 3). The work of Martin Heidegger (1977), Karl Jaspers (1951), and Jacques Ellul (1964), Verbeek suggests, shared an interest in moving beyond a merely instrumentalist view of technology — which held that individual technologies should be viewed as nothing more than value-neutral “tools” capable of being taken up and employed by humans to a variety of ends (good or bad) — toward a substantivist view which approached technology as “a threat to human authenticity and the meaningfulness of reality” (Verbeek, 2011, p. 3). This was an

important and deeply political move insofar as it insisted that technology (more specifically, the form of rationality it embodied) was a powerful factor in the overall character and quality of human life. However, because technology was given so much autonomy and power in this relationship, it became difficult to understand exactly how these insights could be applied to resisting its apparently negative effects.<sup>9</sup> The *empirical turn* emerged precisely as an attempt to bring the philosophy of technology down to earth, so to speak, by analyzing more closely the relations between people and artifacts in actual contexts of design and use.

Rather than accept the notion that humans could be considered mere byproducts of scientific and technological change, Trevor Pinch and Wiebe Bijker argued in their seminal Science and Technology Studies (STS) essay “The Social Construction of Facts and Artifacts” that “technological artifacts are culturally constructed and interpreted” (Pinch & Bijker, 1987, p. 40). Tracing empirically the early development of the bicycle, they revealed that decisions over which design was ultimately considered “better” had less to do with predetermined technological forces than with resolutely human concerns about fashion, safety, and gender. By demonstrating “not only that there is flexibility in how people think of or interpret artifacts but also that there is flexibility in how artifacts are *designed*,” they made a strong case for how users influence technological change by interpreting and using technologies in deliberate ways (ibid.; original emphasis). The

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<sup>9</sup> Even the philosophers themselves seemed unsure about how to resolve the problems they outlined. “In this study no solution is put forward to the problems raised,” writes Ellul. “I do not say that no solutions will be found; I merely aver that in the present social situation there is not even a beginning of a solution, no breach in the system of technical necessity. Any solutions I might propose would be idealistic and fanciful” (1964, p. xxxi). Indeed, Ellul lists only three possibilities for freeing the human race from the conditions of the modern technological society: an epic and catastrophic war with few survivors, a massive and widespread revolt of humankind against technology, or an act of God (p. xxx).

social construction of technology (SCOT) and social shaping of technology (SST) paradigms that emerged from this orientation shared an interest in exploring “a range of factors (organisational, political, economic and cultural) which pattern the design and implementation of technology” rather than “only address[ing] the outcomes or ‘impacts’ of technological change” (Williams & Edge, 1996, p. 865).

In a parallel yet different approach, scholars like Michel Callon (1980; 1986), Bruno Latour (1987; 1992a; 2005), Madeleine Akrich (1992), and John Law (1992) aimed to transcend even the distinction implied by the labels social construction and social shaping “of” technology through the establishment of a more radical “sociology of associations,” better known as actor-network theory (ANT). The radical claim made by this group of researchers was that, because humans and non-humans each played such prominent roles in shaping each other’s existence, it made little sense to single out one or the other as ontologically special in this relationship. ANT’s point of departure was thus to consider all actors, human and non-human alike, as part of the same sociological class: “the collective thing” (Latour, 2007, p. 254). In doing so, ANT aimed to trace empirically how technological, organizational, and knowledge systems were assembled — not by focusing on the role of technology *or* human agents in this process, but on the “heterogeneous engineering” of both into complex and mutually-dependent “actor-networks” (Law, 1992).

Despite the important differences between each of these approaches, the moral politics of STS more generally came from its insistence that technology must not be viewed as a monolithic “force” somehow capable of imposing an entire way of life on

people, but as thoroughly shaped by the ideas and actions of human agents in radically contingent use-contexts. While this move was highly influential in terms of orienting technology studies away from technological determinism, concerns were soon raised that it “tended to background the critical and sometimes even activist spirit behind the original ‘classical’ [i.e. substantivist] positions” by failing to make its detailed empirical descriptions more obviously politically relevant (Verbeek, 2011, p. 161).<sup>10</sup> Verbeek explains that these shortcomings were eventually “compensated for in the first decade of the twenty-first century, which saw an explosion of ethical approaches to technology” (ibid., p. 162) — a shift he characterizes as the *ethical turn* in the philosophy of technology.

Like the empirical turn, the ethical turn quickly generated its own range of subfields, including “nanoethics, ethics of information technology, ethics of biotechnology, ethics of engineering design, and more,” which aimed to “address actual technologies and technological developments” from an explicitly moral point of view (ibid.). While STS scholarship can be credited in large part for initiating this turn — and has come a long way itself in terms of putting its theory and methods in service of politically and ethically-motivated research — Verbeek argues that many other applied-ethical subfields have failed to retain a similar grasp of the lessons learned during the empirical turn. “[T]he new ethical interest in technology often starts from ethical theories, frameworks, and principles,” he writes, “not from analyses of the complex relations

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<sup>10</sup> This is because many scholars seemed content to merely “describe” the process by which users and technology were mutually shaped and stop there. Important critiques of early constructivist approaches to the study of technology include: Winner (1993) “Upon Opening the Black Box and Finding it Empty,” Hacking (1999) *The Social Construction of What?*, and Sterne & Leach (2005) “The Point of Social Construction and the Purpose of Social Critique.”

between technology and society, including the interwoven character of technology and morality” (ibid., p. 162). Verbeek claims that this is problematic for at least two reasons. First, it has led applied-ethicists and designers to overlook the fact that morality does not “precede” technology but is intimately bound up in its design and use (meaning that ethics can not be straightforwardly “applied”). Second, it has led these groups to limit their task to simply “pull[ing] the emergency brake” when technology appears to be developing in morally problematic directions (ibid., p. 87), rather than attempting to understand the more subtle ways that all technology — even apparently “good” technologies — can powerfully influence moral judgment and behaviour.

In its broadest sense, *moral mediation* attempts to correct the tendency of applied-ethicists and designers to overlook the mediating role of technology by introducing an STS-informed approach to “understanding and designing the morality of things.”<sup>11</sup> This move is complicated because classical ethical theories and principles — which often underpin the conceptual and methodological approaches taken by applied-ethicists and ethically-motivated designers — have not dealt well with questions of non-human agency. “In [classical] ethical theory,” Verbeek explains, “an agent needs to have the intention to act in a specific way, and the freedom to realize this intention. Both requirements seem problematic with respect to artifacts, which, lacking a mind, do not have intentionality, let alone any form of autonomy” (2011, p. 12). Verbeek argues that such a perspective is problematic — untenable, in fact — because it assumes that humans can somehow act or make decisions independently of the technologies that co-shape their

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<sup>11</sup> The sub-title of *Moralizing Technology*.

experiences and understanding of their moral environment. “If the ethics of technology is to take seriously the mediating roles of technology in society and in people’s everyday lives,” he writes, “it must move beyond the modernist subject-object dichotomy that forms its metaphysical roots. Rather than separating ‘humans from nonhumans’ ... the ethics of technology needs to hybridize them” (ibid.). Verbeek provides a blueprint for what such a hybrid ethics of technology might look like by incorporating two perspectives on technological mediation into his theory of moral mediation: a hermeneutic or “experience-oriented” perspective rooted in the work of Don Ihde (1990), and a pragmatic or “praxis-oriented” perspective rooted in the work of Bruno Latour (1992a; 1992b; 1994).

Following Ihde, Verbeek argues that technologies influence human perception both through “embodiment relations” (in which objects, such as eyeglasses, serve to extend the human senses and augment one’s perception of reality) and “hermeneutic relations” (in which objects, such as thermometers, convert certain information about the world into a code which can then be interpreted by humans). These “technological intentionalities,” he suggests, are not stable and fixed, but change according to how the technologies themselves are employed or interpreted in different material and cultural contexts. He refers to this phenomenon as “multistability” for it calls attention to the fact that a technology “can have several ‘stabilities’ depending on the way it is embedded into a use context” (2011, p. 9). Overall, he suggests that because technologies “work” by both amplifying and reducing certain phenomenal possibilities, they play a distinctive and important role in altering our perception and moral understanding of our world. This

means that any attempt to assess the moral quality of a given technology must begin by accounting for how it may “help to determine how reality can be present for and interpreted by people [or] help to shape what counts as ‘real’” (Verbeek, 2006, p. 366).

With respect to praxis, Verbeek argues, following Latour, that technology also influences human action by “prescribing” certain behaviours, sometimes enabling and other times limiting human agency. Taking one of Latour’s most famous examples, he explains that speed bumps contain within them a “script” which calls on human actors to slow down when driving through certain areas (cf. Latour, 1992a). Unlike a symbolic script (for example, a sign that says “drive slowly”) this one has an enforcement mechanism or “program of action” built right into it: drivers who choose to drive through this zone have *no choice* but to obey the speed bump, or else risk badly damaging their car. Of course, speed bumps are not perfect: often they do not regulate speed exactly, are biased against smaller cars, or can be navigated freely (and even more dangerously) around. However, they do serve to organize a set of choices in which certain actions are easier to pursue, and others more difficult. In this way, speed bumps — like all technologies — can be considered significantly human (in that they are the expression of human values and ideals), non-human (in that they “prescribe” certain behaviours on humans), and moral (as they are capable of enforcing, or at least suggesting, certain codes of “good” and “bad” behaviour).

Taken together, these two mediating roles of technology — experience-oriented and praxis-oriented — suggest not only that applied-ethicists need to be careful when assessing the moral potential of a given artifact (as the full range of its technological

intentionalities and scripts may not be readily apparent at first blush), but that designers also need to be aware of the responsibilities they have in designing technologies that will eventually influence moral perception and action. It is at this point that moral mediation becomes not just an exercise in theory but a “philosophy-in-practice,” for Verbeek is interested not only in *understanding* the morality of things but also in *designing* it. “Since technologies are inherently moral entities, designers have a seminal role in the eventual technological mediation of moral actions and decisions,” he writes. “The question, then, is how considerations regarding the mediating role that the technology-in-design will eventually play in society *could be explicitly integrated into the design process*” (Verbeek, 2011, p. 90; emphasis added). And it is this question — the question of how morality can and should be dealt with at the level of design — that I wish to attend to more closely, both in the next section and throughout the remainder of this thesis.

### ***Moral Design***

According to Verbeek, there are two ways of dealing with the moral significance of technology at the level of design. The first is by assessing the potential moral impact of technology — either on experience or praxis — and then judging whether this impact can be considered morally justified or not. He calls this the “minimal option” because it requires only that designers are reflexive in their assessment of the mediating potential of the artifacts they create (Verbeek, 2011, p. 90). The second and more substantial option requires going a step further by “explicitly try[ing] to ‘build in’ forms of mediation that are considered desirable” (ibid.). I call this *moral design* because, in this option, morality

becomes less a secondary consideration than a “part of the intended ‘functionality’ of the product” (ibid.).

It should be said that Verbeek is very much aware of the potential issues involved with such a hands-on approach to doing ethics; and since he discusses these issues at length in his book, I will not rehearse them here (see Verbeek, 2011, pp. 90-119). For my purposes, the position he ends with — which is mine as well — is that if we can accept that technologies will *inevitably* impact the ability of human actors to perceive and act in the world in some way, then it follows that designers should be asked to take *responsibility* for these potential outcomes by taking the mediating role of technology seriously at the level of design. When understood in these terms, the act of moral design is less about trying to “control” human experiences and behaviour than it is about trying to ensure, as much as possible, that each new technology has the best possible chance of achieving a positive moral result. In this way, moral design extends the work of other politically-oriented STS scholarship, such as the work of Langdon Winner (1986; 1993), who has demonstrated that technology organizes human relationships in powerful and potentially dangerous ways — sometimes as intended by technology designers, and sometimes not. Where the moral design approach differs is in its central focus on issues of morality rather than politics (although the two are often related), as well as in its “applied” critical orientation (where the goal is not simply to show “how” technology is morally significant, but to develop strategies for actually “influencing” its development in

democratic and ethically-informed ways).<sup>12</sup>

To ensure technology design decisions are arrived at democratically — or at least in ways that take seriously the moral experiences and desires of end-users — Verbeek outlines three distinct ways that designers might “try to establish a connection between the context of design and the context of use” (Verbeek, 2011, p. 99). The first is by simply trying to anticipate or imagine the kinds of undesirable moral issues that users might come up against when using the technology, and then attempting to correct for these possibilities in design (ibid., pp. 99-102). The second is by polling “relevant social groups” (Pinch & Bijker, 1987) — including “users, lobbies, designers, companies, and the like” (Verbeek, 2011, p. 102) — and then feeding these assessments back into the design process as part of a morally-informed constructive technology assessment (CTA) plan (ibid., pp. 102-3). The third is by involving users more directly in the design process by inviting them to participate in scenario-based evaluations and product simulations (ibid., pp. 104-5).

Although I am generally supportive of these strategies, my project here is somewhat different. While Verbeek and I share a similar desire to promote moral design as a means to improve the quality of our everyday interactions with technology, what we apparently do not share is a similar skepticism about the prospects of actually *implementing* the kinds of detailed moral assessment procedures he outlines. To put it

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<sup>12</sup> For example, when Winner talks about the low overpasses on Robert Moses’s Long Island bridge as being *political* (in the sense that they discriminate against taller vehicles, like buses, ostensibly occupied by racial minorities and lower-income groups), we might also think of these overpasses as being *moral* (in the sense that they express certain ideas of good and bad, right and wrong, design outcomes). While both approaches — political and moral — are certainly valuable, the latter allows us to more easily consider how *ethical thinking* might be applied to the process of design in a strategic way (hopefully circumventing the possibility that a racist or classist bridge, to use the above example, could ever be built).

bluntly: I am not convinced that many designers or design companies in the world today — besides the few that have explicitly built a name for themselves in the manufacture of ethically-responsible products — would be willing to commit to such strict moralizing procedures, particularly if these procedures in any way interfered with their ability to turn out profitable products. And so if Verbeek’s solution to the problem of moral mediation is essentially to moralize the design process, the question I wish to pursue for the remainder of the thesis is this: if we can not depend on designers and design companies to take it upon themselves to implement such formal moralizing procedures, is it possible to achieve a similar result — that is, an increase in positive and carefully-considered moral innovations — in a different way? The answer to this question, I believe, is yes. And to show how this might be done, I propose refining one idea central to the moral mediation approach: what Verbeek calls a “situation of a choice.”

While not formalized in the moral mediation vocabulary, Verbeek often casually invokes this phrase as a means to describe the ways in which technologies help organize particular courses of moral action by putting people in the position of having to make a choice. One example he offers is that of a set of genetic diagnostic tests which help identify hereditary forms of breast cancer and then suggest whether a preemptive mastectomy might be advisable. “The very fact that this technology makes it possible to *know* that it is very likely that a person will become ill, added to the possibility of preventively removing organs, makes this person responsible for his or her own disease,” he writes. “When this technology is used, therefore, it organizes a situation of choice... the technology of genetic testing creates a moral dilemma and also suggests ways to deal

with this dilemma” (p. 5; original emphasis). Yet while Verbeek argues convincingly for the importance of looking at situations of choice for evidence of the moral significance of technology, he offers no suggestions as to what might inspire designers to go about trying and to *lessen* the moral discomfort produced by such situations. If avoiding putting users in difficult moral positions seems to be one of the key goals of the moral mediation approach, then it seems pertinent to understand exactly how designers might come to feel *compelled* to address these issues on behalf of users. To forge this particular understanding, I introduce a distinction between a *situation of choice* and what I call a *situation of obligation*.

My use of the term “obligation” is borrowed from *obligatory passage point*, a familiar term in the ANT tradition. First introduced by Michel Callon in his widely-cited essay on scallop fishing (1986), an obligatory passage point can be understood, in its broadest sense, as a central node in a network — be it an idea or object — that draws actors together in pursuit of a common goal. In Callon’s essay, the problem of how scallops anchor underwater becomes an obligatory passage point because it draws a diverse group of actors — namely, scallops (who want to survive), researchers (who want permission to conduct experimental trials), and fisherman (who want to make ensure the future of their livelihood in an area where scallops are declining) — around the common goal of better understanding the anchoring habits of scallops. The crucial point, for our purposes, is that while an obligatory passage point functions very well at organizing behaviour, it does so *only* so long as the actors involved feel “obliged” to take its necessity as fact. If at any point the actors involved begin to express doubt or rise against

this arrangement, what was once considered “obligatory” can very quickly lose its power, resulting in a collapse of the network. In Callon’s example, the obligatory passage point was called into doubt when the scallops refused to anchor as hoped, and the fisherman decided to sneak out and go fishing without the researchers’ consent. “Faced with these silent mutinies of scallops and fishermen, the strategy of the three researchers begins to wobble,” writes Callon. “Is anchorage an obligatory passage point? Even scientific colleagues get sceptical. The three researchers have now to deal with growing doubt on the part of their laboratory director and the organisations which had agreed to finance the experiment” (p. 16). In short: once the obligatory passage point proved questionable, rather than immutable, the possibility for change became apparent.

Bringing this back to the distinction I have proposed between a situation of choice and a situation of obligation, I suggest that the term “situation of choice” be used to describe a situation in which *a breakdown in the network imposing a moral dilemma appears possible*, and a “situation of obligation” to describe a situation in which *a breakdown in the network imposing a moral dilemma appears impossible or at least highly unlikely*. From the perspective of moral design, this distinction between a situation of choice and a situation of obligation becomes paramount. When a situation of obligation exists, the prospects for change appear low. Users feel bound to the network which produces their subjection, and either willingly submit themselves to it (by doing what the system suggests is morally correct), or feel guilty for not respecting their “obligations.” With the introduction of a situation of *choice*, however, the prospects for change increase tremendously. Users begin to see a way out of the moral dilemma

imposed by the existing network, and take the opportunity to make choices that will diminish or eliminate their moral discomfort.

Returning to Verbeek's example of the genetic diagnostic tests, I would argue that this resembles more closely a "situation of obligation" than a "situation of choice," for while the users *do* recognize they have some kind of say in the matter (they can make the decision to be tested or not, or opt for a preventative mastectomy or not depending on the results), they likely *do not* feel as though they have a choice in avoiding the moral dilemma imposed by this technological arrangement. Their perceived "obligation" to the genetic diagnostic tests thus makes them complicit in their own subjection, for they see no other possibility to avoid the uncomfortable moral dilemma their relationship to this technology produces (as even refusing to get tested still "obliges" them to take moral responsibility for this decision). For this situation of obligation to become a situation of *choice*, I argue, the obligatory passage point, in this case the genetic diagnostic tests, would need to be challenged through the introduction of a *new* factor perceived as offering users a legitimate way out of the network or moral dilemma. This could come about with the introduction of a new idea — for example, new research which challenges the reliability of the genetic tests, points to the many dangers involved with undergoing a mastectomy, highlights flaws in the research linking heredity to breast cancer — or with the introduction of a new technology — for example, a drug that allowed positive test results to be dealt with in a more comfortable way (that is, without requiring a preemptive mastectomy).

With regards to the “situation on our ears” described at the outset of this chapter, I argue this too constitutes a “situation of obligation,” for the use of headphone technology has become so widespread that we — both as individuals and as a collective — have *no choice* but to deal with the moral dilemmas that have emerged as a result. Framed in these terms, the goal of this thesis is to come up with a more effective strategy to convert this situation of obligation into a situation of choice. And as each chapter will aim to demonstrate, this change could potentially be brought about in one of two ways.

The first is if users can identify a potential technological innovation that might help convert an existing situation of obligation into a situation of choice, *and then convince designers to pursue that option*. In this scenario, moral design is spurred by consumer demand (an issue I explore in the context of early broadcast radio culture in chapter one). The second is if designers can identify the opportunity for a technological solution *and then convince users to buy into the new option they create*. In this scenario, moral design is spurred by innovation (an issue I explore in the context of mid-century hi-fi culture in chapter two). In each of these scenarios, moral design comes about through a recognition that situations of obligation are produced in and through technology, and can therefore be “engineered” to have different, and more desirable, outcomes — to the benefit of users and designers alike.

Of course, these new outcomes, or situations of choice, can also generate *new* situations of obligation if designers fail to accurately predict, or adapt their technology to, other moral variables not initially accounted for in the design process (an issue I explore in the context of 1980s personal stereo culture in chapter three). In this case, it would

seem essential that, beyond simply looking for opportunities to convert situations of obligation into situations of choice, we must also find ways to ensure these technological “solutions” are versatile enough to work under a variety of material conditions, and adaptable enough to sustain desirable situations of choice over time (an issue I explore in the context of contemporary mobile headphone culture in the conclusion). I will outline these chapters in more detail below. Before doing so, I will first describe the methodology I will be employing to map out these strategies. I call this, following Foucault, a “history of the present.”

## **A History of the Present**

As Foucault defines it in *Discipline and Punish*, a history of the present is an attempt to move beyond methods of historical analysis which attempt to write “a history of the past *in terms* of the present” (Foucault, 1977a, p. 31; my emphasis). The difference is that, whereas the latter attempts to make sense of present-day concerns by assembling historical events into tidy narratives of progress or decline (a “presentist” search for historical continuities), Foucault’s method aims to highlight moments of rupture or difference as a means of complicating or otherwise disrupting convenient teleological versions of historical change (a critical search for historical discontinuities). This is consistent with the aims of this project, which is interested not in proving that headphones became “more” or “less” moral over time, but that they became *differently* moral in unique material, social, and cultural circumstances.

Central to Foucault's "genealogical" approach is a concern with "record[ing] the singularity of events outside of any monotonous finality" (1977b, p. 139). In other words, he is interested in attempting to make sense of historical events through the eyes (or more accurately the *statements*) of the people and groups that actually took part in them. He refers to this approach alternatively as "eventalization" for it seeks to show, through the analysis of "events" — which as I have described above, is a term chosen for its distinctly "singular" or "momentary" (as opposed to teleological) connotations — that outcomes or decisions which may appear self-evident or even "natural" from a certain historical vantage point are almost certain to have appeared much more complex to the contemporary people and groups living through them. The way to achieve this "effective history," as he calls it, is through descriptive discursive analysis, carried out through the "relentless erudition" of written statements (Foucault, 1977b, p. 139) which can be compared in an effort to shed light on the possibilities and limits of "saying the true" at different historical moments (Dean, 1994, p. 32).

While this discursive approach informed much of the archival work I undertook in this project, following Foucault's methodology to the letter also presented considerable and in some ways insurmountable difficulties. First, unlike topics such as "madness" or "sexuality," which have produced enormous discourses ideal for the kind of descriptive work favoured by Foucault, headphones — by virtue of their often "peripheral" status even within the history of sound reproduction — have not. Second, given the materialist focus of the moral mediation approach, a strictly discursive approach did not permit me to fully consider some of the important ways in which headphones and headphone-related

technologies *themselves* — as moral and moralizing objects — contributed to this process of change. To permit my research to speak more effectively about its object of study, in other words, I found it necessary to look not only to written statements for clues on how headphone-related moralities were constructed at different historical moments, but also at the physical media through which moral actions and ideas were framed.<sup>13</sup>

This idea of looking to physical media for clues to how and why historical change occurs is well supported within classical and contemporary media studies research. From Walter Benjamin's (1936) reflections on the changing status of art in the age of mechanical reproduction, to Harold Innis' (1951) comparative look at the differences between time and space-biased media cultures, to Marshall McLuhan's (1964) infamous declaration that "the medium is the message," media studies has long been aware not only of the importance of discourse, but of the role of technology in co-constituting cultural and communicative practices. Recent media historians have continued to build upon and extend this conceptual orientation outward in a variety of ways: from examining how historical audiences first responded when "old media" were new (Marvin, 1988; Martin, 1991; Sterne, 2003; Gitelman & Pingree, 2004; Gitelman, 2006), to tracing the roots of today's "new media" in older media cultures (Manovich, 2001; Park, Jankowski & Jones, 2011), to recognizing the continued relevance and circulation of old media within newer media cultures (Straw, 2000; Acland, 2007), to uncovering the significance of neglected, obsolescent, or imaginary media (Huhtamo & Parikka, 2011; Parikka, 2012), to offering

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<sup>13</sup> Some, following Kittler (1990; 1999), have gone so far as to insist on the primacy of materiality over discourse itself. While I have no intention of taking my argument this far, I do share with Kittler a commitment to the idea that, just as language mediates consciousness, so too does technology — and for this reason one can learn a lot about past cultures by considering the physical media, and not just written statements, through which certain ideas and behaviours take shape.

critical reflection on the materiality — and uncertain future — of today’s digital media (Sterne 2007; Gabrys 2013). What unites this otherwise diverse body of work is an interest in what Jonathan Sterne and Lisa Gitelman call, citing John Guillory’s (2010) work on the genesis of the concept of media itself, “the question of mediation” (2012, p. 2).<sup>14</sup> These scholars recognize that, like all technologies, media devices do not simply “reflect” the attitudes and intentions of those who use them, they also help establish the conditions of possibility for what can be done or said — and even thought — at particular historical moments. And so rather than focusing solely on the rules governing the way particular technologies were *described* over time (a strictly discursive approach), I have followed these researchers in attending to the physical characteristics of the devices themselves for clues as to why particular cultural attitudes and social behaviours took shape when and how they did.

What makes my particular approach consistent with, yet different from, those described above, is the focus on moral mediation specifically as a means of delineating and analyzing the historical periods I describe. Similar to how media historians in the SCOT tradition, for example, orient their research toward understanding how technological “controversies” emerge and achieve “closure” in particular historical periods, in this thesis my theory and methods came together in the analysis of three events in which headphones helped organize situations of obligation. That is, moments in

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<sup>14</sup> Sterne prefers the term “mediality” over mediation for the reason that, rather than connoting “a greater distance from reality or a more refracted consciousness,” it highlights the ways in which media — and people — exist in a “web of reference [that] is essential to understanding how they represent, figure, and organize broader realities and relationships” (Sterne, 2012, p. 9). While I don’t entirely share Sterne’s desire to move beyond the concept of mediation, I do feel this intervention provides a strong reminder of why the term must be used carefully and should always lead us back to an understanding of media as a constituent element of — rather than barrier to — “direct” human action and experience.

which users were put in the position of having to confront a moral dilemma introduced by a particular sound technology and achieve a state of “settlement” — either by embracing headphones, rejecting headphones, or clamouring for a new headphone design.<sup>15</sup> By placing morality at the centre of my historical periodization and analysis, I tell a particular kind of story about the history of headphones that both respects differences (each “event” is dealt with as a discrete element) and recognizes similarities (that can be read across and compared on a higher conceptual level).

### *Sources and Limitations*

On the discursive side of the project, one of the first and biggest challenges was locating appropriate sources with which to build a detailed understanding of how headphone-related technologies, behaviours, and moral issues were understood in the North American context in different ways over time. In addition to consulting a variety of scholarly histories of sound reproduction (cf. Welch & Burt, 1976; Gelatt, 1977; Douglas, 1989; 2004; Théberge, 1997; Morton, 2000; Thompson, 2002; Sterne, 2003; 2012; Anderson, 2006; Morton, 2006; Bijsterveld, 2008; Weber, 2010; Taylor, Katz, & Grajeda 2012), I found it necessary to compile a considerable archive of primary source materials as a means to make better sense of the specific role of headphones within these broader historical narratives. The sources I used to obtain these materials included a combination of wide-circulation newspapers (*New York Times*, *Washington Post*, *Wall Street Journal*),

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<sup>15</sup> I prefer the term “settlement” over “closure” or “stabilization,” because it suggests that these debates are only ever momentarily resolved under a very particular set of circumstances. Settlement also connotes compromise — and therefore tension — which suggests that a shift in the conditions which brought forth that resolution could change and spring open the debate once again at any moment.

limited-circulation newspapers (*The Daily Messenger*, *Sunday Times*, *Washington Examiner*, *Williamsburg Journal-Tribune*), general purpose magazines (*Life*, *New Scientist*, *McCall's*, *Popular Science*, *Popular Mechanics*, *Scientific American*, *Time*), specialty/trade magazines (*Audio*, *Billboard*, *High Fidelity*, *Radio Age*, *Radio Broadcast*, *Radio Times*), as well as other consumer-oriented materials (such as sales catalogues, headphone manuals, and product packaging). Far from suggesting that the material found in these publications had any kind of direct “impact” on the way people felt about headphones (cf. Hall, 1973), I used these sources primarily as evidence of dominant ideologies surrounding the use of this technology at particular moments in time — that is, as a means of mapping out a broader system of thought. By comparing how headphones were discussed in news stories (which spoke to and on behalf of consumers), letters to the editor (which allowed consumers to speak for themselves) and advertisements (which allowed manufacturers to speak back), I attempted to gain a clearer understanding of how this technology was framed differently depending on the use-contexts and technical systems in mind. As this was a North American study I focused primarily on American and Canadian sources, though I did fold the occasional international source into my analysis when it seemed productive to do so.<sup>16</sup>

While the discursive component of my research focused primarily on materials which would have been circulated for, and with, the general public in mind, the material

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<sup>16</sup> For example, it became difficult at times to talk about 1920s radio developments without including British sources, since many American and Canadian publications were concerned with parallel developments occurring on either side of the Atlantic (and many manufacturing companies served both markets). This wound up adding a lot to the project, for the British had a particularly clear — and often clever — way of articulating certain headphone-related issues through cartoons, etc. that were not as commonly found in American and Canadian sources (and the issues they spoke to were equally prevalent in all three nations at the time).

component led me to examine headphone-related devices, patents, and technical descriptions found in physical archives (Library and Archives Canada; Canadian Science and Technology Museum; McGill University’s Marvin Duchow Music Library) and online repositories — including corporate digital archives (Koss Museum, Sony Archives), university digital exhibits (Kent State University’s “Hearing Aid Museum”; Harvard University’s “Collection of Historical Scientific Instruments”) and private/hobbyist/user-generated websites (Walkman Central; American Radio History). I also amassed a small personal collection of antique and contemporary headphones, including mainstream models as well as lesser-known curiosities so that I might learn more about their overall construction, function, and feel. Together, these resources provided me with a more material understanding of the development of the technology itself — an understanding which ultimately played a crucial role in explaining how headphones came to “function” as well as “mean differently” in different historical periods.<sup>17</sup>

## **Chapter Outline**

As stated previously, the body of the thesis is divided into three chapters. Each one focuses on a historical “event” in which headphones emerged as a solution to — or cause of — a situation of obligation, and seeks to understand the mechanisms through which particular situations of choice emerge. Chapter one looks at how headphones were viewed in the context of early broadcast radio culture (c.1920-1930). At the beginning of

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<sup>17</sup> I should also add that because my research lied primarily in the moral significance of headphone technology, I often paid closer attention to form (how listening took place) than content (what specific sounds, music, or programs were listened to). This is not to say that content issues were ignored, only that unless they proved pertinent to my arguments, they were bracketed as beyond the scope of the project.

the 1920s, headphones symbolized social togetherness; they were an integral part of a technological apparatus through which the radio audience could “listen alone, together” (Sterne, 2003). As the loudspeaker became more prevalent through the mid-1920s, the social meaning of headphones began to change; however, the loudspeaker’s low sound quality, high cost, and invasive visual and physical presence generated another set of problems. Together, these factors established a “situation of obligation,” as listeners desired an easier means of radio sharing, but saw no way of resolving this dilemma within the existing material conditions. By looking at how manufacturers responded to audience pressure to develop a better solution — which they arrived at with an improved loudspeaker and furniture radio console — I show how users played a central role in converting this uncomfortable situation of obligation into a situation of choice.

Chapter two endeavours to explain a significant and by all accounts unexpected headphone revival that began in the late 1950s and which gathered momentum through the next decade. While the introduction of an improved loudspeaker and furniture radio apparatus helped resolve the situation of obligation in the 1920s radio household, the simultaneous arrival of hi-fi and television in the 1950s led audiences to reconsider the value of the loudspeaker in an environment where not one but *several* loudspeaker-oriented sound media existed at once. This generated a new and different situation of obligation as users found themselves unable to see how this “competing loudspeaker” problem could be resolved in a straightforward and mutually satisfying way. In this instance, it was designers that led the way towards converting the situation of obligation

into a situation of choice: by convincing users to welcome headphones back into the home, reengineered to meet the acoustic demands of a new generation of “hi-fi” listeners, they showed audiences how they could “live and let live ... without disturbing the other” (Koss, 1971). By describing the processes through they went about achieving this goal, I demonstrate how designers can take initiative in creating positive moral designs — to the benefit of consumers and themselves — without being morally “obligated” to do so.

Finally, chapter three looks at what happened when headphones migrated from domestic to urban spaces following the introduction of the Sony Walkman in 1979. While researchers have typically made sense of the Walkman’s success by plugging it into a cultural narrative of increasing acoustic privatization, I show here its success came for a very specific reason: it could help provide a solution to a growing public radio problem. The portable radio had been an increasing nuisance in public spaces since the 1940s, and with the proliferation of the boombox in the late 1970s many citizens had finally had enough. By allowing music to be privatized in public space, the Walkman was perceived as converting a situation of obligation (the inability to escape other people’s music) into a situation of choice. Those who were offended by the boombox could now silence it, as well as other offending urban noises, in a quiet and respectful way. Yet as I will show in this chapter, the story did not end as well as it began: the Walkman was soon regarded as socially problematic in its own right, as well as potentially unhealthy and unsafe. By explaining why the Walkman failed to ensure a positive moral result, I demonstrate the importance of thinking of moral design as something that does not end when a product

hits the market, but must continually be adapted to new user/non-user practices and concerns.

The question of how we might go about mobilizing this historical and conceptual understanding of the mediated character of headphone listening toward improving contemporary moral design will be taken up more systematically in the conclusion; there, I will assemble the lessons of the thesis's moral mediation approach to the history of headphones, and apply these perspectives to the contemporary "situation on our ears." Based on over a century of evidence, I will argue that our ability to overcome our present situation of obligation will depend not on how effectively we restrict the use of headphones (i.e. eliminate "bad technology") or educate users (i.e. correct "bad behaviour"), but how we address the co-formative relationship between listeners and technology. Such is the premise — and promise — of an analytics of moral mediation: not morality by force, nor morality by persuasion, but morality *by design*.

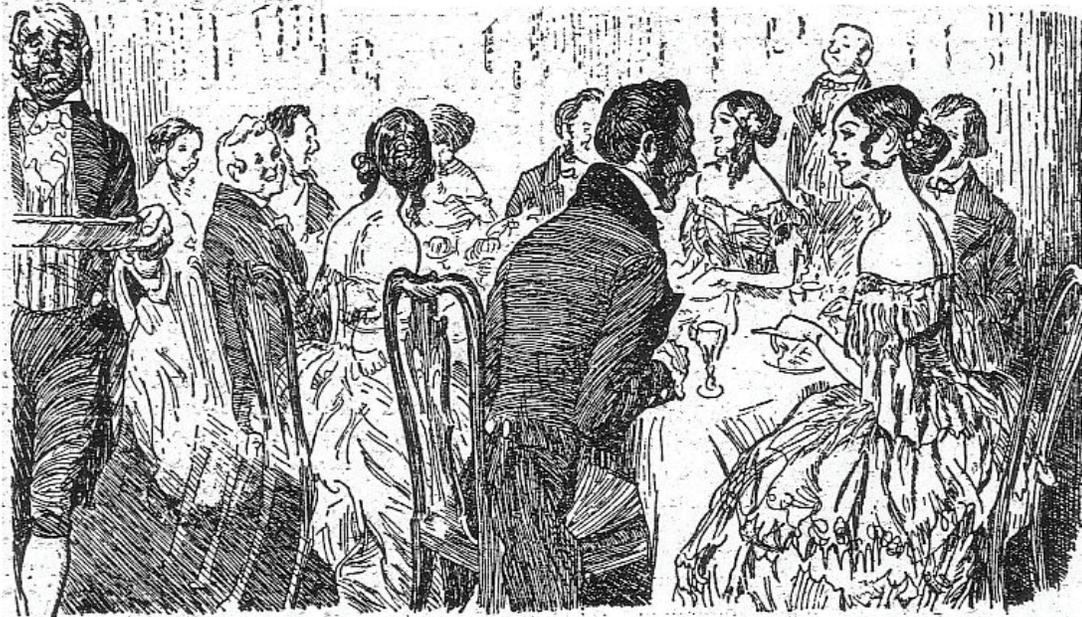
## CHAPTER I

### Radio: *You Need a Headset*

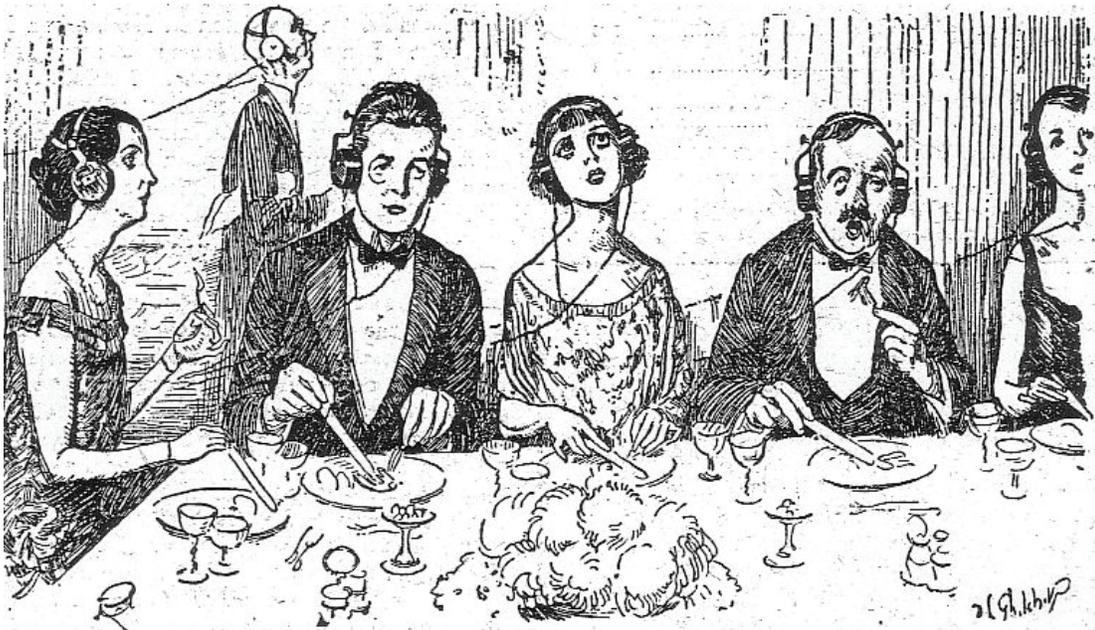
A cartoon in a 1923 issue of *Radio Times*, titled “A Lost Art” (see figure 1), presents the reader with two scenes. In the first, a group of well-dressed late-nineteenth-century partygoers are shown sharing food, drink, and lively conversation. “The dinner parties of our ancestors,” reads the text under the frame, “were embellished with sparking conversation.” In the second, a group of more modern partygoers are pictured sitting at a similarly lavish dinner table — only this time, all are wearing headphones and appear oblivious to the company in their midst. The text under this frame reads “But nowadays the talking is done ‘off.’” What appears to worry the cartoonist is not so much the content of the radio set (which is nowhere to be seen), but the form which radio listening is taking. That is, the concern is not necessarily with what the partygoers are hearing *inside* their headsets, but with what is happening to their relationships *outside* their headsets when they choose to “listen in” in this way. The *Radio Times* cartoon thus condenses an important shift in the archaeology of headphones: suddenly, it seems, headphones have moral significance.

While similar concerns became increasingly prevalent throughout the mid-1920s, for the first few years of broadcast radio headphones were more or less accepted as a central part of the radio apparatus — an apparatus understood less as a *cause* of social isolation than means of *overcoming* it by extending the possibilities of communication with others outside the home. Yet as the medium began to attract greater consumer interest, public opinion on headphones began to change. New radio audiences started to

## A LOST ART.



The dinner-parties of our ancestors were embellished with sparkling conversation—



But nowadays the talking is done "off."

Figure 1. "A Lost Art," Radio Times

question whether this technology was indeed a necessary component or “obligatory passage point” (Callon, 1986) to the radio experience, or whether there were perhaps other, more “socially acceptable” ways that listening might be done. Remarkably, by the end of the decade these concerns vanished almost as quickly as they appeared — not because audiences changed their opinion about headphones, but because they no longer needed them. “For some time after broadcasting started,” wrote *Radio Broadcast* in 1929, “head telephones were used exclusively. When the loud speaker came, it was used for some time interchangeably with the head phones, and a jack was provided by which either might be plugged in. To-day the use of head phones has almost disappeared” (Langley, 1929, p. 69). This chapter explains how it was that headphones became implicated in a “situation of obligation” as audiences began to question the moral character of headphones, and inquires as to how users were then able to convert this into a “situation of choice” by promoting the development of new radio listening systems.

I begin by exploring some of the reasons headphone listening became newly prominent in the early 1920s. Following the inauguration of commercial radio broadcasting on November 2, 1920, prospective audiences had two options for “listening in”: either through headphones, or through a loudspeaker. Given the crude state of radio technology at this time, the intermittent nature of early broadcasts, and the high cost of available receiving equipment, most opted for a pair of headphones rather than a loudspeaker. This is because headphones could detect broadcast stations with greater ease and across further distances, and could be purchased for the fraction of the price of a loudspeaker. For those individuals and families hoping to participate in the burgeoning

radio culture in an effective and affordable way, headphones thus became an obligatory passage point to the experience; their use was not yet identified as constituting a “situation of obligation,” however, because it was generally accepted that this was simply how radio listening was done.<sup>18</sup>

Next, I show how the “obligatory” status of headphones became a more contentious issue between 1923 and 1925, as the popularity of broadcast radio grew. While listeners had largely accepted headphones as a necessary — even desirable — means of listening for the first few years of broadcast radio, two changes began to upset this arrangement. First, as the availability of program-based radio listening increased, headphones came to be associated with more “technical” and masculine uses of radio (such as “fishing” for long-distance stations), perceived as excluding other members of the household. Second, the widespread availability of more powerful radio sets made loudspeaker listening increasingly possible. This combination of factors — the changing identity of headphones, and the greater availability and awareness of loudspeakers — led to the emergence of a “situation of obligation” because it simultaneously *raised the prospects* and *underscored the impossibility* of attaining a truly satisfying collective radio listening experience. This is because the available loudspeaker technology produced a dismally low quality of sound, and required a myriad of new equipment that increased the overall cost, size, and presence of radio — issues that served to intensify, rather than alleviate, the morally objectionable qualities of radio inside the home.

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<sup>18</sup> To be clear, in my framework a “situation” only emerges when an obligatory passage point becomes morally objectionable. The colloquial phrase “we have a situation on our hands” can serve as a useful heuristic for this distinction.

Finally, I use the last section to examine how radio audiences were able to settle the issues faced in the first half of the decade by taking steps to convert this situation of obligation into a legitimate “situation of choice.” Specifically, I reveal how audiences, and women in particular, encouraged manufacturers to pursue the development of higher-definition loudspeakers and self-contained furniture radio consoles more commensurate with ideas of “good” domestic listening and home decor. In other words, rather than passively accept the conditions producing their moral discomfort, I show how these audiences were able to encourage improved moral design by challenging designers to “materialize morality” (Verbeek, 2011) in more agreeable ways.

To be clear, my goal in revisiting this period is not simply to explore how the moral meaning of headphones changed during the first decade of broadcast radio, but to use a moral mediation framework to reveal something about the process by which users came to recognize, as well as influence, the moral environment in which they were part. Whereas Verbeek has suggested that moral decisions are best taken care of in the labs of designers, I show here how “users matter” (Oudshorn & Pinch, 2003) and can factor meaningfully in the process of moral design by making their fears and demands known. As we shall see, a better moral design was achieved not as a result of designers aiming to actively influence the moral behaviours of users through the preemptive development of morally-mediative technologies, but as a result of users who recognized how technology was affecting the quality of their lives and took steps to promote change. In doing so, they were rewarded not only with better-sounding and more attractive radio equipment, but also with a more desirable moral environment.

## Radio Enters the Home

In September, 1920, Westinghouse vice-president Harry P. Davis came up with a novel way to stimulate demand for the company's radio receiving equipment. Taking note of a department store ad placed in a local Pittsburgh newspaper, which promoted the activities of amateur radio broadcaster Frank Conrad in a ploy to sell more amateur radio sets, Davis decided to convince Westinghouse to build a station of its own and put Conrad (already a Westinghouse employee) at the helm. He reasoned that by establishing a more powerful and reliable commercial broadcasting station, Westinghouse could generate a broader consumer interest in radio listening and, in turn, generate a commensurate increase in radio equipment sales (cf. Barnouw, 1966; Douglas, 1987; Douglas, 1989). His plan succeeded beyond any reasonable expectations. The Westinghouse station, better known by its call letters KDKA, began broadcasting on November 2, 1920, and in a short time Westinghouse was struggling to keep up with demand for their radio equipment (Whitney, 1922).<sup>19</sup>

What made Davis's strategy so effective, to put it in Michel Callon's terms, was that it initiated a "double movement" in which a problem (created by Westinghouse) and a solution to that problem (provided by Westinghouse) rendered Westinghouse — or at least the technology they could supply — an "obligatory passage point" in the network (Callon, 1986, p. 204). By making "free" content available over the airwaves, and then charging for the technology necessary to access to that content, Westinghouse produced a

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<sup>19</sup> The *New York Times* reported by 1922 one Westinghouse plant alone was shipping an average of "1,200 receiving sets a day" in an effort to feed growing public demand ("Broadcasting Now in All States," 1922, p. 112).

business model capable of enticing regular people to buy in to the possibilities of radio.<sup>20</sup>

Over the next two years radio manufacturing companies across America mimicked the Davis/Westinghouse model, and in November, 1922, the *New York Times* reported that “[e]very state in the Union now has one or more broadcasting stations,” with California and Ohio each boasting over sixty (“Broadcasting Now in All States,” 1922, p. 112).<sup>21</sup> As *Radio Broadcast* summarized this development in their inaugural issue in 1922:

In 1919, the selling of radio telephone receiving sets to the public did not exist as a commercial business... In the fall of 1920, then, the public first had reason to buy radio telephone receiving sets, and it began to buy. The East Pittsburgh station of the Westinghouse Co. unquestionably began the present sensational development. The public bought all the equipment that was for sale and from that time to this the manufacturers have never been able to catch up with demand.<sup>22</sup> (Whitney, 1922, p. 34)

Although Davis, Conrad, and KDKA no doubt played a significant role in

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<sup>20</sup> As George Douglas points out, while other commercial broadcasting operations existed before KDKA, there are two reasons why it has been credited as the “first”: one, because they were the first to be licensed by the government specifically for those purposes, and two because KDKA was designed with the expressed intent of introducing radio to a wider audience beyond the amateur hobbyists. For more on KDKA’s place in early radio history, see 1987, pp. 1-22.

<sup>21</sup> While it wasn’t just manufacturers setting up stations — many universities, etc. did as well — a significant portion were operated either by radio components manufacturers, or people hoping to stimulate sales for other consumer objects (by advertising heavily during broadcasts).

<sup>22</sup> At this time radio sets were still widely referred to as “radio telephone receiving sets.” This is for two reasons. First, because broadcast radio was still considered a form of wireless telephony, which had only recently come into prominence (prior to 1919 wireless telegraphy had been the norm); and second, because all radio sets relied on a telephone receiver to convert radio waves into audible sound waves (more on this later). Also note the term “receiver” was applied to both the radio set (which “received” the broadcast signals from the antenna) and the end-listening device (which “received” the signals after passing through the radio set).

kickstarting the “broadcasting boom” that swept America in the early 1920s (Douglas, 1989, p. 300), there were in fact a great many forces at work which contributed to the American public’s growing attraction to the idea of radio listening at this time. As Raymond Williams (1974) has written, the post-WWI period marked a time when urban industrialization was having a profound influence on the ability of everyday Americans to feel connected to their extended families and communities. As new transportation and housing infrastructures were developed to accommodate the influx of people to manufacturing jobs in the city, a paradoxical tension emerged between the need for domestic stability (maintaining a functioning household) and physical mobility (acquiring the money, food, and other commodities necessary to sustain and provide for that household). These conditions left many Americans desiring a means to maintain a sense of being in touch with the outside world in the limited hours between work, sleep, and transit, generating in turn what Williams calls an imperative need for “a new kind of social input — news and entertainment brought into the home” (ibid., pp. 20-1). Broadcasters and radio equipment providers took note of this, and shrewdly incorporated themes of domestic togetherness and public fellowship into their marketing campaigns for the new radio equipment. This is perhaps nowhere more evident than in the introduction to RCA’s promotional/educational book, *Radio Enters the Home*, published in 1922:

Radio has placed a new, inspiring and powerful resource at the disposal of civilization. With [a] magic touch it has relieved isolation and neglect on land and

sea ... carrying into the homes of rich and poor alike a modern facility of pleasure and education which is binding the people together in a new and democratic brotherhood. A richer and more complete home-life, with mental stimulus and pleasant relaxation, has been made possible through broadcasting and its receiving corollary, the radio telephone receiver. (RCA, 1922, p. 5)

While in theory gaining access to this new “modern facility of pleasure and education” was as simple as purchasing a home radio set, in reality the limited state of the art in receiving technology in the early 1920s made radio listening a complicated and potentially costly affair. Not only did all receivers require a rudimentary understanding of the physics behind the technology to be operated with any success, but the price of a complete set — and challenges involved with installing and maintaining it — could vary dramatically depending on where one lived and how one wished to listen. As Susan Douglas writes: “People didn’t just walk into a shop in 1922, buy a radio, bring it home, plug it in, and hear orchestral music ... Everyday people had to assemble the device (which included stringing up an antenna), had to learn how to listen, how they wanted to listen, and what they wanted to listen to” (2004, p. 57).

Starting in 1922, a flurry of literature along the lines of *Radio Enters the Home* appeared on the market — some produced by manufacturing companies, others by journalists and dedicated amateurs — with the expressed intent of helping a wider audience understand how to achieve the goals Douglas describes (cf. Cockaday, 1922; Fowler, 1922; Gernsback, 1922; “Getting Results from Home Sets,” 1922; “How to Plan

Set for Home Use,” 1922; Ranger, 1922; Smith, 1922).<sup>23</sup> To keep things simple, these guides often boiled the differences down to three main types of receiving set: the crystal set, the one-tube set, and the three-tube set. The differences between each of these sets was significant, because each posed difficult practical and economic challenges, and “obliged” users to listen in particular ways.

The cheapest option, available to those living within five to twenty-five miles of a transmitting station, was the crystal radio set (see figure 2).<sup>24</sup> This was the oldest consumer-friendly radio receiver, dating back to 1906, and in 1922 could be built for as little as \$6, or purchased complete for between \$10 and \$25.<sup>25</sup> Its name came from the crystal detector it used to “rectify” radio waves: that is, convert them from an oscillating (A/C) current into a pulsating (D/C) current so that they could be successfully passed through a telephone receiver.<sup>26</sup> This step was necessary because the telephone receiver was the only known means of converting electromagnetic currents into physical sound waves capable of being heard by the human ear. While early crystal radio sets (c. 1906-1912) sometimes employed standard telephone receivers, a more sensitive telephone arrangement was soon developed that could better handle the meagre energy

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<sup>23</sup> Even by the end of 1922, the majority of listeners were still made up of radio amateurs who already had a working knowledge of and enthusiasm for the technical side of radio (Douglas, 1987; Douglas 1989). This literature emerged as part of a concerted effort amongst all interested parties to move radio listening beyond this amateur set and into the mainstream. It primarily consisted of short articles in the popular press, on the one hand, and book-length treatises covering both the history and art of the practice, on the other.

<sup>24</sup> 5 miles with an indoor antenna and up to 25 miles or more with an outdoor antenna. See “How to Plan Set for Home Use,” 1922, p. 108; Lynch, 1922, p. 38; Flemming, 1922, p. 112; Weaver, 1923, p. 376.

<sup>25</sup> See “How to Plan Set for Home Use,” 1922, p. 108; Austin, 1922, p. 18; “How to Build and Operate a Very Simple Receiving Set,” 1922, pp. 45, 50; Douglas, 1987, p. 40; Douglas, 1989, p. 195.

<sup>26</sup> As the *New York Times* explains: “[Telephones] have permanent magnets to keep the diaphragm under a constant strain, to prevent hysteresis (heat) losses. They will not operate on oscillating [radio] current because the inductive reactance is too great and the current cannot pass through the phone. Even if the current could pass, the diaphragm could not vibrate so fast, and if the diaphragm could vibrate at that speed the human ear would be unable to hear it” (“Getting Results from Home Sets,” May 21, 1922, p. 85).

**Low in Cost**  
**Simple to manipulate,**



**T**HE radio enthusiast who lives within ten to twenty miles of a broadcasting station has exactly what he wants in Radiola I (ER 753-A)—low cost, compactness, portability, and simplicity of manipulation.

Open the walnut cabinet, and on the front panel you find the tuning control, the crystal detector and the binding post. In the body of the cabinet are the head-telephones. Tuck away the telephones, close the front panel, and you can carry the whole set as you would a satchel.

*Radiola I at your dealer, \$25.00*

The Book that Brings Radio Into the Home  
For 35 cents you can obtain from your dealer or from us a copy of the book "Radio Enters the Home." It explains the principles, the fascination of radio in plain English. It describes Radiolas and their accessories. It contains the most valuable wiring diagrams ever published.



*Carried like a satchel*

*Opened like a book*



*This symbol of quality is your protection*



**Radio**  **Corporation**  
*of America*

*Sales Department*  
233 Broadway  
New York, N. Y.

*District Office*  
10 South La Salle St.,  
Chicago, Ill.

Figure 2. RCA crystal radio receiver advertisement, Radio Broadcast (1922)

output these sets were capable of producing. Known as a double telephone, set of head telephones — or more simply, headphones — this device became the standard means of crystal radio listening from the 1910s on.<sup>27</sup> This is because, lacking battery power or amplification capabilities, neither of which could be applied to a crystal detector, this type of radio set worked poorly with less sensitive receivers (like a standard telephone receiver) and could not supply the electromagnetic energy necessary to power a loudspeaker (more on this shortly).<sup>28</sup>

For those who did not live close to a transmitting station, or who simply wanted the option of choosing from a wider variety of stations, the second option was to purchase a battery-powered one-tube set. This set, which first became available in 1921 (Dunlap Jr., 1930, p. XX10), had a much greater range — roughly thirty to one-hundred miles, depending on whether an indoor or outdoor antenna was used — and could be purchased for around \$75-\$100.<sup>29</sup> The one-tube set, so-named because of the single vacuum tube which took the place of the crystal detector as the radio's detector/rectifier, was valued both for its heightened sensitivity, which permitted listening to be done from much further distances, and for its greater ease of use. While the crystal set required constantly

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<sup>27</sup> While after 1906 dual-ear telephone receivers came to be associated primarily with radio use, it should be noted their use dates back much earlier. Proto-headphone devices were in fact used in many early telephone systems (for increasing the loudness and clarity of longer-distance calls), and even in radio they were widely used in experimental settings prior to 1906 (See, for example, “American Academy of Arts and Sciences,” *Nature*, Jan. 2, 1879, 211 (steel-band telephone); “Living Trees for Wireless Telegraph Stations,” *Popular Mechanics*, February 1905, 207 (head telephone).

<sup>28</sup> It is worth noting that all radio loudspeakers between 1920 and 1925 operated using a single telephone receiver fixed to the base of a loudspeaking horn. In other words, early radio loudspeakers still relied on a telephone receiver to render radio waves audible.

<sup>29</sup> Prices ranged between \$50 and \$150, but \$75-\$100 was about standard for a good quality set with all peripheral components included. The upper-level of distances reached also varied considerably, depending on how the radio was constructed. See Flemming, 1922, p. 114; Lynch, 1922, p. 38; “How to Plan Set for Home Use,” 1922, p. 108.

adjusting a fine wire known as the “cat’s whisker” in order to ensure the most sensitive part of the crystal was being used, the vacuum tube demanded no further adjustment once it was installed. Like the crystal set, however, the one-tube set also lacked amplification, meaning that headphones were still required for listening.

For those hoping to pick up broadcasts at an even greater distance, or incorporate several sets of headphones or a loudspeaker into their home radio system, the third option was to invest in a much more powerful three-tube set (see figure 3).<sup>30</sup> This set could be purchased in 1922 for between \$150 (for a more basic set-up) and \$300 or more (for a more elaborate furniture console), and could receive anywhere between seventy-five and five-hundred miles, depending on the whether headphones or loudspeakers were used.<sup>31</sup> Just like the one-tube set, the first vacuum tube functioned as the radio’s detector and rectifier; however once the signal was rectified, it was then passed through two additional amplifier-type tubes, which boosted it “sixteen to twenty-five times the normal strength” (Flemming, 1922, p. 114). This meant that stations barely audible through a one-tube set could now be heard loudly and clearly through headphones, and that stations which could already be heard loudly and clearly through a one-tube set could now generate enough power to be heard through several headsets or a loudspeaker. With a three-tube set, extreme long-distance listening became possible for the first time, as did practical group-oriented listening.<sup>32</sup>

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<sup>30</sup> Alternatively, one could add two additional tubes and an upgraded battery set to a single-tube set.

<sup>31</sup> For longer distances, the broadcast signals were so faint that even after amplification they were still unable to power a loudspeaker. So while loudspeakers could be used with a three-tube set, headphones were still required for longer-distance listening. See Lynch, 1922, p. 38, Austin, 1922, p. 18; “How to Plan Set for Home Use,” 1922, p. 108.

<sup>32</sup> I specify “practical” here because listeners did often experiment with making headphone listening more conducive to group listening, something I will describe in further detail in the next section.



*Figure 3. Home-built 3-tube radio set (note tubes on top of unit, batteries below), Radio Broadcast (1922)*

Although from a purely technical standpoint the three-tube set was far superior to the one-tube and crystal set, from an economic standpoint the issue was much less clear-cut. As the above prices indicate, even the cheapest three-tube sets were about twice the cost of a good quality one-tube set in 1922, and almost ten times that of an average crystal set. While the initial price was one thing, one- and three-tube sets also required considerable maintenance costs. Just like regular light bulbs, the filament in the vacuum tubes frequently burnt out, meaning that extra tubes needed always to be kept on hand. The batteries necessary to power them also needed regular recharging (and replacing),

costing upwards of \$5 a month (Flemming, 1922; Douglas, 2004).<sup>33</sup> Given the fact that radio broadcasting was still a new and highly unstable medium, investing more than the minimum amount required to access the few hours of available content each week would have seemed exorbitant for all but the most dedicated and financially well-off listeners. Indeed, statistics compiled Sterling & Kittross (2002, p. 862) suggest the average receiver purchased in 1922 was just \$50, indicating that, for the vast majority of people who chose to take part in broadcast radio between 1920 and 1922, “listening in” was done exclusively through headphones.

In light of the above evidence, if the home radio set could be said to constitute an obligatory passage point to broadcast radio, then the same could be said of headphones at this time. For while technically speaking the loudspeaker was a possibility, economically speaking it was not a realistic nor practical option for most. However just because headphones were an obligatory passage point does not mean this arrangement constituted a *situation* of obligation. As explained above, a situation of obligation emerges only when a “situation” becomes apparent — that is, when the obligatory status of a technology becomes morally problematic. While headphones certainly “obliged” people to listen in particular ways, there is little evidence to suggest that they posed any significant moral issues at this time. The majority of the radio audience viewed them as simply a tool of the trade, and the popular press paid no more attention to them than any other essential component in the apparatus.

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<sup>33</sup> As *Radio Broadcast* reported in 1922: “many persons [still] hesitate to employ a vacuum tube set [of any type] because of the expense of purchasing a storage battery, and also because the storage battery must be watched and tested at intervals to determine when it runs down” (Flemming, 1922, pp. 112-3).

Between 1923 and 1925, however, a situation did indeed begin to emerge. As the popularity of radio increased, audiences began to wonder about the moral character of such an ostensibly individualistic mode of listening. To put this in Verbeek-cum-Latour's terms, headphones slowly came to be understood not "merely in terms of functionality" but as "*mediators* that actively help to shape realities" (2005, pp. 45-6; original emphasis). The change was brought about by two developments: first, the increasing popularity of a male-oriented listening practice known as "DXing," and second, by a growing public desire for more a practical means of radio sharing.

## **Call in the Crowd**

Between 1923 and 1925 the radio audience increased fifty-fold. While in 1922 only about sixty thousand American households (0.2% of the population) reported owning a radio set, by 1925 that number had grown to two and three-quarters of a million (over 10% of the population) and counting (Sterling & Kittross, 2002, p. 862). This surge of public interest in radio listening led not only to the development of better means of mass producing radio equipment, but also to growing competition in the manufacturing sector. As a result, the price of components (in particular vacuum tubes) began to come down, while the overall quality and reliability of equipment increased. If prior to 1923 it was rare to see a radio set boasting more than one tube, by 1925 higher-end systems — including the antenna-less superheterodyne receiver that would become increasingly

popular in years to come — could accommodate six tubes or more.<sup>34</sup>

Yet while these more powerful radio sets began to make it easier to open radio up to the entire household to listen in, they also presented the opportunity for greater numbers of listeners — predominantly men — to begin experimenting with a much older and more individualistic form of radio listening: DXing. Short for “distance listening,” DXing involved tinkering with the radio set in order to try and tune in the faintest, most distant stations possible. As Susan Douglas points out, this hobbyist use of radio dated back to the earliest days of the crystal radio (c. 1906–1912), when young boys would build home-made crystal receivers and compete with friends over who could listen the furthest (see Douglas 1989, p. 214; 2004, pp. 58-61). Between 1920 and 1922 the majority of radio equipment sold was purchased by the same boys (now men) that had learned to build their first radio sets in this earlier period; however as the availability of more powerful and easily operated radio sets grew, so too did the number of average men who also became intrigued with the possibilities of exploring — and not just passively listening to — the airwaves.

Significantly, headphones were used exclusively for this form of listening because they increased the sensitivity and distance-listening capabilities of all radio sets, regardless of their size or cost. As Sterne explains, by channeling the sounds produced by the radio set directly into the ears, and bracketing out distracting “noise” located within the listening room, headphones helped “intensify and localize listeners’ auditory fields,

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<sup>34</sup> The superheterodyne or “superhet” receiver was considered a significant breakthrough in 1920s radio technology. As George H. Douglas writes, not only did it provide “unusually high” quality of reception, it also “required no antenna and could easily be tuned” (1987, p. 46). This made higher quality and simpler radio reception possible for the less technically-minded, and spared them the hassle of stringing antennas and installing ground wires.

making it much easier to pay attention to minute sonic details and faint sounds” (Sterne, 2003, p. 87). This was especially important in the context of DXing, for the further broadcast stations were from the listener’s radio set, the fainter their signals would be when they arrived. “You *need* a headset” insisted one Brandes advertisement aimed at the DX audience in 1925: “to tune-in with; to get distant stations — both domestic and foreign; to listen-in without disturbing others; to shut out the noise in the room — and get all the radio fun; to get the truest and clearest reception — always” (see figure 4).<sup>35</sup>

For those not involved in the practice, however — predominantly women — headphones slowly came to be associated not only with *sonic* exclusion but also *social* exclusion. Starting in 1923, complaints began to surface that when men chose to don headphones in the evenings, many women felt silenced and otherwise ignored. “One of the most important of radio developments is the radio widow,” went one letter to the editor written by a female reader of *Radio Broadcast* in 1924. “When the children are in bed, the local station finished with its program, father goes fishing for those elusive long distance stations ... Wife sits mum, consoling herself with a book, or solitaire, having at least the chill comfort of his physical presence, though his soul go marching on” (Harris, 1924, p. 530).<sup>36</sup> This figure of the radio or wireless widow featured prominently in

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<sup>35</sup> In *The Audible Past* (2003), Sterne uses this advertisement as the end-point of his hundred-year cultural history of modern listening. What is significant about this ad, for Sterne, is how it demonstrates an intuitive understanding, on the part of the 1920s radio listener, of the usefulness of *audile technique*: that is, a practical and conceptual orientation to sound and listening that emerged with the acoustic stethoscope in the early nineteenth century, and was further disseminated with the popularization of the telephone, phonograph, and radio in the late nineteenth and early twentieth centuries. “Brandes’s 1925 headset ad marks a convenient end point for a series of transformations in practical orientations toward listening that began in the 1800s,” he writes. “Brandes could harangue their readers with the imperative ‘You need a headset’ because the headset supplements and crystallizes an orientation to listening that they presumably already had. It presumed a high level of intuitive knowledge about radio listening” (2003, pp. 88-9).

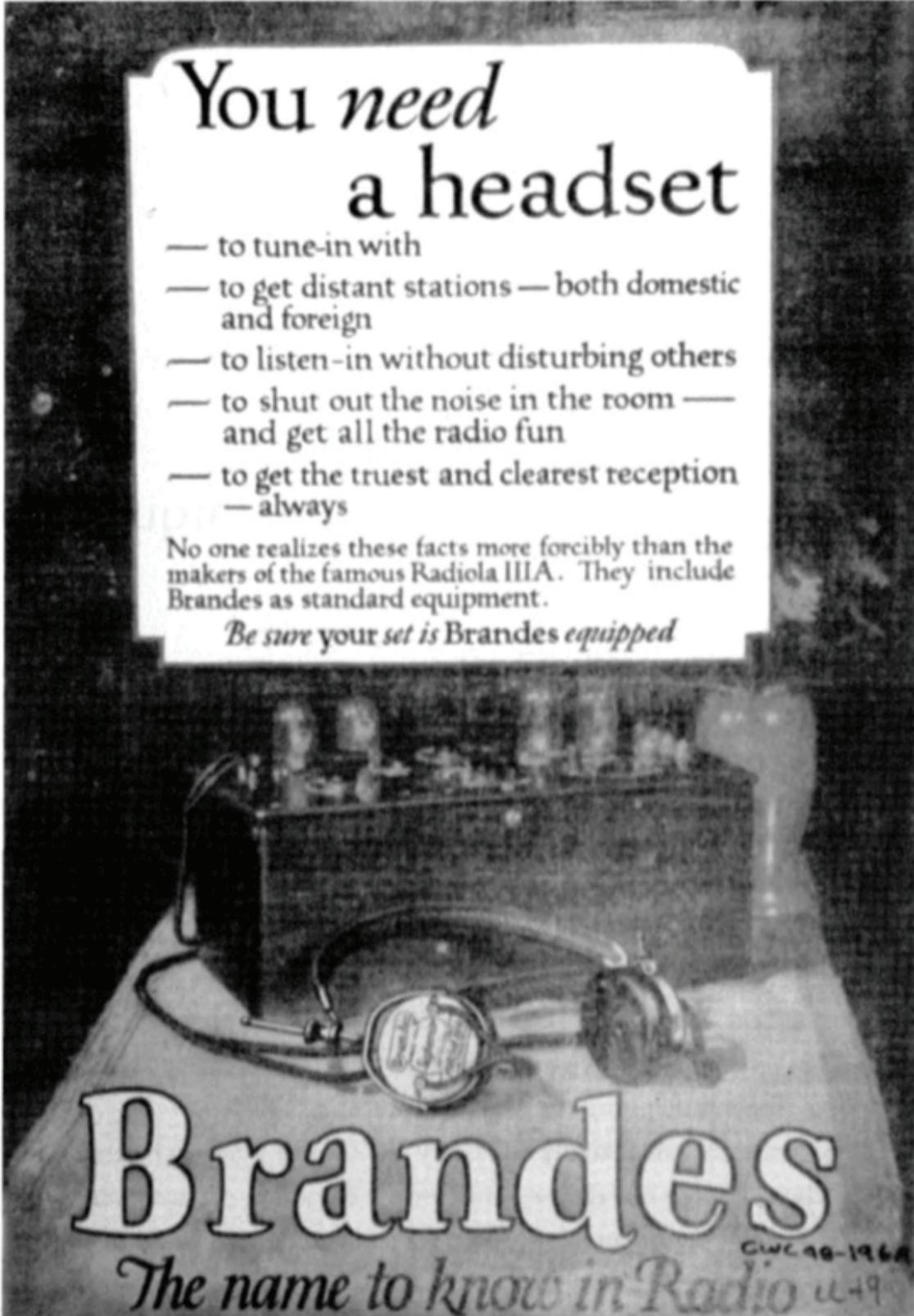
<sup>36</sup> “Those two letters ‘DX’ have caused as much joy and sorrow as any others known in the vast and mystic terminology of a science,” went another *Radio Broadcast* article in 1925. “To radio widows, the term is anathema” (Welles, October 1925, 751).

# You need a headset

- to tune-in with
- to get distant stations — both domestic and foreign
- to listen-in without disturbing others
- to shut out the noise in the room — and get all the radio fun
- to get the truest and clearest reception — always

No one realizes these facts more forcibly than the makers of the famous Radiola IIIA. They include Brandes as standard equipment.

*Be sure your set is Brandes equipped*



# Brandes

*The name to know in Radio* 449

Figure 4. "You need a headset," Brandes Corporation (1925)

popular discourse surrounding DXing through the middle of the decade, serving as a particularly clear index of how radio was serving not only to enrich — but also disrupt — the conditions of the domestic sphere (Sewell, 2014, p. 84).<sup>37</sup> Headphones frequently factored into the imagery surrounding DXing, not only because that is how this form of listening was predominantly done, but because it served as a convenient visual symbol of exclusion and obliviousness in this context (see figures 5 and 6).<sup>38</sup>

While the association of headphones with the DX phenomenon posed one set of domestic problems, for those who owned a crystal or one-tube set and *did* wish to invite other family members to listen in, headphones presented equal challenges. Promotional materials and articles in the popular press frequently pictured family members gathered awkwardly around a single listener “in an effort to catch the strains of music that might escape from the phones” (Dunlap Jr., 1930, p. XX10; see RCA, 1922, p. 14), or described individuals turning outwards or physically removing one of the earpieces so that others could more easily listen in (RCA, 1922, p. 6; Moores, 1998, p. 30). “Whenever there are more persons present than headsets,” wrote *Radio Broadcast* in 1923, “making it necessary for someone in the crowd to wait his turn to listen-in to the concerts, someone invariably will remove a receiver from his head-band and lend it to his neighbor” (Jones,

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<sup>37</sup> While content-based radio listening was often constructed in the popular press as a means of bringing the family closer together, distance-based listening was compared to other masculine pastimes like fishing and golf, which had long been considered opportunities for men to avoid rather than improve their relationships at home (Douglas, 2004, p. 73; Spigel, 1992, p. 27).

<sup>38</sup> “Are you a ‘wireless widow?’” asked the *Williamsburg Journal Tribune* in 1923. “Since wireless has become such a male hobby, her number is increasing, alarmingly, and divorce court judges predict it will cause more trouble in the home than golf ever indicated” (“Wireless Widow,” Jan 11, 1923, 4). The mention of divorce in this article is particularly interesting, for a year later the first instance of a literal “wireless widow” was widely reported on in the popular press. “Now comes Mrs. Cora White, the first ‘Wireless Widow’ to sue for ‘Radio Divorce’,” one headline read. “She alleges her husband thinks more of his radio than of her” (“Radio Widow in Courts at Last,” 1924, 12).



THE WIRELESS WIDOW.

Figure 5. "The Wireless Widow," Radio Times (1923)



Figure 6. "The Bystander," Radio Times (1924)

1923, pp. 77-8). More inventive users were reported as going so far as to place headphones in fish bowls, pots, cardboard boxes, or empty water basins to better amplify the sound for others to hear (“Radio Broadcasting News,” 1923, p. 5; McMahon, 1986, p. 199; Douglas, 2004, p. 70; Moores, 1998, p. 30). As one might imagine, these group-listening tactics were not particularly ideal. But for those who lacked the financial means necessary to invest in a larger multi-tube radio set, these makeshift efforts were often the only resort for turning radio listening into a more communal or family-oriented activity.

Recognizing the tensions that were beginning to emerge as a result of the proliferation of headphone-only crystal and one-tube radio sets, manufacturers in the early 1920s began trying to persuade consumers to upgrade their equipment to loudspeaker-capable multi-tube sets so as to make collective listening a greater possibility. “It is the Magnavox Radio which gives every receiving set its greatest enjoyment and use,” announced one Magnavox advertisement in 1922, “doing away with the restrictions and limitations of the *individual headset*” (Magnavox Corporation, 1922, p. 447; original emphasis). “Call in the crowd, now,” went another for RCA in 1923. “Everyone can listen in with as much joy as one man at the headphones... No more one-man radio sets. Everybody gets it — all!” (see figure 7).<sup>39</sup> While headphones had played a crucial role in the proliferation of radio broadcasting by making radio equipment affordable enough for the public to experiment with, manufacturers increasingly

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<sup>39</sup> Examples like this abound. “To get the most pleasure out of wireless you will want a loudspeaker,” remarked a 1922 amplifier ad. “Then you can entertain a group of friends — hear the wireless telephone programs clearly all over the room — just like [the] phonograph” (Acme Apparatus Co., 1922, p. 77). “Music for the crowd as clear as one man gets it on the headphones!” announced another for RCA in 1923 (RCA, 1923, p. 173). “The band begins. Stirring music rings in the room — full, rich and clear,” went yet another for Atwater Kent loudspeakers in 1924. “Thank the Atwater Kent Loud Speaker for that great new joy and exemption from bothersome head-pieces” (Atwater Kent, 1924, p. 2).

# Clear as Your Headphones

**C**ALL in the crowd, now. Everyone can listen in with as much joy as one man at the headphones. Here is a loudspeaker with a reproducing range so wide that it gets all the tones—the high notes—and the low ones—with all their overtones and partials—full and rich. With a horn so perfect that it causes no distortion—adds no vibration of its own. And a one-finger adjustment that controls the volume, at your pleasure. Everything—music, speech, sports news—*clear for the crowd!* No more one-man radio sets. Everybody gets it—all!



This symbol  
of quality  
is your pro-  
tection.

Radiola Loudspeaker  
Model U. Z.—1320  
Price \$36.50



Radio Corporation of America

Sales Offices: Dept. 31

295 Broadway, New York

19 So. La Salle St., Chicago, Ill.

433 California St., San Francisco, Cal.

# Radiola

## LOUDSPEAKER

★ Tested and approved by Radio Broadcasters ★

Figure 7. "No more one-man radio sets. Everybody gets it—all!" RCA Radiola advertisement (1923)

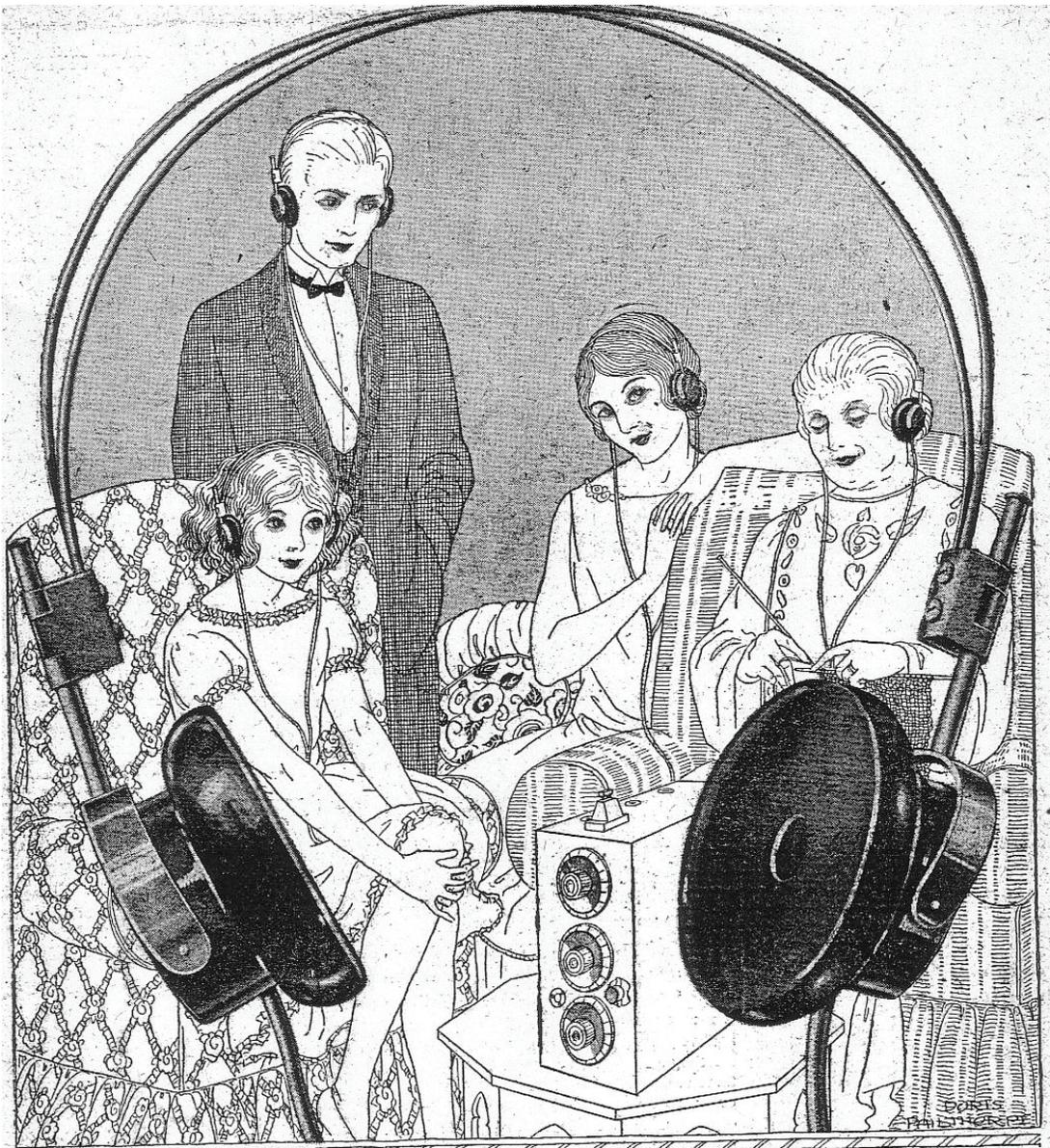
recognized a growing need — and economic opportunity — to address some of the clear moral issues that were beginning to surface as a result of the headphones’ “obligatory” status within the cheaper systems.

The trouble, however, is that the loudspeaker often introduced as many problems as it solved. Rather than present listeners with a “situation of choice,” it instead *deepened* the perceived situation of obligation by further emphasizing, even exacerbating, the complexities of the group-listening problem. To start, while loudspeaker manufacturers often boasted a high quality of sound, the results were often less than satisfactory in practice — this meant that collective listening and “loudness” came at the cost of clarity. As Douglas puts it bluntly: “early loudspeakers mangled the sound of radio” (2004, p. 70). The reason for this is because radio loudspeakers were still relatively unsophisticated devices, consisting of little more than a phonograph-type horn with a single telephone receiver fixed at its base. While telephone receivers worked well in a headset arrangement, where they only had to move a small amount of air between the diaphragms and the listener’s ears, they were not very effective when pushed to the level of power required for a loudspeaker. Low notes in particular required the diaphragm to swing widely from side to side in order to produce the air pressure necessary to generate a loud and clear tone. This meant the diaphragm would often touch the magnets on either side, producing distortion. As long as a telephone receiver was necessary in a loudspeaker arrangement, in other words, there appeared no way to produce the same sound quality possible through most headphones worth a fraction of the cost. As *Radio Broadcast* put it rather emphatically in January, 1926: “it is to be expected that this season’s [radio]

offerings stress... improved audio-frequency amplification so as to produce loud speaker results comparable with those obtained from the simple crystal detector receiver and headset — the cheapest yet highest acoustic development in radio telephone reception!” (Lescarbourea, 1926, p. 306).

In addition to being expensive and poor-sounding, from a domestic standpoint the loudspeaker introduced additional difficulties. As discussed in the previous section, the larger radio sets necessary to power a loudspeaker required a minimum of three tubes, each of which required significant battery power. These batteries were large in size, industrial in design, and were notorious for leaking battery acid (Spigel, 1992, p. 27; note batteries pictured on the floor in figure 3). Not only did this ruin floors, carpets, and furniture, it also emitted a noxious odour into the listening space (Douglas, 2004, p. 70). The physical form of the loudspeaker itself posed its own challenges. Nicknamed the “gooseneck” based on its awkward shape, these loudspeakers took up a fair amount of space and were considered unsightly by most, and especially by women who were often responsible for the home decor (ibid.; see also Brainard, 1927). For these reasons many families were hesitant to grant loudspeakers — or the equipment necessary to power and operate them — a permanent place in the living room.

If one was willing to put up with the battery issues but not the lower quality of sound and/or unsightly appearance of the gooseneck, one option available to listeners interested in a more communal listening experience was to invest in a multi-tube radio set and employ multiple sets of headphones in place of the loudspeaker — one headset for each member of the family (see figure 8). While many families did opt to pursue this



# **Western Electric** **HEAD RECEIVERS**

*For Comfort and Clarity of Tone*

PRICE, 4,000 OHMS - - - - - 25/-

MADE BY THE MAKERS OF OVER HALF THE WORLD'S TELEPHONES

ADVERT. of Western Electric Company Ltd., Connaught House, Aldwych, W.C.2.

Figure 8. Western Electric Head Receivers advertisement, Radio Times (1924)

option, however, few found this arrangement particularly ideal either. Reports indicate that many men found headphones to be “bothersome” and uncomfortable for long periods of listening (“Progress in Radio,” 1924, p. 16; see also Morecroft, 1922, p. 4), and many women objected to how they tugged at and messed up the hair (Spigel, 1992, p. 28; Boddy, 2004, p. 37). In one extreme case, the *New York Times* even warned listeners of “a new radio disease” called aural eczema, which it was claimed was “caused by excessive pressure from the earphones. If neglected the disease is likely to spread to the spine” (“Aural Eczema New Radio Disease,” 1924, p. 15).

In an effort to resolve these issues, new lightweight headsets were developed which pressed less firmly on the head and ears, and hand-held models were marketed towards women who “object, for personal reasons, to wearing the more usual types of telephones” (Brown Headphones, 1925, p. 231).<sup>40</sup> Despite advertisers’ frequent claims to the contrary, however, neither design appears to have been particularly desirable nor enthusiastically embraced by casual listeners — male or female — who still seemed to prefer the idea of unencumbered listening more readily identified with the loudspeaker.

Yet perhaps the biggest concern produced by multiple-headset arrangements was not their lack of comfort but the fact that they placed physical acoustic barriers between individuals and family members when in use. As Spigel writes, while 1920s radio advertisements certainly did their best to sell users on the sense of togetherness multiple headsets could provide, it was difficult not to get the sense in viewing these ads that “the experience of listening to radio [was instead] one of isolation and fragmentation as family

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<sup>40</sup> See also “Some ‘Amplion’ and Graham Productions,” 1923, p. 38.

members convene not with each other, but with the a distant source of inspiration” (1992, p. 28). This feeling, captured in the “A Lost Art” cartoon described above (recall figure 1), was also expressed by contemporary cultural critics such as Siegfried Kracauer who worried what would become of social interaction in a world filled with individuals listening “alone, together.”<sup>41</sup> “Who would want to resist the invitation of those dainty headphones?” wrote Kracauer in 1924. “They gleam in living rooms and entwine themselves around heads all by themselves; and instead of fostering cultivated conversation ... one becomes a playground for worldwide noises ... Silent and lifeless, people sit side by side as if their souls were wandering about far away” (1924, p. 333).

Despite these practical challenges, frustrations, and concerns, the imperative for group-oriented radio listening prevailed. Between 1922 and 1925, the popularity of loudspeakers increased tremendously; at the same time, headphone sales also continued to grow. An April 1925 poll in *Radio Broadcast* even suggested that while loudspeakers were indeed becoming more prevalent, headphones continued to be the primary mode of reception (53.4%) followed by headphone/loudspeaker combinations (29%) and trailed rather significantly by the loudspeaker alone (17.6%) (Fraine, 1925, p. 1120). Although these stats were measured only during a single public listening event, they do indicate that audiences were unsure exactly what to do to resolve the “situation of obligation” that was increasingly becoming apparent in the 1920s radio home. While loudspeakers had begun to present the opportunity of “doing away with the restrictions and limitations” of headphones (Magnavox Corporation, 1922, p. 447), they also forced families to make a

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<sup>41</sup> My use of the phrase “alone, together” is borrowed from Sterne (2003).

number of significant concessions in order to achieve this goal — concessions which arguably exacerbated rather than alleviated the group-listening problem by “obliging” families to choose between *two* unsatisfactory listening arrangements. For this situation of obligation to be converted into a situation of *choice*, in other words, a new set of factors would need to be introduced which could provide a legitimate way out of this dilemma. These factors arrived in the latter half of the decade — and users had a significant role to play in bringing them about.

### **No More One-Man Radio Sets**

Through the midpoint of the decade, the broadcast radio landscape continued to change and grow. Between 1925 and 1930 the US radio audience skyrocketed from 10% of the population to almost 50% (just under fourteen million), and any questions about broadcast radio’s long-term feasibility were being decisively answered (Sterling & Kittross, 2002, p. 862). While in 1923 sales of tube sets had already begun surpassing sales of crystal sets, by 1926 even single-tube sets were on the decline. The new multi-tube superheterodyne-type receivers were becoming increasingly valued for their easy operation, clear reception, and antenna-less design, and audiences were proving willing to spend extra money so long as their listening experience was noticeably improved. Prevailing public dissatisfaction with the existing headphone and loudspeaker-arrangements, which had kept engineers in their labs for the first half of the decade, had also finally begun to bear some fruit: a new “hornless” loudspeaker was introduced in 1925 which boasted not only a less ostentatious appearance, but an improved quality of

sound (see figure 9).<sup>42</sup> The combination of the greater availability of more powerful multi-tube radio sets, coupled with this new type of loudspeaker, meant that audiences were slowly beginning to get their wish: a situation of choice was emerging.



*Figure 9. An early cone-type loudspeaker, Radio Broadcast (1925)*

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<sup>42</sup> Commonly known as the moving-coil or cone loudspeaker, the new loudspeaker worked on a different principle than the existing horn-type or gooseneck models. In this new design, the metal diaphragm of the telephone receiver was replaced with a metal coil which, instead of moving in and out (toward the magnets), moved up and down (between the magnets). As the coil moved up and down, it caused a thin and wide paper diaphragm — attached to one end of the coil and outside of the magnetic field — to move in tandem. Because there was no longer a concern with touching the magnets (since the coil moved between and not toward them), this meant the coil could move in and out with greater force and without ever distorting the sound. And because the paper diaphragm was far larger than a telephone diaphragm, it could also move a lot more air, meaning that a horn was no longer required to amplify the sound. It would take several years before the kinks in the new design were worked out, but already by 1925 manufacturers could finally claim with some truth that they had designed a loudspeaker “clear as your headphones” (recall figure 3).

Yet it was not the radio manufacturers, nor the stereotypical male radio audience members, who were most active in terms of making sure the new technological possibilities which constituted this situation of choice were realized in practice. If women had previously been some of the most outspoken critics of radio — often relegating listening to attics, workshops, and garages where the equipment wouldn't impose its sights, sounds, and battery fumes on the rest of the family — in the second half of the decade they began to set the terms by which these new developments would be judged and implemented.

It is well known that in the first few years of radio broadcasting the majority of the listenership was made up of men (cf. Douglas, 1987; Douglas, 1989).<sup>43</sup> Even in 1925, *Radio Broadcast* reported that 71% of radios were still being operated exclusively by men, and only 6% by women (Welles, 1925, p. 32). Despite the best efforts of radio manufacturers and broadcasters to cultivate a family-oriented identity for radio in the early years, it seems the highly technical nature of radio reception still appealed more to men than to women. “Until about three years ago, radio was strictly a man’s affair,” wrote prominent female radio host and soon-to-be NBC executive Bertha Brainard in 1927. “A large percentage of the sets in use were home-built. They were complicated in operation and difficult to keep in working order. Consequently, women were not attracted to broadcasting. . . . The lure of radio was largely mechanical, and mechanics have never carried a large appeal for women” (Brainard, 1927, p. R16). Beyond the technical aspects of radio, the fact that most sets were purchased and/or built exclusively by men also gave

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<sup>43</sup> As early as 1923 articles began to appear in the popular press featuring titles such as “Making Radio Attractive to Women” (Wood, 1923, pp. 221-2).

them a sense of entitlement over its operation. For example, one rare female DXer wrote a letter to *Radio Broadcast* in 1927 explaining why she had become an ardent early radio fan whereas most other women had not: “I believe there is a reason: I have had no intolerant males to push me aside and show me how it’s done... Sit in a chair alongside your receiver, let [another] fellow put the phones on and do the fishing; you’ll be just as bored as though you didn’t give a hang about radio. Just try it!” (Dogan, 1927, p. 100). The reliance of early 1920s radio sets on headphones proved especially problematic in this regard: because “a great many of the receivers were not equipped for loud-speaker operation,” Brainard explains, “comparatively few [women] bothered to listen in” (Brainard, 1927, p. R16).

Starting around 1925, however, female programmers began to recognize that “there were many women becoming interested in radio” (Jenkins, 1925, p. 25). This had a lot to do with the increasing cultural fascination with and proliferation of radio broadcasting, as well as the increasing availability of loudspeaker-enabled multi-tube radio sets which exposed the family to radio more readily than headphones since anyone within earshot could not help but “listen in.” As women became more exposed to radio they also became more interested in it, and an imperative soon developed for more female-oriented broadcast content. For as *Radio Age* put it in 1925: “graphic descriptions of boxing bouts, business talks and stock reports contained little interest for the women members of most families” (ibid.). Increasingly, networks began to provide new content, such as “[c]ooking classes, style talks, advice on interior decorating, gardening” (ibid.) as well as daytime dramas and music, which proved especially popular amongst female

audiences who could listen while their husbands were not around to intervene. “Women discovered that during the day, while the men were out of the house, they could gain a wealth of diversion from their radio sets,” Brainard continues. “Music made the routine household tasks seem easier, and there was a great deal of helpful and interesting information being broadcast during the special women’s hours planned by the various stations” (Brainard, 1927, p. R16). By the second half of the decade, then, women were becoming considerably more involved and invested in radio broadcasting; significantly, they were also beginning to take a more active role in the purchasing of home radio equipment. As it turns out, this had important influence not only in what kinds of radio sets were permitted to enter the home, but also how they were *designed*.

As women began to demand more reliable and user-friendly radio sets that they could use while their husbands were not around, as well as more self-contained and ornate radio housing units that blended better with the home decor, the form of radio began to change. “The order of the day,” reported *Radio Broadcast* in 1926, “is a steady move toward self-contained receivers... It certainly makes things lots easier for us men who must sell the radio idea to Friend Wife!” (1926, p. 307).<sup>44</sup> These self-contained furniture-style radio sets were comprised largely of superheterodyne receivers (meaning no antenna), internally-mounted cone loudspeakers (meaning no unsightly gooseneck), and were increasingly built so they could be plugged directly into a wall socket (meaning no batteries). Many women preferred these units because they were easier to operate,

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<sup>44</sup> “It is natural and right that, as radio has become more an accepted part of the equipment of every home, women have had an increasing voice in the selection of the radio receiver,” the magazine proclaimed again, this time in 1928: “Her ideas of the necessary limitations of her domestic decorative scheme should blend with her husband’s technical opinions” (“1928 Radio Receivers of Beauty and Utility,” 1927, pp. 352-3).

could be catered more easily to the living room decorating scheme, and eliminated the hassles (and smell) of batteries. These receivers also did away with headphones, which were poorly suited to daytime listening when women needed to move around “untethered” from the radio set, and also increasingly fell into the category of furniture, meaning that women had more control over their eventual purchase. In December of 1929 it was even being claimed by some retailers that “Women buy 65 per cent. of all radios” (Schneiderhahn, 1929, p. 86), suggesting the men now tasked with “sell[ing] the radio idea to Friend Wife” were not their husbands but the radio manufacturers. Indeed, the tag-line for Freshman’s “World’s Greatest Radio Receiving Set,” described as “a handsome piece of furniture that fits in any corner of the room,” was as subtle as any in the second half of the decade: “THE RADIO RECEIVER WOMEN HAVE BEEN WAITING FOR” (see figure 10).

Whereas just a few years previously there seemed no solution to the group listening problem, the introduction of the superheterodyne receiver, cone loudspeaker, and furniture console had been recognized as generating a “situation of choice” capable of permitting individuals to listen collectively, comfortably, and with a desirable quality of sound. While designers certainly played a significant part in “materializing” these changes, it is clear that users — and women in particular — played an especially key role: for it was their dissatisfaction with the available listening options in the first half of the decade which spurred further research and development, and the greater involvement of women in radio which contributed to the decline of both gooseneck loudspeakers and headphones in the second half in the decade. As summarized by *Popular Science* in 1930:

In the early days of radio there were few loudspeakers and no good ones. Everybody listened with the aid of headphones, and illustrations of the newest sets of that period usually pictured several people attached to the receivers by headphones. Most people, however, found headphones a nuisance and the development of the loudspeaker proceeded so rapidly that today the headphones is considered a relic of the past. (Lane, 1930, p. 67)

**Model 6-F-1**

New and Improved  
**FRESHMAN  
MASTERPIECE**

**The World's Greatest  
Radio Receiving Set**

Freshman's latest sensation has a real appeal to the women of the home. It is built of five-ply genuine mahogany; a handsome piece of furniture that fits in any corner of the room. It is compact and comparatively small, giving it preference over clumsy consoles. Contains an especially large tone chamber.

**With Built-in Loud Speaker of  
Great Volume and Superb Tone**

When not used as a radio it can be entirely closed. The top is stationary and provides an attractive resting place for vases and other ornaments. Spacious compartments afford ample room for all batteries, etc.—not a single wire being visible.

**THE RADIO RECEIVER WOMEN  
HAVE BEEN WAITING FOR—**

Prices slightly higher Denver and West and Canada

**\$ 99.50**

Figure 10. "The radio receiver women have been waiting for," Freshman Corporation advertisement (1926)

## Conclusion

An obligatory passage point is only as powerful as the network that rallies around it (Callon, 1986). Once established, it has the potential to successfully mobilize a diverse group of actors around a common idea or goal; once challenged, however, it can also quickly break down and what was initially taken as a given often becomes the subject of reevaluation and critique. This is precisely what happened to headphones over the course of the 1920s. While in the first few years of broadcasting it was more or less accepted that headphones were a necessary part of radio listening, as the radio apparatus and cultural form changed, the need for a better moral design emerged. As demands for a more comfortable, communal, and morally acceptable home listening experience were met by loudspeaker manufacturers, headphones lost their obvious competitive advantage; and as fewer radio fans saw reason to buy them, the place of headphones in the late-1920s radio market became less assured. The obsolescence of headphones was soon scripted into the new furniture radio systems, which offered no easy way of even connecting headsets to the newer units. By the end of the decade, like the crystal radios that first made them popular, headphones became symbolic of days gone by: a quaint object of the past, and not a promising technology of the future.

Whereas technology scholars such as Verbeek write primarily of a designer-led, “trickle-down” morality, the trajectory of headphones in the broadcast radio era, viewed through an analytics of moral mediation, shows that users can also play a significant role in initiating moral change. Headphones were not outmoded because they were the inferior listening technology; rather, they were outmoded because they imposed a set of listening

conditions that users found unacceptable in the 1920s home. Gender played a significant role in this shift because, almost from the outset, headphones were framed as predominantly masculine (associated with DXing and other more “technical” forms of radio listening) and anti-domestic (as placing uncomfortable acoustic barriers between family members in communal domestic spaces). Because the only other “solution” to the radio listening problem early on was the gooseneck loudspeaker — a technology that not only sounded poor, but was regarded as a blight on the living room decorating scheme — headphones remained a serviceable option; once given the “choice,” however, women made their preference for the horn-loudspeaker-oriented furniture radio clear.<sup>45</sup> The problem of headphones in 1920s radio culture thus instances a key theme in sound culture whereby the social character of audio technology both inflects and is inflected by gender relations. Indeed, as we will see in the next chapter, similar themes resurfaced over twenty years later with the simultaneous introduction of television and hi-fi into the 1950s/60s home.

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<sup>45</sup> At a time when Victorian ideals of family togetherness and “feminine” interior decoration prevailed, it is perhaps not surprising that the material form of radio would evolve along the same lines that the phonograph had several decades before: “The phonograph, initially marketed and perceived as a technological wonder alone,” writes Holly Kruse, “came additionally to be defined as a piece of fine furniture. . . . Ideologically charged constructions of the phonograph [as gendered] both pre-dated and resulted from its introduction into the early twentieth century home” (Kruse, 1993, pp. 11, 13; see also Gitelman, 2003; Barnett, 2006).

## CHAPTER II

### Hi-Fi: Live and Let Live

More than three decades after *Popular Science* called headphones a “relic of the past” (Lane, 1930, p. 67), the popular press made a surprising announcement: headphone listening was popular again. “Those of us whose radio listening goes back to the crystal set,” wrote the *New York Times* in 1964, “are perhaps entitled to a moment of amusement, or perhaps a whiff of nostalgia, at the recent elevation of headphone listening into a high-fidelity fad” (Syrjala, 1964, p. X18). The term “fad” turned out to be an understatement, for over the next five years headphones became one of the biggest selling components in the 1960s home audio market. “Earphones have been as extinct as dinosaurs for nearly half a century since the first loudspeakers made their appearance in the 1920s. Yet suddenly they’re back in style,” echoed well-known audio industry analyst Hans Fantel in a 1969 issue of *Popular Mechanics*. “Sales are jumping so fast,” he said, “that many audio dealers consider [headphones] the hottest thing in hi-fi sound. What accounts for the amazing revival of these ancient relics?” (Fantel, 1969, pp. 146-147).

This chapter seeks to answer the same question. Yet rather than simply list the benefits headphones were said to offer this new generation of listeners, as does Fantel, I dig deeper into the process by which the “situation of obligation” that came to define loudspeaker listening in the post-1930 home audio market was converted back into a “situation of choice” with the revival of headphone listening in the 1960s. More specifically, I seek to better understand what compelled listeners to welcome headphones

into the home after finding them so thoroughly incommensurate with ideas of good listening three decades before, and what the role of designers was in cultivating this shift.

I begin my analysis a decade before the headphone revival. The 1950s marked a shift in the social meaning of the loudspeaker, as the radio-phonograph cabinet was supplanted by two competing technologies: television and hi-fi. In addition to raising significant questions about gender in the domestic sphere, these technologies also introduced a “competing loudspeaker” problem by making it difficult for both to occupy the same acoustic space. In the home, audiences struggled to accommodate two technologies that imposed sound as a condition of their operation, but which also demanded silence as a condition of their experience. Unable to see past this situation of obligation — characterized by the status of the loudspeaker as an obligatory passage point to both systems — audiences resigned themselves to temporary solutions that often exacerbated domestic tensions more than they alleviated them.

Next, I turn my attention to another competing loudspeaker problem being confronted at the same time, but in a very different space: that of the consumer audio show. As this popular audio industry showcase event was becoming increasingly saturated with loudspeakers and volume-hungry consumers, hi-fi manufacturers began to wonder what might be done to mitigate the bothersome and often dangerously high sound levels many shows were experiencing. Momentarily suspending their “obligations” to the loudspeaker, a few creative exhibitors began to experiment with headphones — re-engineered to produce sound at a much higher definition than those left over from the crystal radio era — as a potential solution to the problem. By identifying the competing

loudspeaker problem as an opportunity for moral design, these exhibitors found they could use technology design as a means to establish a safer and more productive listening environment for all involved.

Finally, I examine how headphone manufacturers attempted to build on their success at the consumer audio show by encouraging the public to recognize how headphones could be useful in resolving the competing loudspeaker problem in the home. Realizing headphones could potentially be a tough sell in this setting, headphone manufacturers worked hard to persuade consumers that headphones were comparable to the best loudspeakers in terms of their quality of sound, and that they could help make the domestic environment a more peaceful and co-habitable acoustic space. They also took steps to overcome some of the significant technical barriers that prevented headphones from being easily connected to the available hi-fi equipment. In doing so, designers were active not only in recognizing the opportunity for a new “moralizing technology” (Verbeek, 2011), but in helping consumers to see the potential benefits of this technology — as well as physically incorporate it into their existing material environment.

Whereas in the previous chapter I showed how users can play an important role in the design process by creating demand for morally acceptable technologies, in this chapter I explore how designers can also lead the way by recognizing a moral dilemma and providing audiences with the potential means to overcome it. Whether in the end one agrees or disagrees that headphones were the “best” means of resolving these conflicts, there is little doubt that headphones afforded audiences more agency by empowering them to exercise greater control over their moral environment. And if democratizing the

design process is, as Verbeek (2011) suggests, about giving consumers a say in how technology is permitted to shape their moral behaviours and experiences, then this chapter offers insight as to how headphone designers were able to do just that — namely by helping to convert a situation of obligation into a more agreeable situation of choice.

### **The Competing Loudspeaker Problem**

From the mid-1920s through the 1940s the sound reproduction industry had been moving slowly, if unevenly towards a complete integration of home audio entertainment equipment. Whereas the radio and the phonograph in the early 1920s had been regarded as distinct technologies, the introduction of the vacuum tube, the improved electrically-amplified loudspeaker, and the cabinet radio receiver after 1925 made it possible for both to be integrated into a more contained, all-in-one machine. Such a machine did not appear overnight, but in a number of incremental steps over the next two decades. As Thomas F. Joyce (1944) of RCA Victor explains, the large size, high cost, and propensity for mechanical failures in the first all-in-one radio-phonographs initially made them a difficult sell. “Then came the Depression,” he writes, “and with it, almost complete extinction of the phonograph. Records, to the public, were an anachronism” (1944, p. 30). With little money to spend and an abundance of free programming available over the radio airwaves, audiences appeared to momentarily lose interest in purchasing physical records, let alone replacing their existing equipment with an entirely new all-in-one system. Despite this apparent lack of interest, manufacturers persisted and eventually succeeded not only in developing a much improved and more reliable radio-phonograph

machine, but in successfully attracting the public's interest to the idea as well. "The spark [for change] was provided by an inexpensive record-player attachment," Joyce continues. "Soon the public was once again clamoring for recorded music and sales of all kinds of record-playing equipment boomed. Fewer and fewer straight radio consoles were sold. A fine radio-phonograph had become the ideal of every American home" (ibid.).

Yet almost as soon as this combination radio-phonograph was finally realizing the desire of families to hear their recorded music and radio broadcasts from a single system, the introduction of two new sound reproduction technologies began to initiate a different imperative within the 1940s home sound entertainment environment. As Keir Keightley explains,

The simultaneous appearance of, on the one hand, commercial broadcast television as the 'natural' descendant of radio broadcasting, and on the other, high-fidelity phonographs and component systems as radically 'new and improved' sound reproduction technology meant that a kind of bifurcation occurred in electronic home entertainment: generally speaking, *two* new technologies replaced the unitary radio-phonograph console. (2003, p. 239; original emphasis)

This relegation of broadcasting and sound recording to separate machines had less to do with their technical capabilities, however — as there was no real reason why both couldn't also be integrated to work within a single shared unit — but, as I will now

explain, the ways in which television and hi-fi came to acquire different gendered identities within the late 1940s and 1950s home.

As Spigel (1992) demonstrates, television was initially regarded as a kind of great post-war family-unifier. While the onset of WWII delayed attempts to bring television to the mass market, the immediate post-war period offered the ideal economic and cultural conditions for such an effort to take place. On the one hand, the economic boom which immediately followed the war, coupled with a growing market for household commodities aimed at children, made television both a desirable and attainable device. On the other hand, at a time when military veterans were finding it difficult to adapt to life back at home, and many women also struggled to adjust to the change, television was imbued with great potential as “a kind of household cement that promised to reassemble the splintered lives of families who had been separated during the war” (p. 39). Indeed, as terms like the “family room” were gaining cultural currency (*ibid.*), television was promoted as an “electronic hearth” (Tichi, 1991), capable of introducing a sense of warmth and communality into a domestic sphere that was sometimes experienced as a cold and divided place.

While the moral promise of television was great, its early integration into the home presented some significant and unforeseen complications. Concerns were soon raised about how little family members actually interacted with one another when the television was on, whether its content would “seduce the innocent,” and how its invasive presence might serve to upset existing power dynamics within the home (Spigel, 1992, pp. 44-71). At a time when masculinity in particular was perceived as under attack —

underlined by popular representations of men as psychologically and sexually unstable (a product of their war-time experiences) and increasingly powerless in the workplace (a product of the rise of corporate America) — many men became suspicious of how television might undermine their position of domestic authority (ibid.; see also Keightley, 1996; 2003). While some remained ambivalent toward (and even embraced) television at this time, the simultaneous introduction of hi-fi soon further complicated the male relationship to television as the two technologies came to be constructed as oppositional. As Keightley (2003) explains:

A representative sample of magazines and films from the 1950s illustrates a process in which a series of binary oppositions — of gender, taste, and technology — [were] aligned in discursive exchanges that mapped ‘masculine/feminine’ onto “high/low” onto “hi-fi/television” and so on. In this process, high fidelity was positioned as the ‘high’ masculine and television its ‘low-feminine’ opposite, or cultural Other. (p. 238)

Just as radio in the pre-broadcast era had been coded masculine on account of its largely male following and emphasis on technical mastery (Douglas, 1989; Waksman, 2004), so too was “hi-fi” increasingly understood as a means by which men could get back in touch with their masculinity, either by building a high-quality home phonograph system from scratch, or “selecting the various components (turntable, tuner, amp, speakers, etc.) of a system which would then be uniquely his own combination”

(Keightley, 1996, p. 151). At stake, Keightley argues, was not just a reclamation of masculinity against what was now perceived as the “feminizing” force of television, but a reclamation of physical space within the home. If a “discourse of togetherness” was being mobilized to help sell women on the benefits of a television set, a “counter-discourse of entrapment, involving expressions of desire for privacy and autonomy” (p. 152) was how hi-fi was often sold to a generation of men who were understood as being increasingly marginalized inside the home. Hans Fantel would later express this sentiment in the *New York Times*: “Time was when a well-appointed home included a music room or library where a man could take a quick vacation from his family behind oak doors. But in this split-level age of cardboard walls and doorless togetherness, it’s getting harder all the time to find an island of quiet for the enjoyment of music” (Fantel, 1968, p. H5).

In terms of content, form, and ethos, hi-fi was frequently framed in stark contrast to television. If television limited audiences to a handful of pre-selected programs designed for mass consumption, hi-fi was promoted as offering an array of classical art music (and later jazz) available to be hand-selected and played by each individual; if television was sold as an all-in-one entertainment system, complete with screen and loudspeaker enclosed in a single cabinet, hi-fi was sold in component parts meant to be mixed, matched, and constantly modified; if television was meant to blend into the background and invite a passive engagement with the content on-screen, hi-fi was meant to stand out as a technical artifact and invite active engagement with the materials which produced the entertainment; and if the “woman’s work” of choosing a television that matched the living room decor largely ended once television was purchased and placed

the home, the “man’s work” of building a good-quality sound system capable of reproducing “sound as it was sounded, and music as it was written” was never finished (Burke, 1954, p. 115).

While not all women rejected hi-fi outright, many self-described “hi-fi wives” did comment on how it disrupted existing decorating schemes and placed new pressures on the organization of domestic space (e.g. Edwards, 1953; “Hi-Fi Spouse Sings Dirge,” 1953; Goodenough, 1954; Loomis, 1955; Reif, 1956; see also, Keightley, 1996; 2003). “As his mind becomes more and more warped by this progressive [hi-fi] mania, his viewpoint, and perforce your own, will become strangely distorted,” wrote one female contributor to *High Fidelity* in an article directed at other “hi-fi wives” in 1953. “Your whole life will gradually come to revolve around that phonograph. When you arrange the furniture in your living room you must always keep the speaker in mind” (Edwards, 1953, p. 44). Similarly, many men also expressed frustration with television — and women — for refusing to surrender when they wished to engage in hi-fi listening. “If the hi-fi husband has trouble getting his equipment into the house in the first place,” complained a male *High Fidelity* contributor in 1957, “this is nothing compared to the amount of trouble he may have getting to use it once it’s in. The principal asp in the grass, my investigations convince me, is television. Other issues separate the men from the boys; this one separates the men from the women” (Schopenhauer, 1957, p. 49). Yet while hi-fi was often framed in advertisements and the popular press “as a masculine weapon in a battle of the sexes over domestic space” (Keightley, 1996, p. 159), on a practical level the conflict often resembled more of a moral struggle for accommodation

than a battle for sonic domination. Faced with a situation of obligation in which neither medium was likely to go away anytime soon,<sup>46</sup> men and women quickly realized — if sometimes begrudgingly — that unless something was done to settle their moral conflicts in a mutually-beneficial way, neither could have their preferred mode of entertainment and hear it too.

I characterize this struggle as a “competing loudspeaker” problem because, practically speaking, the main barrier to a workable compromise between television viewing and hi-fi listening was the reliance of both systems on a loudspeaker. While television is often considered a visual medium first and an acoustic medium second, sound in no way played an inferior role when it came to actually taking in a program (Ticci, 1991).<sup>47</sup> As Ticchi writes, some of the worst transgressors of early television’s unspoken rules of conduct were said to be “the interruptive ‘conversationalist’ and the ‘critic,’ both of whom violate[d] the owners’ sound space” (p. 29). This need for quiet as a precondition for good television viewing also underscored “how far the adult viewers were, at that time, from the dual, simultaneous attention to television and habitat eventually to become commonplace” (ibid.). Watching television therefore also meant *listening* to television — and this demanded a certain level of quiet and concentration.

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<sup>46</sup> “Whether viewed dismally or hopefully,” *Kiplinger* magazine announced as early as 1949: “one fact is certain: Television is here to stay” (“Television muscles into everything,” 1949, p. 18). The same was repeatedly said of hi-fi over the next five years as well. “[H]i-fi promises to become a major American enthusiasm,” wrote *Life* in 1953, “Currently it is working a revolution in the phonograph industry. In the past few years, particularly under the impact of TV, sales of the big, familiar radio-phonograph have slumped to almost nothing. Meanwhile, in the last eight months sales of the hi-fi ‘rigs’ have grown to the point where estimates of 1953 sales now range from a conservative \$60 million to an optimistic \$100 million” (Brean, 1953, p. 146).

<sup>47</sup> For more on the significant relationship between music and early television, see also Frith, 2002; Forman, 2012; Negus, 2006.

With its explicit interest in detail-oriented listening and the construction of the illusion of being “transported” to a distant recording studio or concert hall (Keightley, 1996), hi-fi also demanded some measure of silence before listening could be done effectively. Like television, one of the chief complaints of hi-fi enthusiasts was when others insisted on talking through a performance rather than carefully listening (Edwards, 1953; Schopenhauer, 1957), and any sound considered exterior to the musical performance — conversation or otherwise — was considered a blemish on the overall experience. Hi-fi listening, writes Keightley (1996), “require[d] what is known as focused listening, which necessarily abhors distractions of any kind, but especially from competing sound sources. The need for environmental silence during the playing of LPs on a hi-fi phonograph, even at high volume, was frequently mentioned in the audio literature of the period” (p. 169).

A necessary precondition of the enjoyment of television or hi-fi was therefore a silencing of the other(’s) loudspeaker. While the hi-fi was on, television viewers could not maintain the level of concentration necessary for them to enjoy their programming; and while the television was on, hi-fi listeners could not achieve the level of focused listening required to appreciate their music. And since both technologies generally occupied the same acoustic space, or at least existed together in relatively close quarters, settling the conflict over which loudspeaker would come to organize the family’s activities at a given moment soon became a serious issue with no easy resolution. “[W]hat is the hi-fi husband to do?” wrote an exasperated S. Strindberg Schopenhauer in 1957.

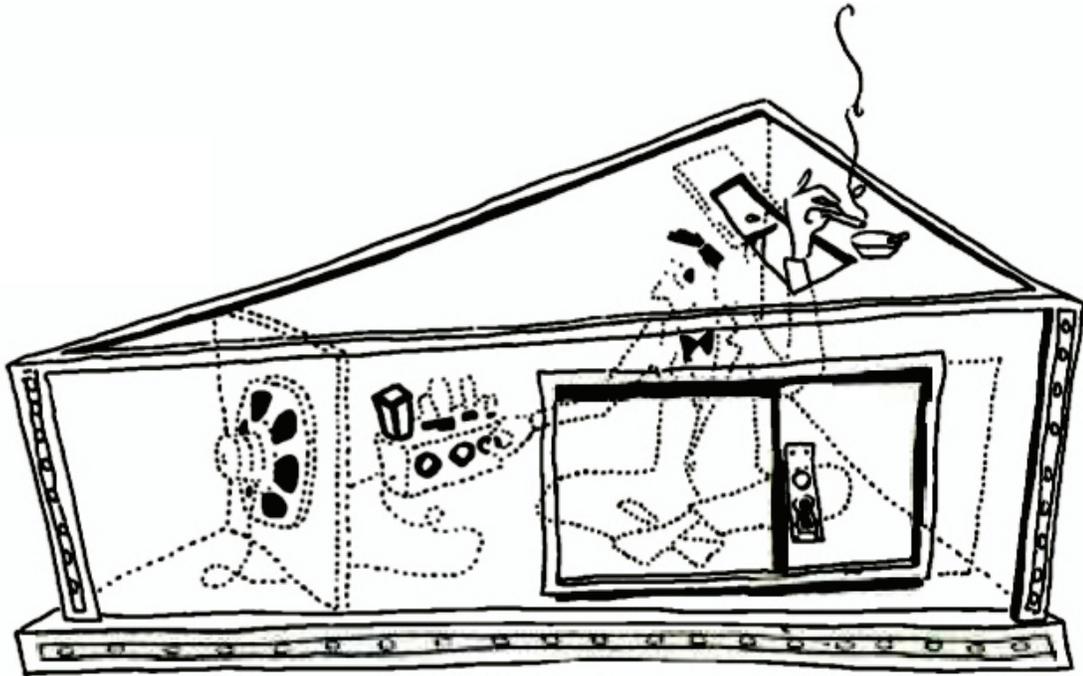
Well, he has several choices. For one give up completely and just *look* at his equipment without playing it — except perhaps when his wife is out with the girls. Or watching TV at a neighbor's house. I'd hate to think that many hi-fi husbands make so abject a surrender, but I fear some of them do. The second possibility is that the hi-fi husband comes to a working agreement with his wife: certain nights of the week shall be sacred to TV, others to music. Even this arrangement has a flaw in it: assuming that the husband's taste diverge from the sort of programming favored by the women's committees of our community orchestras and concert associations, he *still* had better save his Bach and Bartók (since it is a sorry fact that to most women even these composers are esoteric) until his helpmeet is out of the house or asleep. Unless he wants to listen against a background of feminine fuming, that is. The third, and most drastic expedient, especially in that it may involve buying a house, is for the husband simply to get the hi-fi rig out of earshot of the TV set. (pp. 49-50; original emphasis)

Besides emphasizing the blatantly misogynistic terms by which some men chose to frame the ideological “problem” of women and television in relation to hi-fi in the 1950s, this quote also reveals much about the practical challenges faced by men and women alike in figuring out how to accommodate two highly invasive — and loud — consumer technologies at once. Schopenhauer's overly-aggressive tone exposes his insecurity that television (and women) remained in full control of the domestic environment, rendering the hi-fi system “silent” unless the female spouse was either absent or willing to

accommodate. It also offers some insight as to the kinds of “*masculine fuming*” women were likely forced to endure from men like Schopenhauer when they chose to veto hi-fi in favour of allowing the children to watch television or take in a program themselves. Finally it suggests that while strategies like time-sharing could theoretically resolve the issue, on a practical level they seemed unlikely to work on account of demanding a significant level of human patience and tolerance at a time when gender conflict was acute and tempers ran high.

While many men approached the subject in a cynical fashion, some did use the hi-fi press as an outlet to begin discussing the possibilities of a more permanent technological solution to the problem. These ranged from the extreme (building a devoted hi-fi room out of earshot of the television set (Schopenhauer, 1957)) to the far-fetched (building a “Yogi Enclosure,” described as a “speaker cabinet, unique in that it holds not only a speaker, but also the listener” (see figure 11)) to the plainly ridiculous (building a pair of “High-fidelity Ear-horns,” described as a mode of ““direct-wire record production,’ in which the listener’s cochlea bone of the inner ear is attached directly to the pick-up arm cartridge” (Giddings, 1954, 19)). Rather than come up with an entirely new invention, others looked to existing technology for inspiration on how the issue might be resolved in a more straightforward way. “One of the serious problems in my household is that on most evenings and holidays, when I would like to enjoy a high fidelity concert, the rest of the family would prefer to observe some favorite TV program,” wrote *High Fidelity* contributor Joseph Marshall in 1955.

Since they constitute a majority and I have no desire to be the authoritarian father, the result is inevitably a victory for television. After some years of this sort of frustration I was at last driven to do something about it... Obviously the solution is to provide headphones for either the TV viewers or the hi-fi listeners. (p. 91)



*Figure 11. The Yogi Enclosure, High Fidelity, (1954)*

By this time, the idea of reintroducing headphones into the domestic listening environment for use with television was in fact nothing new. Five years earlier, the *New York Times* had already announced “A new gadget to aid television parents” which “permits the attachment of as many as four sets of headphones so that youngsters can enjoy ‘Captain Video’ without disturbing adults who might want to read a newspaper in peace” (“Gadget,” 1950, p. 119). A few months later, *Popular Science* published its own instructions on how a television owner could install their own headphone attachment using a piece of plywood and some other household items. “Peace in a television home is

restored,” the author claimed, “if you provide earphones” (“How to Hush Your Television Set,” 1950, p. 209). In 1952, a *New York Times* letter to the editor even went so far as to suggest that headphones should come standard with the newer television sets, “so that a person could watch and listen without disturbing other persons in the room. I know it would improve the relationships in my family 100%” (G.E.L., 1952, p. X13). While Marshall seemed to feel that, between television and hi-fi, “Logic would seem to favour phones for the TV viewers, for the simple reason that audio quality may not be important to the enjoyment of TV,” he also shed some light on why these previous efforts to integrate headphones with television had failed to gain widespread acceptance. “Unfortunately, it would be difficult to act on this logic; first, because it would take several headphone sets and, even more important, because the majority is not likely to agree to wear them” (1955, p. 91). Given the lengths to which some 1950s magazines suggested parents might go to try and convince their children to don headsets — including, on the extreme end, “mount[ing] the phones inside space helmets, available at toy stores” (see figure 12) — he was probably right.

That said, Marshall’s (1955) ultimate conclusion — that the “only practical answer is headphones for the high fidelity minority of one” (p. 91) — was perhaps not too far off the suggestion of a space helmet as far as most 1950s hi-fi enthusiasts were concerned. At a time when it was believed that a hi-fi system “can only be as good as the weakest unit or ‘link’ in the chain of components” (Kettering, as cited in McProud, 1955, p. 12), the idea of filtering a high fidelity concert through a “relic” of the crystal radio era was not likely to be taken seriously. As *Audio Engineering* put it in 1954: “To a



*Figure 12. "Put a Silencer on Your TV Set," Popular Mechanics, (1955)*

suggestion that he try phones, an avid but uninformed hi-fi lover might protest, 'What! When I've got a \$200 speaker system? What do you think I am, a [radio] ham or something?'" (Tappan, 1954, p. 22). Furthermore, since there was no such thing as native headphone inputs at this time, simply hooking up a pair of headphones would have been

anything but a straightforward affair. Consider, for example, some of the instructions to “easily” connect a pair of headphones in 1954 (which go on for several pages):

Headphones are easily connected to the secondary terminals of the output transformer of an amplifier. It is important to terminate the amplifier with the proper impedance. This is most readily done by shunting a resistor of the proper value across the phones as in (A) of *Fig. 6*. For example, if 25-ohm phones are to be operated from an 8-ohm output tap, they should be shunted by a resistance of approximately 12 ohms. Many phones have impedance of 500 ohms or more and when these are operated from a low-impedance tap, the shunt resistor should be equal to the impedance of the tap since the phone[s] present negligible loading. Operation of phones from a tap of the same impedance rating as the phones is not recommended for two reasons: first, they are so much more sensitive than a speaker that unless the volume control setting is drastically reduced the phones may be seriously damaged by excessive audio power; and second, except in the most carefully designed amplifiers hum becomes bothersome when the volume control is barely cracked... (ibid., p. 24)

While this do-it-yourself project may well have supported the masculine hobbyist ideal that in some ways defined hi-fi culturally at the time (Keightley, 1996), it likely would have put off many men possessing neither the technical acumen nor motivation necessary

to complete such a task.<sup>48</sup> Finally, the question of how headphones would be interpreted morally loomed large. While in theory headphones could resolve some of the conflicts being experienced in the home, how users would respond to this “solution” in practice — particularly given how headphones had been so quickly banished from the domestic sphere just a few decades before — was difficult to determine.

In short, while headphones did present a compelling option for some interested in overcoming the situation of obligation imposed by competing television and hi-fi loudspeakers in the 1950s home, it seemed unlikely many would entertain them as a genuine solution to the problem. With the integration of headphones and television largely out of the question, the only hope it seemed was to apply them to the “hi-fi minority” (Marshall, 1955). However given the reputation of headphones as a “lo-fi” technology left over from the crystal radio era, it would take a lot more than Marshall’s word that “[head]phones provide listening quality which merits the designation high fidelity in every respect” (p. 92) to make the new generation of hi-fi listeners take them seriously. For this situation of obligation to be converted into a genuine situation of choice, in other words, the hi-fi community would need to be convinced that headphones could compete reasonably with their loudspeakers in terms of sound quality, that they could be connected with few modifications to their existing equipment, and that they would be perceived as alleviating rather than exacerbating the moral conflict at home. As it turns out, the first steps toward fulfilling these requirements would soon be taken —

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<sup>48</sup> For more on the historical connection between masculinity and do-it-yourself hobbyism, see also Douglas 1989, Gelber, 1997 and Waksman, 2004.

not in the domestic sphere, but in the masculine space of the consumer audio show, where a competing loudspeaker problem of a different type had materialized.

### **A Private Switch**

Throughout the 1950s, the institution of the consumer audio show was slowly becoming the victim of its own success. In 1954, attendance at the sixth annual New York Audio Fair had ballooned to the point that visitors could be expected to spend only “60 seconds for each piece of equipment on display (and that includes time required to squeeze through the halls from one room to another, waiting in line to talk with the exhibitors’ representatives, and so forth)” — and even this required a total of “12 hours of steady, hard sight-seeing” (Fowler, 1954, p. 39). While growing crowds and line-ups were one issue, a bigger problem was that, with so many demonstrations occurring at once, the overall sound of the event had reached levels deemed both unproductive and unsafe.

In an effort to stand out from — and be heard over — this considerable crowd, exhibitors had taken to demonstrating their equipment at extremely high levels.<sup>49</sup> Besides making it difficult to appreciate the nuances between different components and accessories, there were real fears that such high-intensity sound might permanently damage the hearing of those working at and attending the event. In 1952, the *New York Times* described the annual New York and Chicago Audio Fairs as “dangerous... Tinnabulation-of-the-Decibels Babel[s]” (Darrell, 1952, p. X6), suggesting a direct

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<sup>49</sup> For more on the complex historical relationship between “high fidelity” and “high volume” sound, see Devine (2013).

link between the level of sound produced by these events and the threat to public health.<sup>50</sup> With respect to the 1954 New York edition of the event, *High Fidelity*'s editor Charles Fowler wrote that "In the High Fidelity rooms, which had a sign outside 'Come in and rest your ears,' the loudness level ran between 75 and 80 db, or about the same as a noisy factory. In rooms where equipment was being demonstrated, the pain level was frequently approached" (1954, p. 39). In an effort to get the situation under control, show officials began patrolling the event with decibel meters "to provide unbiased judgment on manufacturers accused of playing their equipment too loud" ("Decibel Meter Halts Earaches," 1954, p. 1). But judging by the persistence of the problem — in 1959, the New York High Fidelity Show had begun employing an entire squad of "decibel detectives," whose job it was "to keep constantly moving around the show keeping track on the sound level in the various exhibits" (Freas, 1959, p. 13) — these efforts at persuading exhibitors to turn down the volume seem to have been met with limited success.

In addition to these issues, the fact that many audio shows had been forced to use much larger venues to accommodate growing industry and consumer demand seemed only to compound the problem. The growth of "arena" shows in particular — so called because they were housed in large auditoriums typically reserved for sporting events — proved particularly problematic from an acoustic standpoint. Reporting on one such event held at the Pan-Pacific Auditorium in Los Angeles in 1960, C. G. McProud, editor of

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<sup>50</sup> "Tinnabulation" refers to the ringing in the ears experienced after exposure to high-volume sound. In many cases this is a short-term issue, but repeated exposure can often lead to tinnitus. The main symptom of tinnitus is a persistent ringing in the ears which can result not only in difficulties hearing, but a wide range of personal and psychological problems. For more on this condition, see Tyler (2008).

*Audio Engineering*, described the ceiling as “a long arched wood structure which serves as a perfect cylindrico-concave reflector — a wonderful idea, probably, for hearing an announcer, not entirely ideal when there are eighty or more sound sources with different program material on each.” He concluded that while “It is entirely conceivable that adequate sound isolation could be provided in an arena booth, [it] is likely that the cost would be prohibitive... One thing is for certain — if there are to be more shows, and successful ones, some new formula must be found” (1960, p. 16; original emphasis). To quote Fowler’s words from six years before: “There seems to be no real answer to the loudness problem” (1954, p. 39).

As hi-fi manufacturers in the late 1950s struggled to discipline themselves in increasingly challenging demonstration environments, the key to coming up with a more permanent solution to the loudness problem came from an unlikely source. New to the audio market after years in the hospital television rental business, American engineer John Koss and a friend had teamed up to develop a small portable phonograph, which they planned to demonstrate at the 1958 Institute of High Fidelity Manufacturers hi-fi show in Milwaukee. Concerned not necessarily for the safety of his audience’s ears, but for their ability to discern the quality of their phonograph’s sound in such a noisy environment, Koss suggested they include “a private switch” on the device which would allow users to bypass the stereo speakers using headphones (Barrier, 1990). Since wide frequency-range headphones wired for two-channel “stereo” playback were not yet widely available, Koss opted to build a custom set of his own by installing a pair of

miniature speaker drivers inside a gutted aviator headset (see figure 13).<sup>51</sup> While not the first to develop such a headset, two aspects of his design came together particularly well in this prototype and, thus, captured the interest of the high-fidelity community: their high quality of sound and their “attenuating” or noise-bracketing capabilities.



*Figure 13. John Koss (right) and Martin Lange Jr. developing the 390 Phonograph and Stereophone prototype, Feb 6, 1958, Koss Corporation (2014)*

As mentioned in the previous section, headphones in the 1950s were not considered legitimate purveyors of “true” high fidelity sound. While Joseph Marshall insisted that the few available headsets he reviewed in 1955 produced sound at a higher definition than their frequency response curves charts indicated, he also recognized that

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<sup>51</sup> Stereo was the latest development in high fidelity playback which meant using two (or more) speakers to create a more convincing three-dimensional effect than previous monaural (one speaker) systems.

even the best devices suffered “a very severe drop above the 6,000 to 8,000-cycle region” (p. 91).<sup>52</sup> This was far from what hi-fi enthusiasts had come to expect from their equipment, which at the time was between 12 000 cycles (passable) and 15 000+ (ideal) (Brean, 1953; Fowler, 1954). While the response curve charts of Koss’ original headphone prototype are unavailable, his first mass-produced model (the SP-3, which debuted in 1959) was rated with a frequency response of up to 15 000 cycles per second. This suggests that his 1958 prototype was not just an improvement over the headphones tested in Marshall’s article, but likely produced sound well within existing consumer expectations of what constituted “true” high fidelity sound at the time.

These improvements in sound came about not only as a result of Koss’s decision to employ three-and-a-half-inch dynamic speaker drivers, which essentially turned each earpiece into a miniature high fidelity loudspeaker, but the way in which the donut-shaped rubber earpieces created a small acoustic cavity by resting not *on* the ears but *around* them. This “circumaural” or “round-the-ear” design significantly improved the quality of sound by giving the sound waves greater space to resonate — much as a loudspeaker worked by moving air within a room. It also dramatically increased their comfort, particularly when compared to 1920s-style radio headsets or “old-fashioned ear-busters” as *Popular Science* called them in 1950 (“How to Hush,” 1950, p. 210). Finally, by entirely encasing rather than merely pressing on the ears, the rubber earpieces also made it more difficult for “exterior” sound to leak in, and “interior” sound to leak out. For this reason, Koss’s prototype offered compelling evidence that headphones could not

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<sup>52</sup> Response curve charts were (are) a technical means of gauging to ability of a listening device to reproduce tones within a given frequency range.

only compete with loudspeakers in terms of the quality of sound offered, they could also do something that loudspeakers could not: succeed in “keeping all extraneous sound away from the ears of the listener — and shutting out a competitor’s sound reproduction method” (Freeman, 1961, p. 41).

While Koss’s motivations for developing an improved hi-fi headset in 1958 may well have been to sell more phonographs, the surprising quality and practicality of his device soon led other manufacturers to regard it as a significant step forward in resolving the loudness problem described above. Although some continued to propose other solutions, such as “ten well sound-isolated ‘theaters’ for demonstrations, each to be shared on a time basis by the exhibitors in some mutually acceptable fashion” (McProud, 1960, p. 16), the control offered by headphones — and elimination of the human element of having to share a very limited number of “live” booths — became regarded as a more practical solution. Starting around 1960, exhibitors began incorporating their own version of the private switch/headphone combination with increased frequency — a move that also gained the approval of the popular press. “The Audio Show, an annual high point for sound buffs and musical engineers, has adopted a dignified, pianissimo tone this year,” announced the *New York Times* in 1961. “When the show, now known as the New York High Fidelity Music Show opens its doors... the most surprising assault on the ears of visitors will be the quiet. A preview yesterday indicated that headphones would be in wide use” (Freeman, 1961, p. 41). Two years later, *Billboard* reported that still more exhibitors were installing “banks of headphones to demonstrate audio equipment, a fact

which produced a notable lack of the expected and somewhat traditional Hi-Fi Show chaos of competing sound” (“‘All Things’ Star of Hi-Fi Show,” 1963, p. 64).

This “dignified turn” in the consumer audio show afforded by headphones did not stop at the exhibition hall’s doors; it also gained traction in other demonstration spaces. Already by 1960, *Billboard* was reporting that “A number of record companies and large dealerships have taken to using stereophones in their in-store demonstrations,” and even Koss got involved in developing a “Silent Symphony System” which promised record dealers the opportunity to “add personalized listening to your demonstrations while your department remains quiet and dignified” (Koss, 2013). As the popularity of headphones increased amongst salesmen and component manufacturers, so too did consumers warm up to the idea of using dedicated headphone listening stations — or “silent salesmen” as they were sometimes called (“‘Silent Ads’ Reap Sales,” 1963) — to shop for records or decide on a new piece of equipment. “People go goofy about headphone listening,” reported one store owner-manager in 1963. “Not only does it attract people to listen but it’s easy on our ears. The silence is deafening; it’s paradise” (*ibid.*, p. 45).

Over a period of about five years, headphones went from being virtually unthinkable in the hi-fi community to one of the most popular ways of demonstrating the latest equipment and records. This shift occurred in response to a growing loudness problem that was perceived as a threat to the consumer audio show’s usefulness as a showcase opportunity, as well its attendees’ ears. John Koss led the way in realizing that the best way to deal with the noise problem was not by moralizing his colleagues — telling them to turn their machines down, complaining to the “decibel detectives” — but

by moralizing his technology. He did so through the implementation of a “private switch,” which “scripted” (Latour, 1992a) into his portable phonograph the *choice* between headphones (re-engineered to accommodate high-fidelity sound) and a loudspeaker. After battling a problem that seemed to have no solution for almost a decade, hi-fi manufacturers finally realized that morality — in the demonstration environment at least — was best managed, not through more creative disciplinary measures, but through smarter moral *design*.

Unsurprisingly, headphone manufacturers like Koss also began to realize that there was another context in which such a device could prove useful: the private home. Yet while it was one thing to convince hi-fiers to don headphones in environments where headphones came pre-wired and salespeople were on hand to address sound quality questions and other concerns, it was quite another to convince hi-fiers — particularly those who had not yet had an opportunity to listen in — that integrating headphones into their home listening stations could be equally productive. In other words, before this “private switch” could become as successful in the private sphere as it had become in public, manufacturers needed to convince hi-fiers — on both an ideological and material level — that headphones did indeed constitute a legitimate “choice” in the home.

### **Selling the Situation of Choice**

In a remarkably short time, headphones had earned the approval of the hi-fi manufacturing and sales community for producing high-quality “privatized” sound in otherwise noisy public spaces. For those who had not yet had a chance to try a pair for

themselves, however, headphones still held strong associations with the bygone crystal radio era and represented less an exciting new frontier for high fidelity listening than a questionable regression to an outmoded practice. For manufacturers to sell consumers on the situation of choice headphones could provide, in other words, they had to start by selling them on the quality of a technology which had been “generally scorned for entertainment purposes... since about 1924” (Lanier, 1970, p. 76). In demonstration environments they encouraged visitors to listen for themselves, and provided them with brochures to take home and share with friends (see figure 14). Realizing they could only reach a very limited segment of their potential market this way, they also turned to advertising — most often in the specialized hi-fi press — as a means to turn the public perception of headphones as an outmoded technology on its head.

Recognizing that achieving the *highest* high-fidelity sound was the goal of most committed hi-fiers, many headphone advertisements framed headphones not as a mere “alternative” to loudspeakers but as a unique and potentially superior “new route to stereo” (“New Route to Stereo,” 1959, p. 20). Early Koss ads, for example, pointed to the fact that headphones delivered the left and right channels of the stereo mix directly to the ears, thereby preventing each channel from blending unpredictably on the way to the ears. “Complete separation of the two channels,” boasted one series of ads in 1959, “gives realism and fine tonal qualities that are unobtainable by any other method regardless of cost” (Koss, 1959). Others suggested that, because the acoustic conditions inside the headset were always perfectly controlled, headphones could also bypass many of the practical challenges involved with achieving good sound from a pair of loudspeakers.



*Figure 14. An early Koss listening station, c. 1958, Koss Corporation (2014)*

“With a Telex Dyna-Twin,” claimed Telex in 1960, “there’s no more speaker placement problems, no more juggling furniture, no more fiddling with controls. Just sit back and let Telex provide the most exciting depth and direction you’ve ever experienced” (Telex, 1960). Others still suggested that headphones could “outperform the finest loudspeakers” by “shut[ting] out’ random noise that masks the very highs, the very lows” (Sharpe, 1965) or by simply ensuring that no note produced by a recording was lost on its way to the ears (David Clark, 1967). In these ways headphone manufacturers worked hard to convince listeners that headphones were not only on-par with loudspeakers in terms of the quality of sound offered, but could perhaps even surpass them in a number of important respects. As Beyer put it plainly in 1961:

“The Perfect Speaker” has been the objective of engineers and knowledgeable audiophiles since the advent of high fidelity recording. In spite of great strides in design, this goal has still not been attained by any speaker. The Beyer Headphones now emerge as the only perfect transducers, flawlessly duplicating the original signal and outperforming any existing speaker system. (see figure 15)

As headphone manufacturers proceeded to try and convince the hi-fi public that high fidelity listening was not something only (or even best) done on loudspeakers, their claims were given an added boost by journalists and industry experts who often spoke just as highly of the new generation of headphones in the popular and specialized press. “In this day of sophisticated loudspeaker design, the use of headphones for the enjoyment

**NO SPEAKER SYSTEM  
CAN MATCH  
THE PERFORMANCE  
OF THE  
BEYER DT-48 DYNAMIC HEADPHONES!**



"The Perfect Speaker" has been the objective of engineers and knowledgeable audiophiles since the advent of high fidelity recording. In spite of great strides in design, this goal still has not been attained by any speaker. The Beyer Headphones now emerge as the only perfect transducers, flawlessly duplicating the original signal and outperforming any existing speaker system. Distortion, even at loudest volume levels is virtually non-existent . . . unmeasurable above 100 cycles and less than 0.3% RMS below 100 cycles. Frequency response is 20-15,000 cycles flat at 20 cycles. A headphone impedance at 5 ohms permits attachment to any high fidelity amplifier. The result is a thrilling new experience in an exclusive world of perfect sound. If you're considering a new stereo installation or simply searching for better sound recreation, investigate the Beyer DT-48 Dynamic Headphones, available direct from Norted Audio Corporation. Price: \$79.50. For more information write to Dept. H, at the address below.

Exclusively imported by Gotham Audio Corporation • Distributed by:

**NORTED AUDIO CORPORATION**  
72 West 45th Street, New York 36, N.Y.

*Figure 15. Beyer DT-48 Dynamic Headphones advertisement, Audio (1961)*

of music at home may seem an anachronism, dating back to the dark ages of crystal radio sets,” wrote *High Fidelity* in 1961. “Banish the misconception: it has become apparent that headphones — improved in response, appearance, and wearing comfort — can prove a very useful adjunct to the most up-to-date high-fidelity system, as well as a unique medium of stereo sound experience” (Darrell, 1961, 65). On the subject of stereophonic enhancement, some suggested that “headphones are now popular, in part, for providing super-stereo effects, giving in a sense beyond loudspeakers in the re-creation of a sense of space around the music that is the special objective of stereophony” (Syrjala, 1964, p. X18). Others praised the wide dynamic range and heightened sense of intimacy headphones could provide. “You can hear the whisper of a *pianissimo*, with no sense of straining to hear it,” remarked *High Fidelity* in 1964. “Dynamic range seems wider. The music has an intense intimacy, a sense of being right there, close enough to touch” (Sterling, 1964, p. 52). Many even agreed that headphones could offer a theoretically “higher” fidelity experience because they better preserved the original stereo mix while also removing living room acoustics from the equation. “Because the sound goes directly to the ears,” Hans Fantel explained in the *New York Times*, “The acoustic image of the place where the original recording was made reaches you without being altered by your own home acoustics. Problems such as speaker placement and stereo listening location are automatically bypassed” (Fantel, 1968, p. H5). Some went so far as to suggest that “protracted exposure to stereo reproduction through headphones spoils one for the more mundane experience of listening to speaker reproduction” (Bookspan, 1964, p. x21),

implying that it was perhaps *headphones*, not loudspeakers, that were the finest “route to stereo” yet (“New Route to Stereo,” 1959).

Even if manufacturers could successfully sell the public on the quality of this new generation of headphones, however, there remained a second potential barrier to their widespread acceptance. As we saw in Chapter I, one of the major reasons why headphones quickly fell out of favour with radio audiences following the introduction of an improved loudspeaker and furniture radio set was because “private” listening had been deemed antithetical to ideas of good listening in the home. Even though some at that time continued to regard headphones as superior from the perspective of sound quality, from a moral standpoint many found the loudspeaker to be more closely aligned with the spirit of communal listening that defined the 1920s radio ideal. Of course, much had changed since then. With not one but *two* dominant listening technologies now competing for the family’s undivided attention, the communal listening experience afforded by the loudspeaker had become regarded as much an obstacle as a bridge to harmonious domestic relations. That said, it was not a forgone conclusion that audiences would automatically accept headphones as the ideal solution to this new problem of competing sound. For headphone manufacturers to be successful in rebranding headphones as a useful technology in the home, in other words, they still needed to overcome any remaining negative connotations of private listening left over from the crystal radio era and convincingly situate headphones within a new moral framework. To do this, they commissioned advertisements which promoted “private” headphone listening as being not only good for the listener but for the *non*-listener as well.

To appeal to home consumers like S. Strindberg Schopenhauer (see p. 9 above) whose main concern was simply finding more time to use his hi-fi equipment, headphone manufacturers promoted headphone listening as a means to expand opportunities for listening — without bothering others sharing the same acoustic same space. “It’s one thing to fill a whole room with music. But getting to enjoy it at the volume you want, anytime you want, can be a problem,” suggested one Superex ad in 1965. “That’s where Superex stereophones come in. They make listening a strictly personal pleasure... You don’t bother anyone. No one bothers you. Which is a good thing” (Superex, 1965, p. 46). Careful to avoid any symbolic association with the “wireless widow” phenomenon of the early radio broadcast era, other manufacturers put women first in their construction of headphone listening as a consummate moral activity. “This man is *not* disturbing his wife while he listens to a stereo concert,” claimed a Jensen ad in 1962, “and he’s sitting out in the audience where he wants to be” (Jensen, 1962, p. 14; original emphasis). Jensen even went so far as to suggest that women might be the ones to purchase headphones *on behalf* of their spouses, on account of headphones’ privatizing potentials. “Let him listen to his hi-fi without disturbing anybody,” suggested one Christmas ad, “give him a pair of Jensen HS-1 Stereo Headphones for enjoyable and exclusive Private Listening wherever and whenever he wishes” (Jensen, 1962, p. 86).

Women of course were not the only “others” to make appearances in ads of this type — often it was the family in general, or nearby neighbours, who were said could benefit, if indirectly, from the introduction of headphones into the home. “The Magna headset,” went one early Magna ad, “has found its way into literally dozens of uses,

providing rewarding benefits at home, where you can have volume high or low while others are conversing, resting or sleeping” (Magna, 1959, p. 88). “Why shock around the clock?” asked another for Telex in 1960. “Love thy neighbor by doing your late evening hi-fi stereo listening — fully relaxed and in private” (Telex, 1960, p. 130). “[Y]ou enjoy full volume listening — without disturbing others,” went still another for Superex in 1966. “Isn’t that why you wanted a headset in the first place?” (Superex, 1966, p. 113). Examples like these abound.<sup>53</sup> While headphone manufacturers were always careful to play to their audience by reinforcing the masculine image of hi-fi listening as a kind of “anti-domestic” activity, it is clear they were also well aware of the fact that unless hi-fi was adequately “domesticated” — that is, brought into relative harmony with the other people inside, and sometimes outside, the home — then it would continue to be a source of conflict, rather than pleasure, much of the time.

As they had been with regards to sound quality issues, the popular press was also supportive of this interpretation of headphones as an ideal solution to the loudness problem being confronted by many a 1960s home. “The most obvious advantage of headphones,” remarked *High Fidelity* in 1961, “is in enabling their wearer to listen to the program of his choice without being disturbed by extraneous noises and without imposing his tastes on others” (Darrell, 1961, p. 65). “Who’s listening?” asked *Changing*

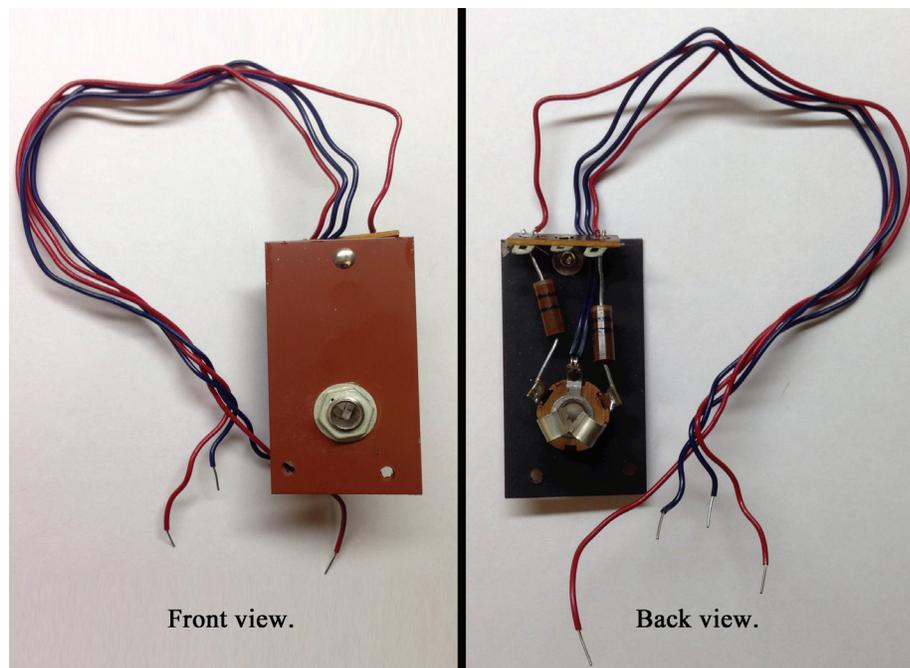
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<sup>53</sup> “High fidelity in all its glory is yours *any hour of the day or night*,” went one early ad for Permoflux. Music, elegant — *While the baby sleeps*” (Permoflux, 1958, p. 132; original emphasis). “Now you can listen to your equipment at full volume without disturbing anyone else in the house, because Koss Stereophones provide you with personalized listening” (Koss, 1962, p. 14) “Listen to your favorite stereo recording, tape or fm program at full volume without disturbing anyone else in the room — just you and your music” (Superex, 1962, p. 147). “Not only do the neighbors not hear,” went still another for Koss in 1965, “but he doesn’t even disturb his family in the same room! That’s because Koss Stereophones are for personal listening” (Koss, 1965, p. 24). “At peak volume, the only thing your neighbors will hear is your humming” (Pioneer, 1970, unknown page).

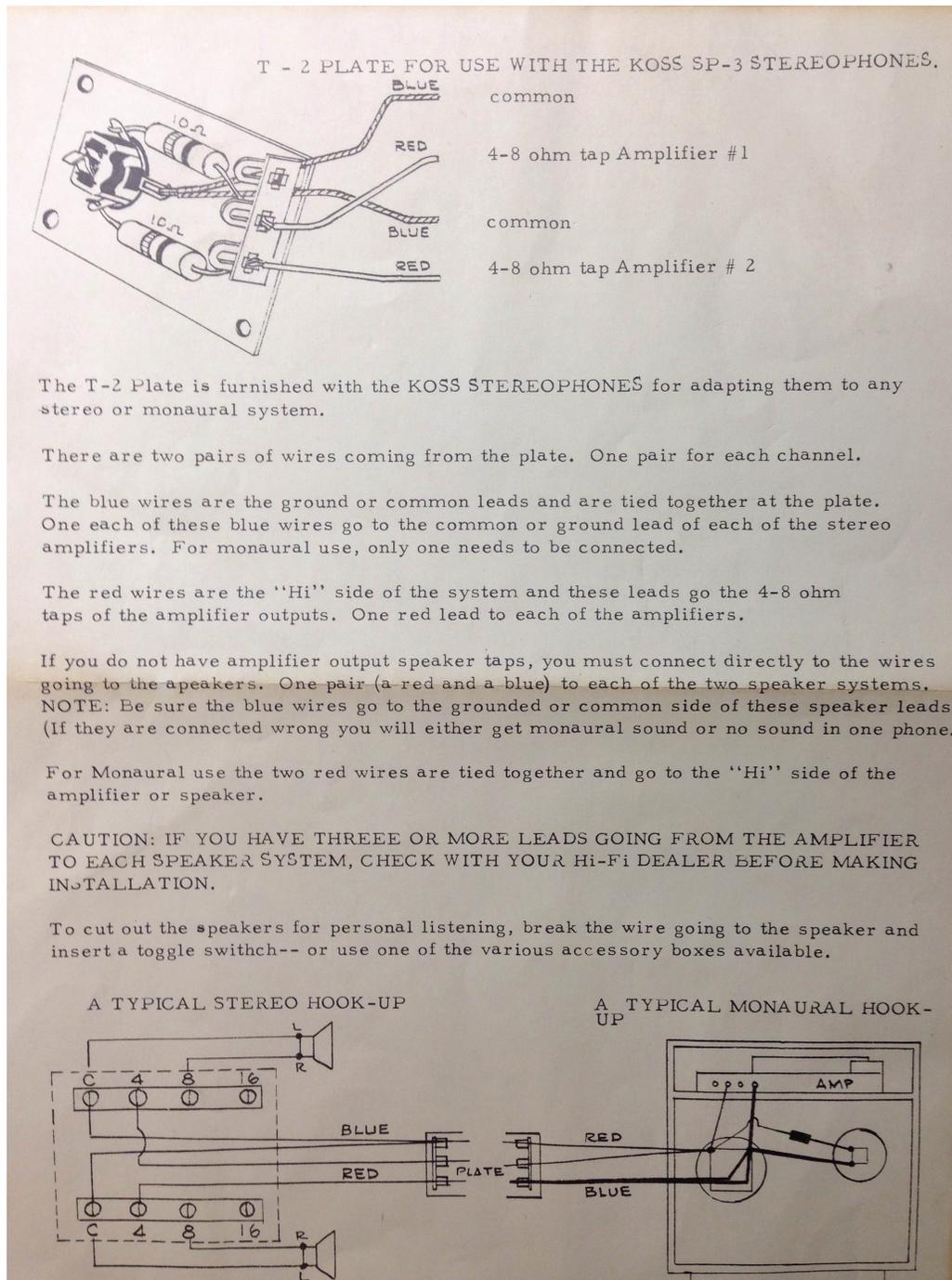
*Times* in 1962, “The most obvious prospect is the man who loves music, loves it loud, and thereby is a nuisance to his family. Fit him with earphones and he can listen to his heart’s content without bothering — or being bothered by — members of his family or neighbors” (“Stereo Without the Speakers,” 1962, p. 22). In an article addressed specifically to audio dealers in 1963, *Billboard* claimed “You can almost ad lib the advantages of stereo phones to your customers. Greater stereo effect than speakers, private listening to stereo while the rest of the family watches TV, late-night listening, etc.” (Lachenbruch, 1963, p. 52). “The privacy works both ways,” reminded Fantel, this time in 1969. “It also makes life peaceful for others in your home” (1969, p. 150). As with the advertisements that sometimes accompanied them in print, these editorials thus celebrated the ability of headphones to not only provide a high quality acoustic experience, but to foster a more peaceful environment by allowing for living spaces to be acoustically sub-divided so that competing desires (e.g. sound vs. silence) and entertainment media (e.g. hi-fi vs. television) could be more effectively managed.

Yet even if headphone manufacturers could effectively legitimize the new technology, and reframe its moral significance in the new domestic media environment, the fact that existing hi-fi consoles in the early 1960s permitted no easy way of actually connecting headphones presented a final significant barrier to their widespread acceptance. While not quite as complicated or daunting as it had been in 1954 when Peter Tappan of *Audio Engineering* saw fit to print several pages of do’s and don’ts for running a headphone connection, the newer hi-fi consoles had still not graduated to anything resembling simple “plug in and play” status. Potential headphone owners still had to be

careful to match impedances and manage power outputs (to avoid blowing the headset — or one’s ears), choose from a range of after-market equipment (to enable, for example, easy switching between headphones and loudspeakers), and navigate a host of other considerations (such as whether to invest in a separate headphone amplifier, run an extension across the floor or through the wall, etc.) which could be intimidating to even the most well-initiated hi-fi enthusiast. Koss attempted to overcome this problem by including a small external jack with all his early headsets in order to standardize and simplify the connection process (see figures 16 and 17), but even this was at best a short-term fix. For even if it saved customers from having to permanently solder a connection into their amplifier, it still burdened them with the task of making unfamiliar and potentially intimidating adjustments to their home system, as well as implied that headphones were still somehow “exterior” to what was more properly a loudspeaker-oriented affair.



*Figure 16. Koss headphone jack component, c. 1960, Author’s private collection*



**Figure 17.** Koss headphone jack component installation instructions, c. 1960, Author's private collection

In order to overcome this final barrier, Koss once again led the way by convincing two of the biggest console manufacturers in the US at the time, Scott and Fisher, to begin including native headphone inputs on their newer units. "I was having trouble working

through the politics,” Koss recalls, “but I knew they were very competitive and jealous of each other... So I basically told [Scott] that I didn’t have any trouble convincing Fisher to install the jacks and he bought it.” He says he then tried the same line with Fisher, “and soon they were installing the same jacks in their equipment” (Dunn, 2002, p. B2).

Whether done out of competition, jealousy, or recognition of a new business opportunity, there is no doubt that the appearance of native headphone jacks on the front of the newest high fidelity consoles constituted a significant turning point in the mainstream potential of headphones. “Just plug Koss Stereophones into the jack on the front panel of one of these Knight, Fisher, Scott, Bogen, or Harmon-Kardon amplifiers,” Koss could instruct by 1963, “and a whole new world of breathtaking stereo surrounds you” (Koss, 1963, p. 30). Whereas in 1954 it had taken several pages for Peter Tappan to explain to *Audio Engineering’s* readership how headphones could be connected — and several more to convince them why they might actually want to go through the trouble — by the mid-1960s headphone manufacturers simply needed point to the console as a sign of headphones’ newly-established “place” in the home audio environment.<sup>54</sup> “Slip the plug in the headphone jack on your amplifier or receiver,” Koss directed again in 1966, this time finding it unnecessary to single out only a few participating console brands. “It’s right there on the front panel. You never noticed it?” (p. 161).<sup>55</sup>

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<sup>54</sup> Sterne makes a similar argument in *The Audible Past* to explain how *audile technique* went from being strikingly unusual (with the invention of the monaural stethoscope) to commonplace (following the introduction of telephony, phonograph, and radio). “Over the span of a century,” he writes, “technicized listening moved from an esoteric medical technique that required extended training and explanation to a common motif in the ‘radio boom’ of the early 1920s... What took hundreds of pages to explain in the 1820s could by the 1920s be accomplished within the space of a single page or even the single frame of a comic strip” (2003, p. 174).

<sup>55</sup> In 1973, the *Washington Post* would confirm: “Today, no self respecting amplifier or receiver would be caught without the familiar headphone-jack — and on the front panel, at that!” (“Over-Sized Earphones That Once Drew Laughs Are Now Standard in Hi-Fi,” 1973, p. H10).

## Conclusion

Whether for their ability to “outperform the finest loudspeakers” (Sharpe, 1965) or permit home listeners to “enjoy full volume listening — without disturbing others” (Superex, 1966), headphones went from being a mere consumer audio show curiosity in 1958 to “the hottest item in audio in terms of sales volume growth” in just over a decade (Fantel, 1968, p. H5). Although headphone manufacturers by no means “caused” this shift, they did play a significant role in convincing the public to suspend their preconceived notions of headphones as a lo-fi and antisocial technology left over from the crystal radio era, and begin thinking about them in a new way.

In demonstration exhibits and in advertisements, headphone manufacturers encouraged consumers to think outside the “black box” of the existing hi-fi system by drawing attention to some of the acoustic limitations, as well as the moral inadequacies, of the loudspeaker. They also took steps to overcome the outsider status of headphones on a material level by having the option of headphone listening physically scripted into the newer receivers. Together, these efforts challenged consumers to question their obligations to the loudspeaker — not just out of fidelity to their music, but out of fidelity to their loved ones. For if “good” listening in the all-in-one radio-phonograph period had been defined by the ideal of everyone in the family listening together, the changing dynamics of the 1950s and 1960s domestic media environment had begun to suggest that respecting one’s right *not* to listen was of at least equal importance. “No two people ever really enjoy all the same things,” summarized a Koss ad in 1971. “But with Koss Stereophones, you can live and let live. Because both can be turned on at the same time.

As loud as you want, without disturbing the other... from \$19.95 to \$150. It's a small price to pay for a little peace" (Koss, 1971).

Whether all those who encountered these messages bought into the rosy picture provided by headphone manufacturers and the popular press is certainly debatable. It is likely that many women, for example, would have viewed the new sense of "togetherness" headphones provided as the complete *opposite* of what they had hoped for when they first welcomed television into the home (Spigel, 1992). There is also every possibility that, as Keightley (1996) suggests, many men would have embraced headphones not *altruistically*, as a means to create a more harmonious home environment for all, but *egoistically*, as a means to more frequently escape from their wives, children, and other domestic responsibilities. Yet if this kind of skepticism was indeed prevalent, it is very difficult to substantiate from reading popular reports published at the time. For even as headphone sales continued to rise significantly through the 1970s, there emerged no significant critical discourse (that I could find anyway) to match.

To be sure, Koss and his colleagues' reasons for re-positioning headphones as a kind of "moralizing technology" (Verbeek, 2011) was not to try and make the world a better place. Their goal was, as the goal of design companies often is, to monetize technology — and in this context, selling consumers on the idea that headphones *could* potentially make the world a better place proved an effective means to sell more headsets. Yet whether one chooses to regard these efforts sympathetically or cynically, the fact remains that headphones provoked little public outcry following their unlikely revival in the 1960s. Faced with the challenge of how to accommodate two imposing media

technologies at once, many millions of American households voted with their wallets to welcome headphones back into the domestic environment, and seem to have raised few additional moral concerns as a result.

While this is far from Verbeek's idea of a "democratically organized moralization of technology" (2011, p. 99) — which for him means implementing morality assessment methods into the design process itself — it is a strong example of how the democratic moralization of technology can be executed in a different yet equally important way. The 1940s and 1950s consumer audio industry's unwavering commitment to the loudspeaker can in some ways be regarded as a technocratic state of affairs: once entered into, it imposed a certain set of practical and experiential conditions which produced moral dilemmas that could not easily be resolved. Those who attended consumer audio shows, or purchased home audio equipment, often got more than they bargained for; yet they were left with little recourse but to accept the uncomfortable position these situations of obligation produced. By identifying the loudspeaker as the source of this discomfort, and finding a practical means to overcome this discomfort through design, innovators like Koss helped empower audio manufacturers, and consumers themselves, to exercise greater control over their moral environments. And in the end, both sides were left with not just an exciting "new route to stereo" ("New Route to Stereo," 1959) — but also a valuable new situation of choice.

## CHAPTER III

### Walkman: Nobody Hears it but You

In the span of just over a decade, headphones went from having “never been considered commercial” in the hi-fi market (Lanier, 1958, p. X16) to “one of today’s biggest-selling hi-fi accessories” (Fantel, 1969, p. 146). Yet as the popularity of headphones in domestic environments grew, there was still one place most headphone listeners did not go: outside the home. Even as other forms of portable music listening became increasingly ubiquitous from the 1940s, it was only following the introduction of the Sony Walkman in 1979 that a prominent mobile headphone culture emerged. Taking the morality of mobile listening as its focus, this chapter explains first why the Walkman was so successful in generating public interest in headphones in mobile environments after audiences had previously seemed uninterested in such technology, and second why the moral meaning of mobile headphone listening changed once the Walkman’s place in urban culture was assured.

To date, scholars have made sense of the Walkman’s success by situating it within a general history of mobile acoustic privatization. Shuhei Hosokawa, for example, has described the Walkman as the last in a series of “four successive and accumulative steps” (1984, p. 166) in which *musica mobilis* — what he defines as “music whose source voluntarily or involuntarily moves from one point to another, coordinated by the corporal transport of the source owner(s)” (ibid.) — shifted from being an unintentional byproduct of city life to a direct and intentional input controlled by individual headphone listeners. Paul du Gay et al. have similarly placed the Walkman “at the outer limit of this revolution

in ‘the culture of listening’” (1997, p. 20), marked by what they call a “succession of developments, from the portable radio to the car stereo, [which] has made it possible to transport [an] inner landscape of sound with one wherever one goes” (ibid.). While certainly illuminating, there remains in these historical narratives a sense in which the Walkman’s success was almost inevitable — merely the latest phase in “an acoustic history of increasingly mobile privatized sound” (Bull, 2007, p. 2).<sup>56</sup> In this chapter, I take a different approach. Rather than regard the Walkman as ushering an inevitable shift from one phase of mobile acoustic privatization to another, I attempt to explain what actually *prompted* this shift by situating the Walkman’s success within a specific material and moral context.

This chapter is organized into three main sections. My analysis begins in the 1940s when “a parade of post-war portables” (Shiffer, 1991, p. 133) began to move radio listening increasingly out of doors. This led to objections from some that the intrusion of private music on public space might constitute a significant threat to public peace. Throughout the 1950s and 1960s the prevalence of portable radio sets, and portable radio complaints, increased considerably, and by the end of the 1970s altercations were occurring over whose vision of good listening should take precedence: those who wished to listen, or those who wished not to. Unable to see past the situation of obligation imposed by the portable radio — characterized by an imposition of private music onto

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<sup>56</sup> While Heike Weber (2010) does an excellent job of tracing how headphone listening transitioned from being “a static ‘technique of listening’ into a mobile ‘technique of acoustic privatization’” (p. 340) in the West German context, her account of how the Walkman also successfully “normalized a public, mobile use of... headphones” (p. 353) in the American context is limited.

shared acoustic space — proponents and critics alike struggled to determine whose public listening ideals would prevail.

In the next section I show how the Walkman emerged, in 1979, as a potential solution to this growing portable radio problem. While Sony initially envisioned the device as a higher-quality mobile listening alternative, the Walkman soon came to be understood as offering something more significant: a means for those offended by the “blare” of the portable radio, and other urban noise, to remove themselves from it in a quiet and non-confrontational way. The Walkman was thus interpreted not only as a high-quality mobile listening device, but as a sonic medium capable of restoring public peace by converting the situation of obligation imposed by the portable radio into a much more agreeable situation of choice.

In the final section of this chapter I seek to understand why, unlike in the 1960s domestic setting, this positive moral meaning of headphones in mobile environments ultimately did not hold. Initially regarded as a “civilized alternative” (Dullea, 1981, p. B4) to the portable radio, in under three years the Walkman came to be derided instead as a “potent symbol of an antisocial electronic future” (Shapiro, 1982, p. 2). Two factors, I argue, were particularly significant in this shift. First, while Sony had incorporated a number of communications features into the original Walkman, few came into popular use. This reinforced a growing notion that headphone listeners were less interested in contributing to a more friendly and co-habitable urban space, than simply retreating into their own individual auditory “bubbles” or “cocoon” (Du Gay et al., 1997; Bull, 2000; 2004; 2006; Weber, 2010). Second, while portable radios had been considered by critics

to be a serious public annoyance, mobile headphone listening was found not only to be antisocial but unsafe. By overriding some of the safety features built in to the Walkman, users found they could gain a more enjoyable listening experience; by listening at high volumes, however, they also put their ears at risk of long-term hearing damage and their bodies at risk of more immediate harm (since oncoming vehicles and other urban dangers could not be so easily heard). These factors, I argue, led the Walkman to cease being understood as a kind of “solution” to the portable radio problem, and instead as imposing its own unique moral challenges and obligations.

In the previous two chapters I offered examples of how users and designers worked together towards resolving moral dilemmas by converting uncomfortable situations of obligation into more agreeable situations of choice. In chapter one, I showed how radio listeners were able to achieve a more comfortable and collective radio listening experience by convincing manufacturers to standardize loudspeakers in the radio apparatus. In chapter two, I demonstrated how manufacturers were able to help hi-fi and television listeners resolve their competing loudspeaker problem by reintroducing headphones as a viable listening alternative. In this chapter I reveal how a carefully designed “morally mediating technology” (Verbeek, 2010, p. 40) can also *fail* to secure a positive moral result if not properly adapted to evolving consumer attitudes, behaviours, and use-contexts. While the Walkman was initially interpreted as a morally superior listening alternative to the portable radio, it soon came to be regarded as imposing a new — and arguably even more problematic — situation of obligation of its own. By understanding exactly how this shift in the moral meaning of the Walkman occurred, I

aim to demonstrate why moral design initiatives must go beyond the initial product development stage in order to ensure that a technology makes good on its promise to make life better for all involved.

## **The Portable Radio Problem**

In the late 1970s and early 1980s, American cities were experiencing a noise problem. While public complaints about noise in urban settings were nothing new (cf. Bijsterveld, 2008; Radovac, 2011; Sewald, 2011), what distinguished this problem was its focus on a specific new music technology: the portable, transistorized radio-cassette player, or boombox. “[T]he public tranquility is being regularly murdered by that handy modern convenience, the portable transistor radio,” reported *Time* in 1979. “Its proliferation is nothing if not phenomenal... They are everywhere, and always going full blast. They play nothing but frenzied music, day and night. They are inescapable” (Trippett, 1979, p. 60). “In case you hadn’t heard, the urban sound is portable, louder and practically everywhere,” echoed the *Washington Post*. “The portable stereophonic radio-cassette players have become a badge of the city’s seasons, a symbol of adolescence, a take-everywhere recreation outlet and, to some outsiders — particularly parents and bus riders — an annoyance” (Trescott, 1980, p. B1).

While described as a new and imposing urban nuisance, this was not the first time America had encountered a portable radio boom — or a portable radio problem. As Michael Brian Schiffer explains in *The Portable Radio in American Life*, the first such boom occurred back in 1923 when “a flurry of interest in portables included the arrival of

the first commercial boom box” (1991, p. 63). The limitations of the available radio technology, coupled with the unreliability of commercial broadcasting at the time, meant this boom was ultimately short-lived. However, the public’s interest in a mobile-friendly radio set surged once again in the late 1930s and 1940s with the onset of WWII. “With war seemingly imminent,” explains Schiffer, “portables were a sensible purchase in England, for they could be used to receive crucial news in bomb shelters and in homes with failed power” (ibid., p. 118). Taking note of this increase in the popularity of portable radios in Europe, American companies soon began to manufacture similar sets for use on the home front. Rather than sell them as “ideal for receiving bad news from abroad,” American companies instead emphasized “the leisure activities that the portable could accompany” (ibid, p. 121). These proto-boomboxes were advertised as “take anywhere” music devices, and soon prompted public interest and criticism alike.

In ads directed at middle-aged Americans, portable radios were described idealistically as devices that could accompany individuals on family trips, or be used in places the larger furniture radios could not reach. “Now — in your summer camp or country home, on a boat or elsewhere,” went one RCA ad published in *Life* in 1939, “your family can enjoy ALL music, regardless of where you live, or where you plan to spend your vacation” (p. 45). A Zenith radio ad placed a year later went so far as to include a series of images depicting all of the different places a portable radio could go — from planes, trains and automobiles, to offices, picnics, and sports games (see figure 18). For younger demographics, portable radios were advertised in a similar fashion, as a means to open up new opportunities for mobile listening both in and outside the home.



Figure 18. “A New Invention. It’s Different,” Zenith Radio Corporation (1940)

“Look Boys!” exclaimed one Philco ad published in *Boy’s Life* in 1940: “A portable radio that you can strap over your shoulder and carry wherever you go! It plays on its own battery power and you can take your favorite radio programs with you on hikes, picnics, riding, boating or anywhere, indoors or outdoors” (Philco, 1940, p. 42). The young adult market was especially sold on shoulder-strap models, often made to resemble camera cases, that could be played either alone or in the company of friends (see figure 19). By and large, the public responded favourably to this new generation of portable radios and by 1948 their popularity had become so pronounced that the *Washington Post* described the technology as “the public’s pet,” whose “status has changed from novelty to almost necessity... account[ing] for about 16 per cent of all radio production” (Oliver, 1948, p. L4).

AMAZING NEW  
*Majestic*  
RADIO  
WEIGHS LESS  
THAN 4 POUNDS



NOW! CARRY YOUR  
RADIO LIKE A CAMERA  
HEAR YOUR FAVORITE  
PROGRAMS WHEREVER  
YOU ARE!

Only  
**\$14.95**

*East of Rockies*  
with self-contained battery and shoulder carrying strap. So small it can be carried in a handbag. Size: 3½" x 5½" x 7".



**Self Powered! No Aerial, No Ground, No Socket! Plays Anywhere, Anytime!**

Majestic—for 1940—presents a truly *portable* radio! It's completely self-contained as shown above—that's all there is to it—loop aerial, tubes, battery all enclosed in camera-type case weighing LESS than 4 pounds complete! Enjoy your favorite programs wherever you are—picnicking, camping, at the seashore, golfing—anywhere, anytime! And reception is amazingly sharp and clear. Enjoy a demonstration at your dealer's today.

"Camera-Case" Set  
for Sports Use

WORN like a camera case, and hardly more bulky, a new compact portable radio can be used on hikes and outings where a regular-size receiving set would be out of the question. Its multiturn, non-directional loop aerial is concealed in the shoulder strap. Because the aerial is nondirectional, the little set is said to bring in a wide range of stations. The leather-covered "camera case" in which the midget receiver is housed measures only four by five by eight and a quarter inches. Complete with batteries, the compact receiver weighs less than five pounds.



NEW KINKS

Novel Radio Resembles a Camera



A PORTABLE radio now on the market resembles a candid camera in outside appearance and construction. Available with either a shoulder strap or a carrying handle, the four-and-a-half-pound receiver measures four inches in depth, five inches in width, and eight and a quarter inches in length. It utilizes miniature radio tubes recently introduced. Flash-light cells serve as an "A" battery for the set, which boasts of a built-in aerial, dynamic speaker, automatic volume control, super-heterodyne circuit, and a headphone plug-in connection for long-distance or one-man listening.

Fine for outings, the radio is available with a shoulder strap or handle

Figure 19. LEFT: "Amazing New Majestic Radio," Majestic Radio & Television Corporation (1939); TOP RIGHT: "'Camera-Case' Set for Sports Use," Popular Science (1939); BOTTOM RIGHT: "Novel Radio Resembles a Camera," Popular Science (1940)

While embraced by many, some viewed the portable radio not as a practical solution to the stationary radio problem, but as introducing a radio problem of its own. "To the younger generation at least, the portable radio appears to have climbed almost into the necessity class," reported *Consumers' Research Bulletin* in 1941. "[A]t the beach, at picnics, in the country, and even spectators' stands at sporting events, portable radios

can be seen and (unfortunately, at times) heard... So common have the small sets become that complaints against their use are beginning to appear in the newspapers” (as cited in Schiffer, 1991, p. 121). At what might have been the height of the “camera-style” portable radio’s popularity in 1948, the *New York Times* covered a report written by a man who went so far as to charge the portable radio with “threatening the present and future mental stability of the nation’s population” (“Topics of The Times,” 1948, p. 18). “[A] man out for a quiet walk in the country runs the risk of having his private mental processes invaded and rudely blasted out of their normal calm channels,” he said; “the steady encroachment of the portable radio on privacy [is] decidedly unhealthy” (ibid.). Yet while complaints like this began to surface in the 1940s, the portable radio failed to become more than a minor public annoyance at this time — likely because the reliance of these radios on miniature tubes and batteries (which were expensive and needed frequent replacing) in some ways kept their indiscriminate use in check.<sup>57</sup> With the introduction of a more efficient portable transistor radio in the 1950s, however, the reliance on tubes disappeared, battery costs dropped considerably, and mobile listening became an increasingly ubiquitous affair.

Utilizing transistors first employed by the commercial hearing aid industry (Schiffer, 1991; Mills, 2011), this series of more compact and efficient portable radios became commercially available starting in 1954. While the high price of their components led manufacturers to initially market these radios to adults, as the decade

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<sup>57</sup> “The futuristic camera radios were rather popular,” writes Schiffer (1991). “[But] they were battery hogs... The average cost for running a camera-style portable was about six cents an hour, at a time when five cents could still buy a cup of coffee. Many surely regretted their purchase of a personal portable when the battery costs started mounting” (pp. 124-5).

progressed they wound up more and more in the hands of youth. The reason, explains Schiffer (1991), had everything to do with the emergence of rock and roll — and more specifically, the desire of adults to avoid hearing it. Following the discovery of the “teenaged” demographic in the mid-1940s (Palladino, 1996; Savage, 2008), the music industry had begun to take notice of the massive spending power of young people; and as rock began to dominate physical record sales charts by the end of the 1950s, radio producers saw an opportunity to tap into this burgeoning market by creating programs dedicated specifically to their music tastes. Soon teenagers began to demand that this new range of programs be played through the home radio set, leading parents to purchase miniature radios for their children so as to not be subjected to the music themselves (Schiffer, 1991). For their part, teens discovered that transistors also gave them an increased ability to not only hear their music, but also to travel with it and share it with others. “The shirt-pocket portable, or simply, *the transistor* (as it was called then) became a metaphor for freedom and independence,” writes Schiffer, “the right to express, in music and in things, the style and tastes of youth” (1991, p. 181; original emphasis; see also Fickers, 2009). While initially young people had to rely on their parents giving the transistors as gifts, the introduction of a wave of cheap radios following the Japanese “invasion” of the portable electronics market at the end of the decade finally made these devices affordable enough for most young people to buy on their own. Already in 1959 *Billboard* reported a significant spike in the number of transistor radios being played by teenagers around town (“Execs Eye Tape, Transistor Build,” 1959, pp. 4, 14), and by

1967 noted that almost 70% of all radios sold were purchased by young people (“Behind the Radio Sales Revival,” 1967, p. 91).

While teenagers often used their transistor radios in private, as part of the emergent “bedroom culture” of the 1950s and 1960s (Livingstone, 2002), the latter decade also saw a dramatic spike in their use in public spaces. “Who listens to all these radios?” asked *Life* in a special report on the “transistor craze” published in 1961:

First, as everyone knows, teeners and sub-teeners, who buy the little sets by the millions with their lunch money. Hooked on sound, they wander abroad with little plastic objects like first-aid kits looped in their belts to keep them from getting out of touch. They have even been seen dancing in public squares, each with a transistor cradled on the other’s shoulder, tuned in to the same station. (p. 23)

While young people were by no means the only ones embracing the possibilities afforded by the transistor radios, complaints in the popular press often focused specifically on teenagers or other purportedly “juvenile” users of this technology. “During this present summer... everywhere I have gone the wail and whine of transistor radios have tortured my ears,” went one 1962 letter to the editor of the *New York Times*. “Teen-agers [are the offenders], usually, listening to, or at least tuned to, the primitive horror of rock-n’roll [*sic*]” (Argow, 1962, p. 144). The editor of the *New York Times* himself saw fit to chastise the “[a]dult children and childish adults [who] use them as mating calls and conversation pieces,” claiming “[i]t’s a toss-up which is worse: the sound of a transistor radio outdoors

or the sight of the person who lovingly carries it, usually walking about open-mouthed and/or glassy-eyed” (“Transistors Go Home,” 1963, p. 28). Other columnists and letter writers equally disparaged those “cretins [who] lovingly hug their shrieking transistor radios with a look of rapt idiocy” (Schonberg, 1965, p. 41), some going so far as to call for laws which might “stop the airwaves from being blistered by those moronic individuals who use a good invention to prey on captive audiences in public spaces” (Conroy, 1963, p. 28).<sup>58</sup> If portable radios had previously provoked the ire of some who found them a public nuisance, in the 1960s this concern became far more prevalent; and as we shall see, with the introduction of a much louder and even more invasive portable radio in the 1970s, these complaints reached a fever pitch.

While the first line of portable stereophonic radio-cassette players — or boomboxes as they would eventually come to be known — appeared in the late 1960s, it was not until the mid-1970s that they started to gain a significant audience.<sup>59</sup> Like the transistor radio, the first portable radio-cassette players were not exactly high-fidelity; however unlike the transistor radio, they were large and considerably more invasive.<sup>60</sup> Their “gigantic, blaring” size and sound (Tolkoff, 1974, p. 544) soon earned this new generation of portables a variety of nicknames, including the “box,” “monster,” and even “the thing” (Trescott, 1980, p. B1). Underscoring the racial and class connotations of the

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<sup>58</sup> “If these empty-headed idiots must be switched-on wherever they go,” went another, this time in 1966, “why must the rest of us, merely desiring as peaceful a ride to the shore as possible, be made to suffer?” (Alexander, 1966, p. 26).

<sup>59</sup> “Exactly when the term *boombox* hit the streets is not known for sure,” writes Owerko (2010). “In the United States, department stores apparently began using the term in marketing and advertising as early as 1983. Street slang linguists pin the term at 1981, and define the boombox as ‘a large portable radio and tape player with two attached speakers’” (p. 12; original emphasis).

<sup>60</sup> On the subject of their poor sound quality, see Fantel (1977): “Battery-powered portable recorders, with few and expensive exceptions, are musically deplorable, as are the flimsy units built into radio-cassette combinations” (p. 54).

device, the term “ghetto blaster” also entered popular discourse around this time, due in large part to the association between early portable radio-cassette players and poor urban youth.<sup>61</sup> “If you walk on the streets of New York, the one obvious thing is the guy with the ghetto blaster, that huge bazooka, walking down the street,” remarked Malcolm McLaren, well-known British band manager (Sex Pistols, Adam and the Ants, Bow Wow Wow) and musician, in 1982. “He’s always black; he’s never white. And he’s always got it as loud as possible. Because he’s into communicating with that music” (as cited in Kozak, 1982, p. 56). This stereotype — that poor urban youth, and black youth in particular, were culturally “predisposed” to appreciate the additional power afforded by the boombox — was often addressed in the popular press. “While nationwide statistics on the characteristics of listeners show a fairly equal balance between the sexes,” reported the *New York Times* in 1976, “the music-carriers of New York seem to be male and either black or of Hispanic origin. Harvard psychologist Sheldon White attributes this phenomenon to their having ‘more reason to tune out’ the society around them” (Maitland, 1976, p. 27).<sup>62</sup> Other explanations included the desire of certain black members of society to share their musical culture after having it “hidden away in little clubs for many years” (Brown Jr., as cited in Maitland, 1976, p. 27). “In some ways, for blacks,” suggested Roscoe C. Brown Jr., director of the Institute of Afro-American Affairs at New York University, “it is a form of pride — they are enjoying their music,

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<sup>61</sup> Other racialized terms included the “ghetto briefcase” in the US and “Brixton briefcase” in the UK (see Owerko, 2010).

<sup>62</sup> *Time* also reported that “The main legions of portable fans are mostly young and predominantly — but not always — black or hispanic” (Trippett, 1979, p. 60).

and they are proud of it” (ibid.).<sup>63</sup> For others, it was more political. “Back then,” reflects historian Adisa Banjoko, “the black man wasn’t being heard in American society. His ideas, his thoughts, his passions, his fears, his hate, his love were just swept under the rug. And so when he’s got his boombox in his hand, he forced you to hear him” (as cited in Owerko, 2010, p. 26).

While the portability and comparatively low cost of these players, particularly compared to console-based “hi-fi” music systems, initially made them popular amongst lower-income and non-white populations, as the decade progressed the market for boomboxes expanded significantly. Soon young people of all races and classes began to cart boomboxes around as a means to express their unique musical tastes and cultural capital in public. The sound of these devices, although still poor, was an improvement over the smaller transistor radios and could be played at a much louder volume. This was considered ideal for adding musical accompaniment to more boisterous outdoor activities, such as dancing or playing sports, as well as more effectively attracting the attention of others. The onboard radio and cassette deck also offered increased flexibility and control over content, permitting young people to either tap into the increasing variety of youth-oriented stations available on the radio (which expanded considerably throughout the 1970s), or play cassettes purchased pre-recorded or containing “mixes” put together by recording segments of radio broadcasts aired previously. For those in the burgeoning hip-hop and punk cultures, boomboxes were also frequently used to record demos of original music that could be played back and promoted to others in the scene, and live-to-tape DJ

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<sup>63</sup> For a detailed discussion of the racial politics of boombox listening see Owerko, 2010.

performances were often circulated “to mark rival deejays’ territories” (Harrison, 2006, p. 287; Owerko, 2010). Symbolically, then, boomboxes came to be regarded as a new kind of “electronic hearth” (Tichi, 1991), capable of colonizing urban spaces by converting street corners, public transportation systems, parks, and beaches into dynamic spaces for young people to spontaneously gather. “Growing up [in New York] in the late 1970s through the mid-1980s meant that a boombox in some way, shape, or form had to have been a major part of your life,” writes Owerko (2010). “Once alive and whirling out an audio assault, a boombox became the sonic campfire in any environment. It was the place that people would gather around to exchange thoughts, mellow out to, or start the party” (p. 15).

Predictably, older — and often white, middle-class — segments of the population were less than impressed. “On buses, the volume that music-toters seem to find so necessary draws them into arguments with other riders,” wrote the *New York Times* in 1976. “On the subway, it has been known to send fellow passengers stumbling toward distant cars to seek relative peace and quiet. Even underground, there is music in the air... Communicating with music addicts is a shouting matter” (Maitland, 1976, p. 27). In 1977, the *New York Times* again remarked on how urban citizens “now have their slim mental balances destroyed by young men with radios, some larger than portable, who fill buses with a blare of shrieking sound that seems rarely tuned in expertly enough to be criticized as music” (Shepard, 1977). Unlike some other urban noises like traffic and construction, which were deemed frustrating but in some ways necessary, boomboxes were regarded by critics as an unjustified source of noise pollution created by a

generation of youth who lacked moral decency and respect.<sup>64</sup> As *Time* summarized the problem in 1979: “Certain noises, those of traffic, for instance, are inherent in city life; essential and irreducible, they must be borne. The music of the boxes is not in that category. So the spread of the box-toters is raising a public rumpus over a valid social issue — the public's right *not* to enjoy the private entertainment of an individual” (Trippett, 1979, p. 60; emphasis added).

The situation of obligation imposed by the boombox was thus defined materially by the acoustic bias of the loudspeaker, which “obliged” all within earshot to take part in the listening experience, and morally by a fundamental disagreement over whether boombox listeners had a right to impose their musical tastes so aggressively on others in shared public spaces. To preserve what they felt was their own right to expect some measure of peace and quiet, critics went on the offensive by demanding that city officials begin regulating the use and volume of boomboxes on streets, beaches, parks, and transportation vehicles. In 1978, the New York City police duly began “giving summonses to those who play radios and tape decks loudly on trains and buses, in violation of a new law” (“The Nuisances of Urban Life” 1978), and in May and June of 1980 officers initiated a city-wide crackdown in which “more than 60 summonses were issued and some 20 radios confiscated” (Trescott, 1980, p. B1). Reminiscent of the “decibel detective” phenomenon of the 1950s consumer audio show, however, these laws seemed to be more an index of the scale of the problem than an adequate solution to it. “We’ve only got 23 inspectors to cover noise and air pollution complaints all over the

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<sup>64</sup> See Bijsterveld 2008 for additional background on links between noise and ideas of urban “progress.”

city,” remarked a spokesman for New York City’s Department on Environmental Protection when asked why portable-radio-related noise laws were not being adequately enforced. “[O]ur backlogs on complaints is at least a couple of weeks” (Bird, 1980, p. B1). For their part, boombox owners were often less than cooperative with their critics, either ignoring requests to turn their music down, verbally or physically intimidating those who confronted them, or even organizing protests to oppose what they saw as unfair restrictions on their right to play music in public spaces (Unger, 1973; Mendenhall, 1977; Trippet, 1979). *Time* notes that one local ordinance against their use on Fire Island, New York City “drew forth about 1,000 box-lovers with their music blaring maximally in protest” (Trippett, 1979, p. 60).

Rather than regulate the use of boomboxes, others suggested it might instead be more productive to mandate the use of headphones in shared public environments; that way listeners could continue listening, and the option of not listening could be restored. “I have been so victimized by the excesses of individuals who board interstate buses with radios and subject all riders to the relentless din of screeching, screaming, and repetitive rock music,” went one letter to the editor in 1977. “Why can’t a regulation be applied to restrict the listening to earphones. Must all bus riders be subjected to the tastes of one or two self-centred individuals?” (Mendenhall, 1977, p. 317). For various reasons, this resolution was not likely to succeed. For one, the only available headphones designed specifically for mobile listening were cheaply made, uncomfortable to wear, and of dismal sound quality (more on this later); on the other hand, those that were popular in domestic environments were bulky, heavy, and not particularly well-suited for listening

outdoors. More importantly, the ability to listen to music in mobile environments was only a small part of the allure of the boombox for young people. For them, it was the *sharing* of that music that was central to the experience, and so any effort to forcibly “privatize” the boombox’s sound was bound to be met with resistance. “The boombox was a way of claiming some territory,” explains film director and DJ Don Letts, “even if you, as I say, pissed off a couple of people on the way, well, that would bring a smile to your face as well. We spend a lot of time — whether we realize it or not — trying to claim some space; stake a territory and say, ‘Yeah, we’re here.’ And the boombox was the ultimate expression of that. It was empowering” (as cited in Owerko, 2010, p. 63).

By the end of the 1970s, many citizens were fed up. Those who opposed the boombox were becoming exasperated with the city’s inability to curb the problem, and those in favour of the boombox were defiant in the face of efforts to regulate what they viewed as a desirable and empowering social activity. With neither side willing to adjust their definition of what constituted good listening in public space, the situation of obligation imposed by the boombox became increasingly problematic; yet beyond jostling over noise bylaws, there seemed to be little recourse for positive action. Unable to rely on city officials to regulate the problem — or on the boombox owners to regulate themselves — the critics finally decided to take matters into their own hands. Starting in December of 1979, they embraced a new portable listening device the *Wall Street Journal* dubbed “the middle- and upper-class answer to the box” (Joseph, 1980, p. 25). This device was the Sony Walkman: a headphone-only personal stereo which promised to

convert the situation of obligation imposed by the boombox into a situation of choice by permitting those who had failed to shut *up* the boomboxes to shut them *out*.

### **Outclassing the Box**

Interestingly, while upon its introduction to America in December, 1979, the Walkman would be regarded as an innovative solution to the boombox problem, this seems to have been the furthest thing from Sony's mind when it first got to work developing the device in Japan earlier that year. As Sony's Akio Morita — the person often credited as the “father” of the Walkman (du Gay et al., 1997, p. 42) — explained in a 1981 *Wall Street Journal* op-ed, he instead felt the potential of the Walkman lied in its ability to provide a *higher-quality* listening alternative for young people who happened to be disappointed in the boombox's poor sound. “Younger people have expensive stereo equipment at home and in their cars, and would listen all day if they could,” he wrote.

But, I thought, what happens when a young couple goes for a drive? As long as they're in the car, the music is with them. But if they go to the country or the seaside and get out of the car, off goes the quality sound. An ordinary tape unit played outdoors doesn't produce half the sound they're used to. I realized they needed a miniature stereo and light, comfortable headphones. (Morita, 1981, p. 27)

Morita reasoned that by eliminating the recording function from Sony's existing portable tape-recorder, and replacing the miniature loudspeaker with a pair of hi-fi stereo headphones, a more efficient and higher-quality mobile listening device could be developed. "With standard stereo, almost all the energy used to produce the sound is wasted because only a fraction of the sound goes to the ears," he said. "I immediately directed my staff to build an experimental cassette player with small headphones" (ibid.).

Yet while Morita was enthusiastic about the prospects of such a device, others at Sony were skeptical. As Norio Ohga, then-executive deputy president (and eventual president and chairman) of Sony, recalls, "In a momentous misjudgment, I was utterly dismissive of the gadget. The little gadget contained no genuinely new technology and lacked even a recording function. I simply couldn't imagine who would ever want to own one" (Ohga, 2008, p. 112). Particularly troubling for engineers was the fact that, by removing the loudspeaker, users would be forced to rely exclusively on headphones for listening. This, they reasoned, would not only limit how the device *could* be used, but whether it even *would* be used — particularly in public spaces. "We were all sceptical," explains Kozo Ohson, general manager of the tape recorder business division at Sony, "because at the time, in Japan, anything you put in your ears to hear with, including headphones, was associated with impaired hearing, and deafness was a taboo subject. Even the word had been disallowed for use in newspapers and magazines" (as cited in Nathan, 1999, p. 153).<sup>65</sup>

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<sup>65</sup> The history of deafness is of course central to the history of hearing. Recent scholarship at the intersection of sound studies and disability studies has started to recognize this (cf. Sterne, 2003; Mills, 2008; 2010; 2011; 2012; Friedner & Helmreich, 2012).

In the American context these concerns were equally well-founded. While sub-miniature headphone-only portable radios had been around since the 1910s, and in more advanced forms since the mid-1940s, they had never succeeded in capturing much public interest (Schiffer, 1991). From the shoulder-strap tube radios of the 1940s to the transistor radios of the 1950s and 1960s to the boomboxes of the 1970s — many of which included headphone jacks for optional private listening — American audiences of all ages had proven far more interested in sharing their music using a loudspeaker. Furthermore, the concern that a headphone-only personal listening device might be rejected on the basis that it could be confused for a hearing aid was by no means exclusive to Japan. As Schiffer (1991) points out, one of the major reasons why devices like the Belmont Boulevard and Privat-ear — two headphone-only pocket-sized portable radios introduced in the 1940s and 1950s — had failed to capture a mass audience was because their headphones were comprised of “off-the-shelf hearing aid parts... rather than custom-designed components” (Schiffer, 1991, p. 166). As a result, these headphones, which were actually just single earplug-type hearing devices, were virtually indistinguishable from hearing aid earpieces in both sound quality and appearance (see figure 20). If, as Schiffer suggests, few Americans in the 1940s would have embraced a device that signalled “poor performance and raised the specter of biological decline” (p. 169), it seemed unlikely that 1970s listeners would feel any differently — particularly since headphones designed for mobile listening, and general attitudes toward hearing aids, had undergone few significant changes in the years since.



**Figure 20.** TOP LEFT: *Western Electric Hearing Aid Advertisement*, *Life* (1945); TOP RIGHT: *A Collection of Miniature Portable Radios*, *Popular Mechanics* (1949); BOTTOM LEFT: *Western Electric Hearing Aid Advertisement*, *Life* (1945); BOTTOM RIGHT: *Zenith Hearing Aid Advertisement*, *Popular Mechanics* (1946)

Contrary to Ohga's claim that the Walkman "contained no genuinely new technology," the first thing Morita and Sony's engineers realized was that if the Walkman was to have any chance at success the headphone component would need to be seriously

rethought.<sup>66</sup> While the 1960s domestic headphone revival presented many high-quality alternatives to the low-definition (and symbolically problematic) earplug-type earphones, they were not exactly tailor-made for mobile listening. The reasons: their physical size, weight, and around-the-ear design made them awkward to wear, difficult to stow when not in use, and hot and sweaty for prolonged listening. According to Morita, designing a suitable pair of headphones to accompany the new device was not only crucial, it also “turned out to be one of the most difficult parts of the Walkman project” (Morita, 1986, p. 79).

To Sony’s advantage, a lighter-weight headset of a different physical style and shape than the standard hi-fi model had in fact begun to generate interest in the high fidelity community prior to 1979. Introduced by Germany company Sennheiser ten years previously, this new design countered the prevailing logic of “closed” listening and instead employed an “open-air” system based on the principle of “having free moving air within the ear cavity, rather than a closed cavity with the air moved by transducers” (Duston, 1974, p. 34). Essentially, this meant that Sennheiser had solved the problem of reproducing sounds at a full-frequency range without having to fully enclose the ears in doughnut-type ear cups. Besides delivering comparable sound quality, headphones which operated on the open-air principle offered at least three additional benefits to the listener when compared to earlier circumaural designs. First, by abandoning the “ear-seal” concept and opening the headphones up to greater sound leak, sound waves did not

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<sup>66</sup> This in some ways challenges Shuhei Hosokawa’s assertion that the Walkman “represents functional reduction, technological reduction... The walkman constitutes a new paradigm owing to its ‘revolutionary’ effects on the pragmatic — not technical — aspects of urban mobile listening” (1984, pp. 168-9). In fact, the success of the Walkman required *significant* technical innovation on the headphone side, and this in turn had a major impact on how the device would be used — and responded to — in mobile environments.

reverberate inside a closed cavity and were therefore experienced more “naturally” as if originating from an external source located somewhere in the surrounding environment. As Hans Fantel explains: “Their sound, less dramatic and intense than that of closed-system headsets, more nearly duplicates the ‘natural’ way of hearing — another open-air system, with our ears sticking out into our environment” (Fantel, 1975, p. 60). Second, because open-air headphones employed flat sponge-rubber pads rather than heavy doughnut-type cups, the weight of the device was significantly lessened, as was its overall size.<sup>67</sup> The gentle on-ear or “supra-aural” contact position also allowed the ears to breathe better, making for more comfortable listening. “Do away with the heavy, “closed-in” feel of conventional headphones,” went one early Sennheiser ad aimed at the domestic hi-fi market. “Unique ‘open-acoustics’ design lets you hear through... and beyond... the earphones. Light-as-a-feather foam ear cushions replace heavy, air-tight seals for unprecedented user comfort” (see figure 21).<sup>68</sup> Finally, headphones of this type did not isolate the listener excessively from their immediate acoustic environment, allowing users to still remain partially in touch with their acoustic surroundings while listening. “Generally, *open-air* headphones do not enclose the ears at all,” wrote *Popular Science* in 1979. “Often, a thin foam cushion that conducts sound separates the drivers from your ear. This approach ‘leaks’ still more sound into the room, and you can easily

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<sup>67</sup> The *Washington Post* wrote in 1977 that the Sennheiser HD-400, “weighing only three ounces and listing for \$30, is the lightest headset I know of that also qualifies as a genuine hi-fi product... In this price class, the only serious rival for the Sennheiser I know of is the AKG K-140 which, at a list price of \$39.95, weighs six ounces (which is still light for a headset)” (Eisenberg, 1977, p. 111).

<sup>68</sup> Sennheiser’s trademarked name “open-aire” soon came to refer to the entire genus of supra-aural headphone design, described as “open-air” (without the e) from the 1970s-on.



## *the Mystique of Open-Aire Sound*

Do away with the heavy, "closed-in" feel of conventional headphones. The sensational new OPEN-AIRE HD-414 headphones by Sennheiser offer an entirely new approach to high-fidelity listening. They deliver their sound not only directly through the earpieces, but also through the air around you...immersing you in sound that is breathtakingly real. Experience the "natural" sound of Sennheiser! Surround yourself with beautifully life-like timbre and lustre, without losing touch with the world. Who said you have to be isolated from family and friends while listening?

- Unique "open-acoustics" design lets you hear through...and beyond...the earphones
- Light-as-a-feather foam ear cushions replace heavy, air-tight seals for unprecedented user comfort
- True-fidelity reproduction from 20 to 20,000 Hz
- Connects directly to either high or low impedance outputs
- Professional quality for only \$29.95.

**the OPEN-AIRE HD-414 HEADPHONE by SENNHEISER**



**SENNHEISER** ELECTRONIC CORPORATION (NY)

500 Fifth Avenue, New York, N.Y. 10036

Figure 21. "The Mystique of Open-Aire Sound," Sennheiser Electronics Corporation (1969)

hear ambient sounds” (Free, 1979, p. 110; original emphasis).<sup>69</sup>

Taking advantage of this technology, Sony was able to develop its flagship MDR-3 Walkman headphones in a comparatively short time. Overall, the MDR-3s featured an open-air design, new miniature headphone driver units, and weighed approximately six to eight times less than conventional circumaural headsets (see figure 22).<sup>70</sup> “The headphone breakthrough was critical,” remarked Okazaki in *Billboard* magazine in 1979, “since the unit had to be lightweight yet strong enough to produce a big sound in stereo” (Traiman, 1979, p. 52).

Despite these key technical developments, Sony executives were still nervous about how headphones would be perceived once introduced into mobile environments. As recalled in the organization’s public archive: “while serving to demonstrate the quality of the sound, [we] made great efforts to overcome the negative public image associated with headphones” (Sony Corporation, 2010a). To start, Sony felt they needed to take extra steps to distance the MDR-3s from other listening devices — namely hearing aids — with which they might accidentally be confused. This effort was reflected not only in the exterior design of the headphones, which made them look distinctly different from both headphones and hearing aids as traditionally recognized, but in advertisements as well,

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<sup>69</sup> It is worth noting that this realization was in some ways matched by a shift in headphone advertising in the 1970s, which began to move away from the logic of complete isolation in order to suggest other, more connected ways of listening. “How does it shut out sound? It doesn’t,” went one Fisher open-air-type headphone ad in 1970. “If the phone rings you’ll hear it. Just as you would if you were listening to speakers” (Fisher, 1970, 73.). Or as Sennheiser put it: “Surround yourself in beautifully life-like timbre and lustre, without losing touch with the world. Who said you have to be isolated from family and friends while listening?” (Sennheiser, 1969).

<sup>70</sup> The speaker drivers measured “23 millimeters across, much smaller than the 56-58 millimeters that was normal for the oval-shaped, earmuff type headphones developed previously” (Sony Corporation, 2010b), and the device overall weighed fifty grams. By comparison, Sennheiser’s HD-400s weighed eighty-five grams and most circumaural-type hi-fi headsets averaged three and four hundred grams.



*Figure 22. "Headphones Without Headaches," Sony Corporation (1980)*

wherein the point was driven home that Walkman headphones were not meant to be concealed (like hearing aids) but tastefully flaunted as an extension of the wearer's own personality (see figure 23). As Sony insider and biographer John Nathan puts it: "The emphasis on fashion [in early Walkman ads] was partly Morita's response to general uneasiness inside Sony about a product that required headphones... In every case, the

images reinforced the notion that the Walkman and its stylish headphones were a fashion statement” (Nathan, 1999, pp. 153-154). Once freed from its image as a symbol of low-quality sound and disability, Sony reasoned the headphones — and with them, the personal stereo — would be in a much better position to begin turning the negative image of “private” mobile listening into something more positive and desirable.



*Figure 23. “For Anytime, Anywhere, Anybody,” Sony Corporation (1980)*

Sony also took steps to anticipate some of the communications and safety challenges headphones might present in public spaces. Under the assumption that couples would wish to listen together rather than alone, Sony decided to equip the Walkman with two headphone jacks for “his and her” listening (Traiman, 1979, p. 52). As Morita recalls, “it dawned on me that the set would need two pairs of headphones. Otherwise there would be trouble when either the boy or girl cut out the other” (Morita, 1981, p. 27). Related to this issue was the problem of being able to toggle between the mediated sounds of the music player and the “unmediated” sounds of the surrounding environment. While the MDR-3s already permitted some measure of sound leak, Morita felt they needed to go a step further by adding a “hot-line” function which would allow users to communicate more easily while listening. By pressing the hot-line button, the listener would engage a small microphone integrated in the body of the Walkman chassis that fed directly into the headphones; once engaged, the microphone would override the music mix (bringing the sounds down to a much quieter level) and the user would be able to easily “listen in” to the surrounding environment, or carry on a conversation, without ever needing to take the headphones off (Ueyama, as found in du Gay et al. 1997, pp. 131-132).<sup>71</sup> In later years, Sony also made it clear that while “at high sound levels outside sounds may become inaudible,” the headphones were “designed so that ambient sounds can be heard” (“Jersey Township Passes Curb on Headphones,” 1982, p. A1). As much as possible, Sony sought to overcome the possibility that headphones might be regarded as

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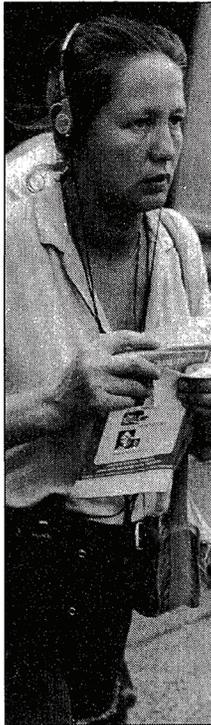
<sup>71</sup> As Morita explains, when demonstrating a Walkman prototype to one of his friends, they found they “couldn’t talk because of the headphones. We had to take them off each time we said something, and it was a nuisance. So I had my staff attach a button-activated microphone to the player. Two people can converse while listening to the music without removing the phones. We call this the ‘hot-line’” (Morita, 1981, p. 27).

excessively exclusionary or unsafe, while still taking advantage of their high sound quality and mobile potential.

First introduced to the American market in December, 1979, after making its debut in Japan five months before, the completed Sony Walkman found a welcome audience. Despite its high list price of \$199.95 (Traiman, 1979, p. 52), it sold out in most major US stores within months, leading to lengthy back-orders and generating significant buzz in the popular press. “Until last week, when reorders arrived,” reported the *New York Times* in July of 1980, “potential owners were placed on a four- to eight-week waiting list at such stores as Bloomingdale’s (where Warren Zorek, the electronics department manager, reports customers were offering \$300 for the display samples) and Macy’s, where, a spokesman said, ‘They’re selling like gold’” (Alexander, 1980, p. B12). Much to Sony’s surprise, the first market for the device was not, as they had predicted, young people hoping for a higher-definition alternative to the boombox, but an older demographic looking for a listening alternative of their own.

“As astonishing as the fact that a pocket-sized set plays true stereo sound,” reported the *Wall Street Journal* in 1980, “is the fact that most of the people currently plugged into the [Walkman] on city streets look as if they wouldn’t be caught dead lugging around one of those cumbersome portable radio ‘boxes’” (Joseph, 1980, p. 25). Indeed, newspaper and magazine articles frequently pictured well-dressed people, often in their late 20s and 30s, strolling about the city with their headphones in plain view (see figure 24). One employee of New York’s Bloomingdale’s store confessed to demonstrating the Walkman’s sound not with popular music cassettes but with “the

## Stereo-to-Go — and Only You Can Hear It



By RON ALEXANDER  
 Josh Lansing and the young blonde woman had never even met before, but as they passed each other on Madison Avenue the other afternoon, she waved and smiled and he tipped his headphones in salute. This, it should be understood, was not your stereotypical pickup. It was, rather, a stereophonic encounter.

What the two well-dressed strangers first noticed about each other was that they were both possessors of the newest status symbol around town: the Walkman, a portable stereo unit (priced in most stores at \$200), consisting of an ultra-light headphone set plugged into a cassette player that weighs in at less than 14 ounces, batteries included.

"It's just like Mercedes-Benz owners honking when they pass each other on the road," explained Mr. Lansing, whose cassette hung from his Gucci belt (the woman's was strapped around perfectly-shouldered shoulders).

The Walkman was introduced in the United States by the Sony Corporation just before Christmas (its first appearance was in Japan last summer). Until last week, when reorders arrived, potential owners were placed on a four- to eight-week waiting list at such stores as Bloomingdale's (where Warren Zarek, the electronics department manager, reports customers were of-



fering \$300 for the display samples) and Macy's, where, a spokesman said, "They're selling like gold."

As astonishing as the fact that a pocket-size set plays true stereo sound with stereo separation is the fact that most of the people currently plugged into the unit on the city's streets look as if they wouldn't be caught dead lugging around those cumbersome portable radio "boxes."

"I couldn't even lift one of those monstrous box things but I love this," said Karen Meyers, who was listening to "Pavarotti's Greatest Hits" on her Walkman as she strolled along East 57th Street. Miss Meyers said she had bought the set because "its sound is so fantastic and it shuts out the awful sounds of the city."

### For the Thinking Man

"It's the thinking man's box," was the opinion of a man in a pin-striped suit who said he was listening to "a business meeting I missed and my secretary taped."

As for Sandy Glassman, she replied, "Mais oui," when asked in Washington Square Park if she was enjoying her Walkman. Miss Glassman, it turned out, was listening to a beginning French cassette while she roller-skated around the arch.

Mark Lavasco takes his Walkman

plus "a backpack of cassettes" when he goes disco-ing. "If I don't like the d.j.'s choice of music," he said, "I play my own and I'm happy."

James Miho is not. When Mr. Miho, a graphics designer, was given the ultimatum by his wife, Judy: "Our marriage or your Sony," he sold his Walkman to an unmarried friend.

"My wife insisted that I was tuning her out for reggae," he said sadly.

One other often-seen-but-not-heard-by-others sound system (this one not requiring a headset) is the Bone Fone. Allen Dawkins, an actor, bought one for \$70 and every evening he jogs up Tenth Avenue listening to agreeably subdued weather forecasts emanating from a bright blue scarf-like object draped around his neck. This is the Bone Fone, in which a pair of transducers, positioned in a flexible polyfoam-filled sleeve, surround those it adorns with AM or FM stereophonic sound.

Evie McMurray, who said she "doesn't like things on my ears," bought her Bone Fone so she can ski to the sounds of rock music ("It's great for creating a rhythm on the slopes.") Mrs. McMurray, who is married to a psychiatrist, also bought one for her father, a physician. "To wear on his rounds at the hospital," she explained, "the doctor should be pleased to learn that the set of three additional colored sieves, available for \$10, includes white."

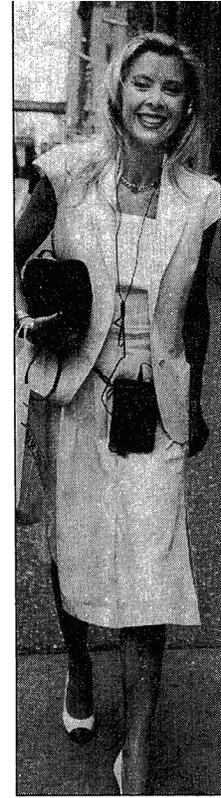
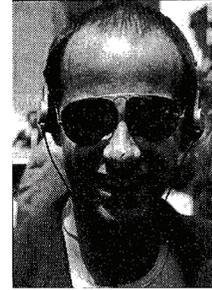


Figure 24. "Stereo-to-Go — and Only You Can Hear It," *New York Times* (1980)

softest schmaltz and classical music" (ibid.). This matched up well with what most Walkman owners reported listening to at the time. "I couldn't even lift one of those monstrous box things but I love this," said one interviewee for the *New York Times* who claimed to be listening to "Pavarotti's [sic] Greatest Hits" on her Walkman (Alexander, 1980, p. B12). Besides Pavarotti, who came up more than once (see also Zito, 1981, p. B2), other examples of recommended or current listening content included Verdi's *Ayda* opera (Egan, 1980, p. 25), an *Otello* aria (Dullea, 1981, p. B4), and other work by classical composers from Stravinsky (Smay, 1980, p. 125) to Mozart (Fantel, 1981, p. D37) to Bach (Will, 1981, p. D7). This symbolic association of the Walkman with high art music was also reflected in its status as an elite and sophisticated cultural object. "It's

just like Mercedes-Benz owners honking when they pass each other on the road,” remarked a Walkman owner to the *New York Times*, who was described as having his device “hung from his Gucci belt” (Alexander, 1980, p. B12). The *Washington Post* was particularly explicit in aligning the Walkman solely with an older, more “refined” audience: “Not to be outdone [by the boombox], the classical music set has adopted a compact, lightweight cassette player, the Sony Corporation’s Walkman, as its symbol” (Trescott, 1980, p. B15).

Morally speaking, what ultimately set the Walkman apart from the boombox, however, was its ability to introduce respectful listening habits back into the public sphere: either in the reactive sense of permitting those who were offended by “the blare” of the boombox to remove themselves from it, or in the proactive sense of allowing those who did want to listen to music in public spaces to keep it quietly to themselves. “Sony Corp.’s Walkman [is] everything in a cassette player that the box is not,” wrote the *Wall Street Journal* in 1980. “Unlike box owners, Walkman owners keep to themselves. Except for slight smiles of recognition when they encounter each other shopping in smart boutiques or jogging in Central Park, Walkman people call no attention to their players” (Joseph, 1980, p. 25).<sup>72</sup> “Bliss out on the beach to your favorite music while no one around you hears anything,” reiterated *New York Magazine* in a Walkman product review published a month later. “The Walkman is the antithesis of those bulky, blaring radios you hear everywhere” (Egan, 1980, p. 25). And as often as the pleasures of

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<sup>72</sup> The *Washington Post* commented similarly in 1981 that the “Walkman is the civilized answer to something that should be illegal: those 20-pound stereo ‘boxes’ carried by young men with strong backs and bad manners” (Will, 1981, p. D7).

Walkman listening and symbolic capital of the device were described in articles of this type, so too did the phrase “without disturbing others” appear as a constant reminder that, no matter what individuals chose to do with their headphones, they could rest assured that nobody else would be offended in the process (cf. Smay, 1980, p. 125; Egan, 1980, p. 25; Alexander, 1980, B12; Fantel, 1980, C9; Kanner, 1980, p. C8; Dullea, 1981, B4; Fox, 1981, 356). As the *New York Times* summarized the positive moral valuation of the Walkman in 1981:

In the beginning was The Box, and The Box was mostly noisy. So loud was the noise typically emanating from this bulky portable stereophonic radio-cassette player that some who played it on subways and buses received dirty looks from fellow riders and once in a while a summons from the police. Then, about a year ago, a civilized alternative to the noise box began to be seen — but not heard — on city streets. It was a pocket-sized stereo-cassette player with headphones whose sounds were audible to no one but the wearer... Unlike The Box people, their popular image was — still is — a peaceful one. (Dullea, 1981, p. B4)

While Sony had never intended the Walkman to be a hit with older demographics, or a perceived solution to public problems of noise, so it was. Those who had felt especially victimized by the situation of obligation imposed by the boombox had found in the Walkman a more desirable situation of choice, and for a brief time it seemed the portable radio problem was on its way to an ideal resolution. “Thanks to the new

‘personal’ pocket stereo which plays through earphones rather than loudspeakers,” affirmed Fantel in the *New York Times* in 1981, “blare is out and sonic privacy is in. If this trend holds, rustic quiet will be restored in a way that pleases everyone” (Fantel, 1981, p. D37). As it turns out, the trend did in fact hold; its positive moral meaning, however, did not. For although Sony had correctly anticipated some of the moral objections that might be raised against headphones in mobile environments — going so far as to add an additional headphone jack, hot-line communications function, and non-isolating headphone design as a means to circumvent possible objections to the device — they failed to accurately predict how listeners would actually incorporate the Walkman into their everyday lives, or how others would respond when they did.

### **A Mobile Headphone Problem**

While for the first year and half after its arrival in the US the Walkman was largely regarded in positive moral terms, by mid-1981 some began to see “the growing headphone movement” as “socially alienating” and “destructive of relationships” (Dullea, 1981, B4). In a dramatic turn, the same class of people that had helped put the Walkman on back-order at the trendiest shops in New York began to wonder which was more troubling: the way in which the boombox had previously made private music excessively public, or the way in which the Walkman was now radically privatizing listening in public space. “Now, I don’t like jackhammers and street noises any more than the next person,” wrote the *Washington Post* in 1982, “but there is something alarming about a

street filled with well-dressed people each marching to his own silent drummer and bass player” (Shapiro, 1982, p. 2).

One of the first complaints levied at the Walkman was that it encouraged an intentional withdrawal from social participation. This concern emerged partly in response to the ubiquity of the Walkman and other equivalents, which were no longer limited to a small faction of the public, but were quickly being embraced by young and old people from all walks of life.<sup>73</sup> “The thin wires of the headsets uncoil from Brooks Brothers blazers and Gucci bags, as well as from bib overalls and warmup suits,” wrote *Time* magazine in 1981. “Commuters, pitchers in bull pens, shoppers hovering over the meat counter and sunbathers soaking up rays are tuning in by the millions... people are now bowling to the Beatles, Frisbeeing while learning French, skiing to Shostakovich and jogging to Jagger” (Harbison, Reed, & Balberman, 1981, p. 88). These varied uses — and users — revealed a trend: while Walkman listeners often listened in the company of others, there rarely did so “together” through the same device. When listening amongst friends and family members, few opted to connect through the second headphone jack; and when listening amongst strangers, listeners rarely invited conversation through the “hot-line” microphone. For personal or practical reasons, Walkman users routinely ignored the social and communications features Sony had purposefully scripted into the device, lending credence to the argument put forth by some that the main purpose of this device was to “snub the world” (Harbison, Reed & Balberman, 1981, p. 88).

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<sup>73</sup> As the *New York Times* explained in 1981, “It is true that, when the Sony Corporation’s Walkman was first introduced here in December 1979, the \$200 price tag made it more of a middle-class indulgence. But several other electronics manufacturers — Panasonic, Aiwa and Toshiba among them — have entered the market and prices are dropping steadily” (Dullea, 1981, p. B4).

For those who took this position, the Walkman did not simply block out the sounds of the boombox and other noises in the city — it also blocked out potential opportunities for human interaction. “With the advent of the Sony Walkman came the end of meeting people,” wrote the *Washington Post* in 1981. “It’s like a drug: You put the Walkman on and you blot out the rest of the world” (Zito, 1981, p. B1). In response to one Walkman user’s remark that “some people don’t appreciate music,” another critic replied: “And some people don’t appreciate people” (Dullea, 1981, p. B4). The increasing visibility of such an obviously “exclusionary” listening practice constituted, for them, further evidence of a growing trend in atomized individualism first brought into public consciousness by influential essays such as Peter Marin’s “The New Narcissism” (1975) and Tom Wolfe’s “The ‘Me’ Decade,” (1976), and books such as Richard Sennett’s *The Fall of Public Man* (1977) and Christopher Lasch’s *The Culture of Narcissism* (1979). Just as these cultural critics were cynical of “the cult of expanded consciousness, health, and personal ‘growth’ so prevalent today” (Lasch, 1979, p. 4) — which they equated with a move away from a communally-oriented to an excessively self-directed mode of existence — so too did Walkman critics regard the “growth of these things [as] another result of the ‘me society’ . . . very selfish” (Parker, as cited in Harbison, Reed, & Balberman, 1981, p. 88).<sup>74</sup> Viewed in this light, the Walkman presented not an agreeable situation of choice, but imposed a *new* situation of obligation by making ostensibly

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<sup>74</sup> “The argument that the walkman protects the *public* from hearing one person’s sounds, is back-to-front,” wrote cultural critic Judith Williamson in 1984: “it is the walk-person who is protected from the outside world, for whether or not their music is audible they are shut off as if by a spell. The walkman is a vivid symbol of our time. It provides a concrete image of alienations, suggesting an implicit hostility to, and isolation from, the environment in which it is worn” (1984, n.p.; original emphasis).

exclusionary, self-directed modes of listening the urban norm — something all urban citizens would now needed to contend with as they made their way through the city.

While some feared for the future of social participation in an increasingly segmented acoustic public sphere, others began to wonder whether headphones might pose additional and more immediate threats to public health and safety. One such threat was that “listening to the headphone sets, especially for long periods with the volume on high, could damage the listener’s hearing” (Lohr, 1982, p. 12). While the open-air design of the MDR-3 headphones had initially been praised because they “don’t isolate you from external sound, an important safety feature” (Fantel, 1981, p. 79), in practice users proved more likely to try and mask external sounds by listening at excessive volumes.

“Routinely, [Walkman] volume levels are set by the wearer to override conversation, traffic noise, and other environmental sounds,” read the first American report on the relationship between mobile headphone listening and hearing loss, published in the *New England Journal of Medicine* in 1982. “In light of what is known regarding noise and its effect on hearing, there can be no doubt that these units have the potential for inducing a permanent bilateral sensorineural hearing loss” (Katz et al., 1982, pp. 1460-1).<sup>75</sup> While potential hearing loss was one issue, the fact that so many listeners were intentionally overriding the safety feature of the MDR-3s in an effort to block out their acoustic surroundings led to an even greater fear: that an increase in mobile headphone listening may also lead to a commensurate increase in otherwise avoidable pedestrian injuries and

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<sup>75</sup> Reports such as this continued to surface with some frequency through the 1980s, suggesting such unsafe listening practices constituted the norm rather than the exception. See, for example, Fern & Hansons (1984), Breslin (1985), Catalano et al. (1985), Mark (1985), Royster (1985), Roper (1986), and Rice et al (1987).

deaths. “Headphones keep the music in,” remarked the *Pittsburgh Post-Gazette* in 1982, “but critics complain that they also keep out the honking of car and bus horns, the skid of tires and shouts of ‘Look out!’ in its obscene and non-obscene variations. The result: a greater risk of accidents” (1982, n.p.).

In fact, just five years after citizens had attempted to legislate headphones *into* public environments as a means to restore public peace, public officials began taking measures to have them legislated *out* of public space citing the above health and safety concerns. “Woodbridge [New Jersey] officials, who believe they are the first in the nation to do so, have voted an ordinance to prohibit the wearing of headphones on the town’s streets,” reported the *New York Times* in July, 1982 (“A Curb on Headphones, 1982, p. B1). The rationale given by the president of the Woodbridge Township Council was that people wearing headphones were “totally oblivious to what’s going on around them. If we can save just a few tragedies by this, it will be successful” (“Jersey Township Passes Curb on Headphones, 1982, p. A1). Approved by the state on August 5th, 1982, this ordinance set in law a belief that was becoming increasingly prevalent as the popularity of the Walkman continued to grow: while the boombox had previously been an annoyance, the Walkman constituted an even greater threat to public health and safety because it impeded one’s ability to remain aurally “in touch” with the environment around them.<sup>76</sup>

This rather abrupt turn in the public’s opinion of the Walkman was responded to

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<sup>76</sup> Within months at least nine states had implemented anti-headphone legislature applicable to those operating motor vehicles (California, Florida, Georgia, Massachusetts, Minnesota, Pennsylvania, Virginia, Illinois and Washington), and other major cities including New York City, Chicago, and Philadelphia had also begun considering pedestrian bans similar to the one in Woodbridge (Purnick, 1982, p. B3; Spataro, 1982, p. 10).

with frustration by proponents of the device who could no longer understand what could be done to appease critics of mobile music listening in any form. “First the social critics inveighed against the invasion, on streets and subways and beaches, of the thunder boxes,” went one *New York Times* columnist in 1982.

So the Japanese, ever accommodating, invented the antitoxin — earphones attached to little radios or tape players that created a race of metronomes whose noise went in both ears and stayed there, bothering no one else. But wait. The social critics *were* bothered. They complained that these people were being hostile, antisocial, shutting the rest of us out... The electronic people simply can't win. When they blare noise, the carpers say they're creating an assaultive, alien environment... And when the headset people impose silence, the carpers say that it's an unfriendly, exclusionary act. Cacophony or quietude, you can't please them. (Schanberg, 1982, p. 19; original emphasis)

This frustration was amplified by the fact that, for some, anti-headphone legislature reflected less a legitimate concern with the dangers of mobile headphone listening than an ungrounded and largely irrational fear of private listening in public space. “The town fathers [of Woodbridge] say they need to do this for reasons of safety,” said the *Washington Post* in 1982. “But the truth is that they hate Walkmen. Lots of people do. I know this because I use (wear?) a Walkman... I notice the hostile glare of passersby, the sort of how-dare-you look in their eyes” (Cohen, 1982, p. B1). The author of the article

claimed that when he asked critics to articulate their objections to the boombox, he was “usually told something really profound, like “It’s not right,” or given the bogus safety argument the officials of Woodbridge want engraved in law,” which suggested to him that the “real reason for the hostility, I think, is that many people feel that the Walkman wearer is not only excluding everyone else from his experience, but excluding himself from everyone else’s experience” (ibid.).<sup>77</sup> While others agreed that from one perspective headphone listening could be regarded as exclusionary, they felt its benefits far outweighed the risks. Not only were concerns raised that blanket headphone bans would “inhibit the headphones and revive the portable radios that inflict their noise on all in their path” (“Unwed, Unheard, Unpaid,” 1982, p. A24), but also that these laws would unnecessarily restrict an activity that many found highly pleasurable. As Sydney Schanberg, the *New York Times* columnist quoted above, observed: “I’m not suggesting that everyone wearing these gizmos is spreading gladness through the streets, but... I’ve seen a lot of happy people wearing headphones. And happiness is not such an epidemic these days that we want to start outlawing it” (Schanberg, 1982, p. 19).

By the end of 1982 citizens were once again struggling to come to an agreement over what constituted good listening in public space. Whereas the Walkman had initially been viewed positively as a means of resolving the situation of obligation imposed by the ubiquitous portable boombox, it was now regarded negatively as introducing a situation of obligation of its own, characterized by the necessity of now having to deal with a

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<sup>77</sup> “All I want to do is listen to music, but I am accused of either endangering the public safety or fragmenting society,” remarked another. “To some people, this seems like just another way of dropping out — an electronic version of the 1960s. It is nothing of the sort” (Cohen, 1982, B1).

growing number of “urban spacemen,” seemingly oblivious to other people and things around them (Williamson, 1984). Once again, the only recourse for action seemed to be through the enactment of new safe listening laws, but these did little more than polarize public opinion on the matter than point to an adequate resolution to the problem. As the *Pittsburgh Post-Gazette* summarized the situation, with a hint of despondency, in 1982.

Thanks to lightweight headphones, the Walkman and its imitators promised a new era in which teen-agers and executives alike could groove to their favorite sounds without jangling the eardrums of passers-by... It was, it seems, too good to be true... So the rise and threatened fall of the noiseless stereo is a double parable: It reminds us not only that every solution poses its own problems but also that, in this interdependent society, no Walkman is an island. (“For their ears only,” 1982, n.p.)

## **Conclusion**

Looking back on it now, the first three years of the Sony Walkman’s introduction into American culture is a telling example of what happens when a well-intentioned moral design fails to achieve its goal. For those who had hoped it would help restore “rustic peace... in a way that pleases everyone” (Fantel, 1981, p. D37), the Walkman was considered a failure because it appeared to make urban spaces *less* socially inviting rather than more — not to mention potentially unsafe. In other words, while early users and commentators had accurately anticipated the potential of the Walkman to “contribute to

the moral actions and decisions of human beings” (Verbeek, 2010, p. 5), they ultimately failed to anticipate how their opinion of this contribution might change once the device actually became a dominant presence in urban life.

To their credit, Sony had in fact made a concerted effort to account for a variety of potential moral objections to the Walkman in the product development stage. To use Verbeek’s language, not only did Sony “try to assess whether the product they [were] designing [would] have undesirable mediating capacities,” they also went a step further by “explicitly try[ing] to build in specific forms of mediation, which are considered desirable” (Verbeek, 2006, p. 369). The second headphone jack was a product of Morita’s concern that others might feel left out when only one person was listening (which he experienced first-hand while listening to a Walkman prototype in the presence of his wife at home), and the idea for the hot-line function came about when he realized that communicating with headphones on could be difficult (which he also experienced while listening together with a friend) (Morita, 1981, p. 27). The MDR-3 headphones were also designed not only to overcome potential objections to public “ear-wiring” (Weber, 2010) — which Sony achieved by emphasizing fashion as much as function in their design — but to make mobile headphone listening safer by limiting the extent to which the headphones could physically block out sound. In this way, Sony successfully fulfilled Verbeek’s requirement that technology designers “attempt to imagine what mediating role the technology they are designing might play in the behavior of its users, [and] feed these anticipations back into the design process” (Verbeek, 2006, p. 372).

As it turns out, however, these efforts did virtually nothing to ensure a positive moral result. For the most part, listeners did not find it convenient to tether themselves in pairs to a single unit, nor did they seem keen on communicating through the hot-line microphone with their headphones on. They also found it difficult to listen at safe volumes, especially in loud environments (such as on trains and buses, or in the company of an offensive boombox), where exterior noises could easily overcome the music inside the headset. In other words, users did not find these “moralizing” functions particularly amenable to the kinds of listening practices they desired, and so opted not to take advantage of them in a meaningful way.<sup>78</sup> While Sony had certainly set out to produce an aesthetically pleasing and morally acceptable technology, in the end they succeeded only in the first category and not in the second.

Worse, Sony actually wound up *reinforcing* many of the negative social stigmas that began to build up around the Walkman in 1982 by failing to follow through on their earlier efforts to properly moralize the device. Rather than attempt to sell users (and non-users) on the practical usefulness of the Walkman’s existing moral functions — or improve these functions so as to bring them more in line with listeners’ actual use-habits — Sony instead went in the opposite direction: they simply removed them in future iterations of the device. Starting in 1981 the hot-line function was discontinued in order

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<sup>78</sup> While Verbeek might point out that a more robust moral mediation analysis, such as that included in an augmented Constructive Technology Assessment (CTA) plan (Verbeek, 2006, p. 375), might have improved Sony’s efforts, I’m skeptical whether Sony would have ever felt compelled to undertake such an exhaustive (as well as expensive and time-consuming) endeavour, or whether the results would have convinced them to act differently even if they did. In fact, Sony claims to have undergone very little market research of any kind before releasing the Walkman for, as Morita once put it, “The public does not know what is possible, but we do... I do not believe that any amount of market research could have told us that the Sony Walkman would be successful” (Morita et al., 1987, p. 82).

to cut down on the Walkman's overall size, and by 1984 even the second headphone jack had disappeared from most units (cf. Jarman & Jarman, 2014). Even following increased public pressure to answer to concerns that the Walkman might pose a risk to listeners' bodies and health (cf. Bishop, 1982; Lohr, 1982; Spataro, 1982; Fantel, 1983; Smith, 1983), Sony opted to substitute better moral education for better moral design. On all Walkman product packaging and manuals they included warnings such as "It can... be potentially hazardous to play your headsets at high volume while walking, especially at pedestrian crossings" and "Do not use headphones at high volume. Hearing experts advise against continuous, loud and extended play" ("Walkman Professional [Manual]," 1983, p. 3), and frequently rehearsed the company line in press releases and interviews that "there is no danger if the volume is not too high" (Morita, 1981, p. 27).

While such disclaimers were no doubt useful in terms of protecting Sony from potential lawsuits, these warnings failed to adequately protect the public because they did not address the root of the problem: that the design of Walkman, and the MDR-3 headphones in particular, "obliged" mobile listeners to do so in morally problematic ways. Depending on when and where listening was done, users often found themselves with *no choice* but to decide between listening in the most enjoyable way possible (with the volume high enough to overpower other interruptions) and listening in the most responsible way possible (with the volume at an adequate level to protect their ears and permit the hearing of environmental sounds); and without the option of a second headphone jack, hot-line button, or any conceivable replacement for these functions, the ability for later Walkman users to experiment with other ways of listening was further

limited. The situation of obligation imposed by the Walkman thus extended well beyond its symbolic meaning as a technology which “suggested” to others a desire to withdraw from shared acoustic spaces; viewed in this light, the design of the Walkman in many ways *ensured* these uncomfortable moral issues would arise over and over again because users were regularly drawn into these uncomfortable positions during their regular course of use.

To be clear, the point of this critique is not to suggest Sony should be held responsible for the perceived “moral decline” of the Walkman between 1979 and 1982. After all, had users actually *used* the moral functions inscribed into the original Walkman, Sony may well have been inspired to improve on and advertise them further. It is, however, to suggest that they could have done a lot more to empower listeners to do so safely and in socially responsible ways. By failing to recognize the situation of obligation that arose with the popularization of the Walkman as an opportunity for moral innovation, Sony missed out on a chance to bring the technology closer in line with its previous moral promise. And as I show in the next and final chapter, while the original Walkman no longer exists, its problems — and opportunities — persist.

# CONCLUSION

## Designing the Future of Headphones

In the far future, I don't think people will be wearing headphones at all. There will be a device implanted to your auditory nerves that you may switch on at will. It will be a phone/music player/noise canceller/cause of cancer and biological rejection. All of which you can customise to your hearts content with brain software. Perhaps even the cancer... All hail the future.

— timmyw, *Tell Me About the Future of Headphones*, 2012

This thesis began with a pronouncement: we have a situation on our ears. Rather than addressing this situation outright, I suggested we might benefit from a historical investigation so as to better understand how this “problem of headphones” took its present form. The goal was not to try and make sense of the present moment by situating it in a teleological moral history of headphones, but instead to draw attention to how headphones have functioned and meant *differently* over time. The purpose was to make clear that the contemporary moral and material configuration of headphone listening is neither fixed nor transcendent, but instead mutable and contingent — an “event” that bears the mark of its particular place in history and will not stay as it is forever.

In chapter one, I showed how headphones were initially regarded a solution to the economic and technical challenges of early radio, only to be reinterpreted as a barrier to good radio listening as new forms of radio emerged. When broadcast radio was still young, headphones were considered unproblematic — ideal, even — for allowing listening to be done more cheaply and over longer distances than was otherwise possible. As radio reception technology improved and the radio audience expanded, new questions emerged: audiences began to wonder whether the ability to listen “alone, together” was

something to be celebrated, or whether this form of listening might be the problem most in need of a solution. With the introduction of a more efficient loudspeaker and furniture-style radio set, the moral meaning of headphones changed dramatically: no longer associated with “reliev[ing] isolation and neglect” (RCA, 1922, p. 5), headphones instead became understood as *causing* isolation and neglect in other ways. The meaning of headphones as a potentially problematic “moralizing technology” was therefore not inherent in the technology itself, but came about in specific cultural and material conditions. Headphones were “made” immoral — and they could have been made otherwise.

In chapter two, I showed how how headphones were in fact “remade” and reinterpreted, three decades later, in a new material and moral context. While the loudspeaker had proven ideal for permitting families to listen “together, together” to the radio, the simultaneous introduction of television and hi-fi in the 1950s and 1960s domestic sphere reconstituted collective listening as a problem as both media could not be enjoyed “at the same time ... without disturbing the other” (Koss, 1971). I identified this as a “competing loudspeaker problem,” which was amplified by a renegotiation of gender norms in the mid-century suburban domestic sphere and which established the conditions for headphones to be evaluated in a new light. In this context, listening “alone, together” took on a new moral meaning as individuals found that respecting the rights of others *not* to listen could be a sign of mutual understanding and care. Headphones made it easier to “live and let live” by privatizing sound for the benefit of listeners and non-listeners alike.

Finally, in chapter three I demonstrated how this positive moral understanding of headphones as a “civil” and “civilizing” sound technology was also reflected in the way the Walkman was first interpreted by the public upon its arrival in 1979. At a time when many were feeling uncomfortable with the amount (and type) of music being shared through portable radios, the Walkman was regarded as an “antitoxin” (Schanberg, 1982) capable of resolving this public noise problem in a polite and non-confrontational way. It was only once mobile headphone listening became ostensibly *too* popular, with attendant concerns about its potential threat to human hearing and public safety, that the positive moral image of headphones changed. This shift in the moral meaning of headphones came about not as the result of “bad technology” or “bad behaviour,” but “bad relations”: that is, the coming together of a particular headphone design (“leaky” open-air headphones) with an expanded user-group (increasingly young and “less sophisticated” audiences) which generated a new interpretation of respectful listening in urban environments. As with the previous two chapters, this chapter revealed that neither headphone technologies nor listening practices unilaterally “caused” or “solved” the moral dilemmas that were confronted; rather, each played a constituent role in how ideas and practices of “good listening” came about.

Yet the goal of each chapter was not simply to demonstrate that headphone-related technologies, listening practices, and moralities were mutually shaped. I also sought to understand the strategies in each “event” that allowed a particular moral dilemma — or situation of obligation — to be converted into a situation of choice. I showed that this could be done in two main ways: (1) if users recognized the potential of a new

technology to resolve an existing moral dilemma and encouraged designers to pursue it further, and (2) if designers developed a new technology capable of resolving an existing moral dilemma and were successful in selling the public on the idea. In chapter one I offered evidence of the former, showing how radio users voiced their displeasure with existing radio equipment and successfully pressured radio manufacturers to design a more morally acceptable home radio system. Chapter three similarly detailed how older Walkman users took a technology designed for another demographic (young people) and repurposed it to solve a moral dilemma of their own (the excessive sharing of music in public space). By contrast, in chapter two I offered evidence of the second designer-generated possibility by showing that, when television and hi-fi users were unable to see exactly how they might resolve the moral conflict imposed by competing loudspeakers, designers took a lead role in “reengineering” these relations to secure a more positive moral result. For all their important differences, in terms of my analytics of moral mediation these three historical events share a similar logic: in each case, a situation of obligation was overcome when users no longer felt “obliged” to take the existence of a moral dilemma as inevitable, and — with designers — took steps to pursue a better way of living.

The problem we are currently facing is that headphones have become so widespread that it is difficult to imagine a world without them; moreover, their material shape and cultural meaning have become so ingrained that we can no longer consider how they might function or mean differently. This concluding chapter seeks to mobilize the lessons learned in the previous chapters by highlighting a variety of emerging

headphone designs and digital applications that might allow us to envision the future of headphones in a different way. While it may be too soon to imagine a world without headphones, as does “timmyw” in the epigraph to this chapter, it is not too soon to imagine a world in which headphones could be designed to more effectively foreground safety and moral responsibility.

In the first section of the conclusion, I suggest that designers can take an active role in initiating such changes by finding more creative ways to address a wider range of potential moral objections — objections that collectively constitute our present situation of obligation. In the second, I argue it would be equally productive to extend our understanding of moral design past headphones “themselves” and begin considering other elements — especially the potential of digital applications — that can help extend the moral function of these technologies in useful ways. Finally, I argue in the third section that public health-and-safety organizations might focus less exclusively on weeding out “bad behaviour” and begin thinking more creatively about how to influence user–technology relations at the level of design.

### **Closed or Open? Yes. (Designing a Versatile Headphone)**

As demonstrated throughout this thesis, designers have long been aware of the moral implications of headphones. When questions about the comfort and isolating acoustic character of headphone listening arose in the 1920s, designers responded by introducing new lightweight and hand-held models so that every member of the family could listen “alone, together” in a shared space. When Koss and others set about redesigning

headphones for the mid-century high-fidelity market, they took steps not only to improve the quality of sound but to carefully reframe headphones as a technology of sonic “containment” capable of sub-dividing acoustic space in mutually-beneficial ways. And when Sony undertook the task of adapting headphones to the unique challenges of mobile listening environments, it introduced a number of new features — including a “leaky” open-air design, integrated “hot-line” microphone system, and extra headphone jack — to try and make this technology as safe and socially accommodating as possible.

These moralizing efforts have seen some success. Before the introduction of an improved loudspeaker in the mid-1920s, multiple-headsets were considered a serviceable option for families that had previously struggled to achieve a communal radio listening experience; and in the 1960s the new closed-type or “circumaural” style of headphones proved popular as a means of resolving the domestic conflict imposed by competing television and hi-fi loudspeakers. Yet these notable successes have largely been overshadowed, particularly in recent years, by a series of more significant and widely publicized failures. Most spectacularly, the open-air or “supra-aural” MDR-3 headphones included with the original Sony Walkman not only failed to make mobile listening safer, they also increased the possibilities that users would incur permanent hearing damage by essentially “forcing” them to listen at unsafe levels if they wished to hear their music with desirable volume and clarity.

What some manufacturers have recognized over the last few years is that one of the biggest barriers preventing users from listening comfortably at lower volumes has

been the amount of competing noise to contend with in urban environments. “When earphones first gained broad acceptance in the early days of stereo,” writes Hans Fantel,

most people used them simply as a means to sonic privacy — listening to their stereo systems at home without disturbing other members of their household.

Since they were listening in fairly quiet surroundings, they had to turn the volume up only to moderate levels, with no resultant harm. But the advent of pocket stereo [i.e. Walkman] in the late 70’s gave listeners a degree of mobility likely to land them in aural trouble, On the street, amid noisy traffic, the listener cranks up the volume to let the music override the surrounding ruckus. . . . Making the music loud enough to do that, he courts the destruction of his ears. (Fantel, 1983, p. H19)

To overcome this potential danger, manufacturers over the last two decades have begun to introduce new headphone designs which promote listening at lower volumes by overcoming the need to raise the volume in order to compete with outside sounds. These come in two general types: *passive noise-reduction* and *active noise-cancelling* headphones.

The first type, “passive noise-reduction” headphones, come in both circumaural or in-ear varieties: those of the circumaural variety form a soft seal around the ear, and therefore cut down on the amount of external noise permitted to enter the ears; and those of the in-ear (or “canalphone”) variety function like rubber or foam earplugs and achieve similar noise-reducing goals by expanding to fill the space between the earpiece and ear

canal (see figure 25). By decreasing the amount of sound that can pass into the ears, each of these headphone varieties establishes a quieter ambient environment for the music to be played in, with the goal of permitting users to listen at more comfortable volume levels without the risk of permanent hearing damage.



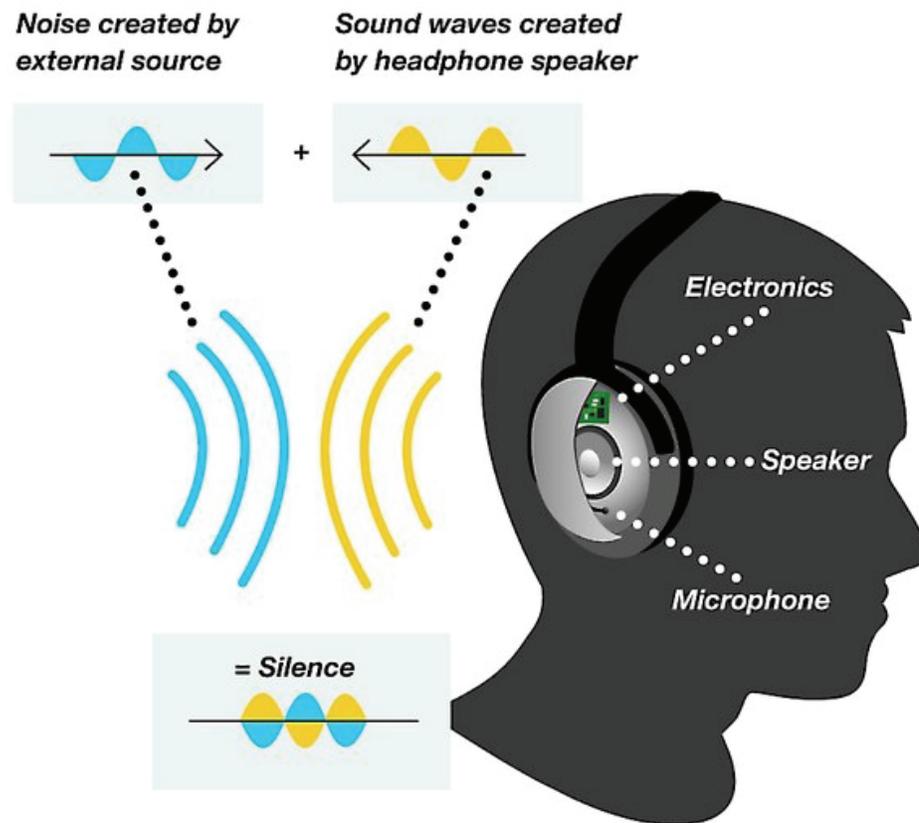
*Figure 25. Passive noise-reduction phones: canalphones (left), circumaural (right). Audio-Technica (2014)*

The second main type, known as “active noise-cancelling” headphones go a step further by supplementing a passive noise reduction design with microphones and computer circuitry. The microphones in these headphones “listen” for consistent tones in the surrounding environment, which software inside the headset matches with inverse sound waves or “anti-waves” meant to cancel these tones out (see figure 26).<sup>79</sup> As with the passive noise-reduction variety, the result is that since music has to compete less with

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<sup>79</sup> This idea of a sound technology “listening for” users also has a long history, dating back to the origins of mechanical sound reproduction. See Chapter 1 “Machines to Hear for Them” in Sterne (2003) and Théberge, Devine & Everett (forthcoming 2015).

noise “outside” the headphones, users can more satisfactorily listen at lower — and therefore safer — volumes.



**Figure 26.** How active noise-cancelling headphones work, Audionic (2014)

Yet while noise-reduction and noise-cancelling headphones have assisted users in listening at safer volumes, they have also made mobile listening more dangerous in other ways. By deliberately making listeners less aware of sounds present in their immediate surroundings they have contributed to what Lichtenstein et al. (2010) have termed *environmental isolation* and *inattention blindness*. “Environmental isolation” refers to “sensory deprivation that results from using headphones with electronic devices” (ibid., p. 3). The idea here is that, when using headphones, users are less perceptive of the

acoustic information available in a given environment, which includes the sounds of approaching vehicles and other audible warning signs. “Inattentional blindness” refers to “the cognitive distraction of interpreting auditory input as well as the tactile distraction needed to manipulate electronic devices” (ibid.). The concern here is that headphone users are not only less aware of their acoustic surroundings, but that they are more likely to become distracted by the auditory input coming through their mobile device — as well as by the operation of the device itself (either while changing songs, toggling volume, or engaging in other digital activities like texting) — and therefore more likely to make dangerous decisions (such as walking in front of moving vehicles). Noise-reduction and noise-cancelling headphones are especially problematic from each of these perspectives because they heighten the sense of auditory disengagement, and potential distraction, from the immediate environment: the cost of protecting one’s ears therefore comes at the price of putting one’s body at an increased risk of harm.

To combat the dual problems of “environmental awareness” and “inattentional blindness,” other headphone designers have begun experimenting in an entirely different direction. This range of headphones, which might be termed the *open-ear* variety, permit listening while leaving one or both ears completely open to the surrounding environment. Single-ear models, such as Far End Gear’s “OneGood Earphones” (2014), have recently come to market which permit a stereo signal to be mixed into a mono signal and delivered via a single earbud. While unable to recreate the spatial effect achieved when listening to a stereo recording with two earpieces, this design has overcome the problem of losing half of the stereo mix when attempting to listen with only one ear. They have

therefore presented a reasonable compromise for those who wish to listen to music and, for safety or communications reasons, keep one ear open to the immediate surroundings.

Perhaps the more interesting development, though, has been the introduction of a new range of “open ear” headphones that allow listening to be done without covering the ears at all. Known as *bone conduction* headphones or colloquially *bonephones*, these headphones rest either in front, above, or behind the ears and work by sending vibrations to the inner ear via the listener’s skull (see figure 27).<sup>80</sup> What makes this design unique is that it permits listening to be done while leaving both ears open to the external environment, thus lowering the amount of “environmental isolation” and “inattentive blindness” even further. The fact that these designs permit both ears to be left open also



**Figure 27.** *Bone-conduction headphones, Aftershokz (2014)*

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<sup>80</sup> Not to be confused with the BoneFone, a listening device introduced in the 1970s which included two speakers contained on either side of a scarf which was meant to be draped over the shoulders. Allegedly it was said to transmit sounds not only through the air, by also via vibration through the collar bone and up to the ears.

signals that the listener is available to be conversed with, thus suggesting a possible overturning of some of the “antisocial” stigmas currently attached to mobile headphone use.

Unfortunately, these open-ear designs also have some fairly significant limitations. While each offers the ability of headphone listeners to remain more readily “in touch” with their surrounding acoustic environment, these benefits come at the price of a significant reduction in sound quality. One-eared models result in a complete loss of the stereo-spatial effect, and bone-conduction models deliver an overall quality of sound that is significantly reduced when compared to similarly-priced models of conventional design. In order to compensate for the fact that bone-conduction works best with lower-frequency sounds, many of these models also project sound outward so that the open ears will also pick up some of the higher frequency sounds. For this reason, they are readily audible to anyone within earshot and are poorly suited to keeping music sufficiently private.

Recently one headphone company has attempted to address the problem of hearing loss *and* bodily harm in one versatile design. In 2013, Bose introduced a new in-ear model in its popular line of active noise-cancelling headphones called the Bose QuietComfort 20s or QC20s. While operating on the same principle of other noise-reduction/cancelling headphones, the QC20s also come with a function called “Aware mode.” When a user moves from a stationary position (such as sitting on a bus or train) into a mobile position (such as walking out into the street), she or he has the option to engage this button which changes the degree of noise-cancelling so that ambient sounds

can be more easily heard. This feature does not entirely disengage the noise-cancelling function, which would require turning up the volume to resume a comfortable level of volume and clarity, but tempers it so as to strike a balance between comfortable listening and safe listening. “QC20 headphones let you experience music on the go as never before,” boasts their website.

StayHear+ tips physically block some noise while our Acoustic Noise Cancelling technology electronically reduces most of what's left. It's just you and your music, even in noisy environments.

But there are moments when you may not want to be so cut off from your surroundings. Crossing a city street. Waiting for airline gate announcements. This is where Aware mode comes in. Instead of removing your headphones, just press a button, and you're back in touch with the sounds around you — while your music keeps playing, and you still experience some noise cancellation. (Bose, 2014)

From the standpoint of moral design, the most interesting aspect of this function is arguably not what it does to the sound but what it suggests to the listener merely in being available. By presenting the “option” of greater awareness, it asks the listener to occasionally reflect on the question: do I need to be more aware in this environment or not? In this way, it subtly draws the listener's attention back to the mediated nature of the experience. The QC20s also include a microphone feature which, reminiscent of the hot-

line button introduced by Sony with the original Walkman, can be toggled to feed the sounds of the immediate environment directly into the earpieces. Not only can one converse comfortably with the headphones in place, but one can also discretely shift in and out of a fuller awareness of the surrounding environment at times when greater attention is deemed necessary, such as crossing the street or navigating through a crowd. While the Bose QC20s are still a long way off in terms of providing the kind of safe and responsible headphone listening experience necessary to constitute a legitimate situation of choice, they do serve as an example of how headphones can be designed in a more versatile way, capable of answering to a variety of potential moral challenges at once (rather than forcing users to choose *between* preserving their hearing, their personal safety, and the volume/clarity of their music).

To be certain, all of these innovations should be regarded as taking important steps forward in the moral design of headphones. By addressing the fact that headphones make it difficult to listen comfortably and morally at the same time, and then attempting to resolve these issues at the level of design, each of these manufacturers has demonstrated that by moralizing the relations *between* users and technology positive change is possible — and may yield significant results. Yet none of these technologies constitute what I would consider a legitimate situation of choice. By still asking users to choose between the safety of their ears or their bodies, or to negotiate between a high quality of sound and other moral considerations, the vast majority of these devices continue to reinforce the notion that headphone listening can not be done comfortably and morally at the same time. The Bose QC20s are an important exception to this rule, but

even they fail to offer more than a tentative first step toward a more versatile all-in-one solution. Besides their high price (in excess of \$330) and mediocre sound (rated much lower than conventional headphones in this price range), they also do not block out as much sound as their promotional materials claim; nor do they offer much flexibility in terms of how “aware” a listener might want to be in a particular environment (the “Aware mode” only has one setting). While it is important that manufacturers continue to pursue moral innovation in these ways, I suggest it would also be beneficial to consider other avenues for “materializing morality” that extend beyond the headphones themselves. One opportunity may be through a better integration with digital peripherals.

### **Responsible Listening? There’s an App for That**

While headphone manufacturers have continued to focus on the hardware side, other companies have begun to explore the possibility of using software applications to improve the moral quality — or even override the moral limitations — of existing headphone designs. In this section, I will describe a few of these initiatives, before considering some new moral questions that will need to be addressed if moral design is to be successfully extended in these directions.

One of the first headphone-related safety apps to gain significant public exposure was “Awareness: The Headphone App,” introduced by Essency in 2011 (Essency, 2014). The app functions by using the microphone on the user’s phone — or headphones, if they include one — to “listen in” to his or her surroundings.<sup>81</sup> Unlike Bose’s “Aware more,”

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<sup>81</sup> Other similar apps include Touchbased’s (2012) “Sound Boss” and Eplayworks’s (2010) “PlayEar.”

the “Awareness” app goes quite a bit further in terms of allowing the user to customize how the headphones respond to and function in different acoustic environments. The most recent version of the app includes a vibrating noise alarm that warns the user or automatically shuts the music off when ambient noises exceed a certain volume threshold (useful for warning of sirens, crashes); a “ducking” feature which lowers the music level when a pre-set level of ambient noise sensing is reached (useful for preparing the user for crossing a busy street); and offers the ability to increase the microphone’s sensitivity to human voices (making interacting easier with headphones on). This app illustrates some of the benefits of integrating existing hardware features (like noise-cancelling and on-board headphone microphones) with more elaborate digital applications that can make headphones respond with greater flexibility to environmental noises and social cues.

Another app, currently in development, which functions in a similar but slightly different manner is One Llama’s “Audio Aware” app (One Llama, 2014). Rather than allowing the user to adjust the level of ambient noise leaked into the headset themselves, “Audio Aware” is designed to automatically warn the user only when danger might be imminent. By feeding sounds heard through the microphone of the user’s digital device or headphones through an online database filled with the sonic signatures of various warning sounds (the sirens of emergency vehicles, horns, screeching tires), it listens “for” the headphone user and then interrupts the music if something seems amiss. “The crux of One Llama’s technology is what the company calls its ‘artificial ear,’” explains *MIT Tech Review*. “When sound enters your ear, it travels through the spiral-shaped cochlea, which is lined with tiny hair cells that vibrate like tuning forks when hit by certain frequencies.

One Llama’s artificial ear is a software version of this — essentially, a bank of digital tuning forks that measure sounds” (Metz, 2014). By attempting to incorporate artificial intelligence into the headphone listening experience, Audio Aware is yet another example of how morality can be “scripted” into headphone–user relations without requiring significant alterations to the headphones themselves.

A final app worth mentioning, which works in a fundamentally different way than the previous two, is “Mutesic,” the result of a collaboration between Saatchi & Saatchi and Vice Media (see figure 28). This app requires no microphone and relies solely on data generated from the phone’s GPS to control how music is experienced inside the headset. When the app is used, the software plots the listener on a virtual map and then calculates the listener’s distance from potentially dangerous areas, such as traffic intersections. As the listener approaches one of these areas, the music inside the headphones is automatically and gradually lowered until he or she arrives, at which time the music shuts off completely. Once the listener crosses the street, or moves away from the dangerous



*Figure 28. Screenshot from Mutesic promotional video, Vice (2014)*

location, the volume slowly increases until he or she is a safe distance away, and then it returns to its full volume. Once again, the interesting thing about this app is that it shifts moral responsibility away both from the headphones *and* from the user. By mediating the relationship between the headphones, user, and surrounding environment, Mutesic offers one more example how technology can help ensure good moral decisions are made, even if the listener is distracted or unable to respond adequately to environmental signals.

By listening for the user (“Awareness,” “Audio Aware”), or monitoring the user’s surrounding environment in other ways such as through global positioning software (“Mutesic”), each of these apps shows promise in terms of resolving some of the prevailing and most difficult questions about how to make headphone listening safer and more responsible. At the same time, however, these apps also introduce a new variety of moral challenges as they do not simply “warn” users of potential danger — they also *make value judgments on behalf of users* about what counts as dangerous, and *actively respond to those judgments* by either turning the music down, turning it off completely, or not adjusting it at all. These various “technological intentionalities” (Ihde, 1990) and behavioural “scripts” (Latour, 1994) influence not only how users are able to *perceive* and *act in* the world, but in how they are constituted as *moral subjects*. This is because their ability to “act morally” is completely bound up in the software’s ability to make the right decision in a potentially dangerous situation.

The risk here is that rather than calling on listeners to *actually* be more aware of their surroundings (which, I argued above, is one of the main benefits of the QC20 headphones “Aware mode” function) these apps run the risk of making listeners confident

in paying *less* attention by putting their trust in technology. For these apps to truly deliver on their promise to make headphone listening safer, we must not only ask what these apps can do to solve moral problems — we must also ask how they co-constitute us as moral subjects. Moral design does not mean offloading moral responsibility onto the technologies we use, but using technology to help make good moral decisions *easier for users to make*. These developments certainly show promise, but care must be taken in making sure such applications do not end up having the opposite of their intended effect.

## **Moral Education**

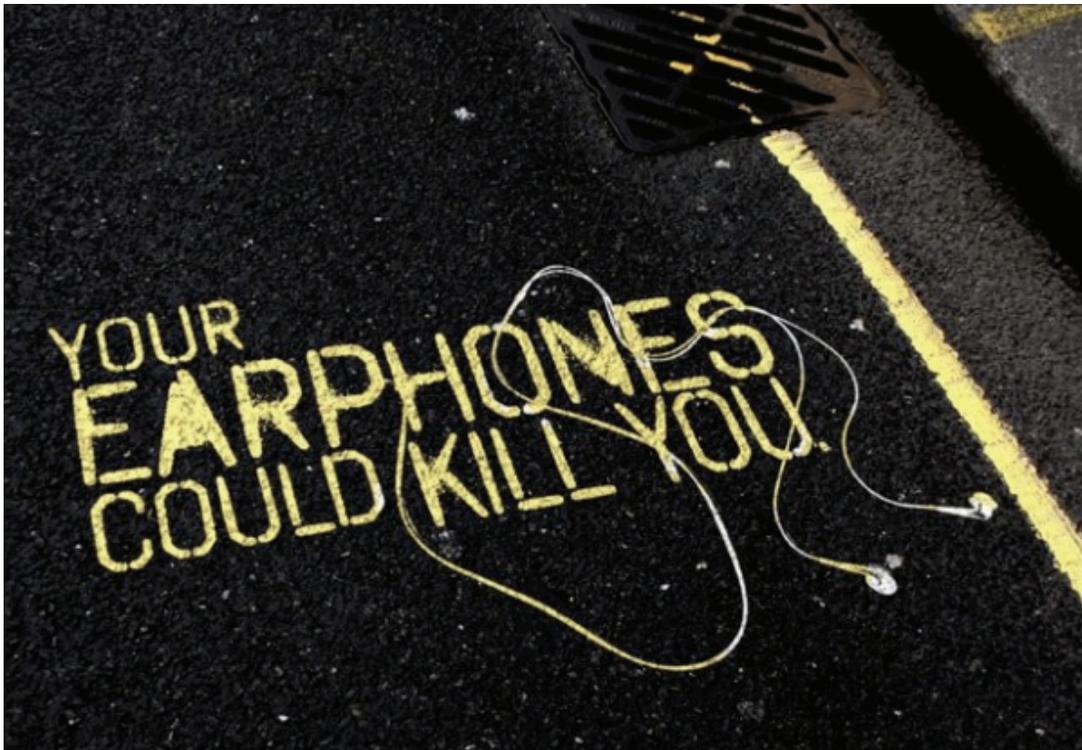
Throughout this thesis I have argued that good moral design is something that arises in the interactions between users and designers, and does not necessarily require the establishment of formal moralizing procedures such as those outlined by Verbeek (2011). As the above section makes clear, however, once particular moralizing technologies are established — particularly so-called “intelligent” systems that begin to “listen for” and make decisions on behalf of users — we begin to enter especially dangerous territory. If designers and users are not fully aware of the ability of these technologies to constitute users as particular kinds of moral subjects, then it becomes difficult to understand how we might exercise control over — and take responsibility for — the moral environments these technologies help define. The question then becomes: if we do not want to (or do not believe it is possible to) resort to formal moralizing design procedures, how can we hold designers accountable for the kinds of moralizing technologies they create? In other words, how can we help steer moral design in such a way as to ensure that deliberately

“morally mediating” technologies have the best chance of ensuring a positive moral result? One answer might be forging a closer connection between public health-and-safety organizations and headphone designers (including app designers) through an expanded moral education framework.

Until now, the strategy of most public health-and-safety organizations has been to focus their goals on teaching users how to engage with headphones in safer and more responsible ways. Their approach, in other words, has been to isolate the problem of “bad behaviour” and resolve it by moralizing users. For example, public health-and-safety awareness campaigns around the world have often resorted to scare tactics, such as shocking viewers with suggestive images (see figure 29) or stating outright that headphones could kill (see figure 30).



**Figure 29.** [LEFT] “Watch for cars when wearing headphones,” NSW Police Force, Australia (2008); [RIGHT] “Don’t Tune Out,” Pedestrian Council of Australia (2012)



*Figure 30. “Your Earphones Could Kill You,” Tune in to Traffic, UK (2011)*

Educational campaigns have often taken a similar tack, using fear-inspired interactive video games and other digital materials to cultivate an awareness of the potential dangers posed by headphone listening. In some, headphones and digital music players are likened to monsters capable of “attacking” the listener’s ears; in others, users are invited to play games in which headphone-related traffic accidents are simulated (see figure 32). In each case, the message of these campaigns is clear: listen better, or else.

Yet as I have argued throughout this thesis, the problem with this approach is that it fails to account for the fact that most headphone designs make it difficult to balance a desire to listen comfortably and listen morally at the same time. As with many other pleasures — e.g. alcohol, smoking, food — many people are now aware of the potential



**Figure 31.** (LEFT) “Turn down the sound!” Interactive Sound Ruler, NIDCD, US (2011); (RIGHT) “Can you ditch the distractions?” (Game screen shot), Ditch the Distraction, Kent County Council, UK (2011)

risks of headphones, yet they continue to listen in dangerous ways. This is not the place to delve into the psychology of risk; but I do want to suggest that educational campaigns need to go further than spreading awareness and fear. If headphones continue to make safe and responsible listening decisions difficult to make, we will continue to operate at the level of a situation of obligation, where truly dramatic change remains unlikely — no matter how much users want to “turn down the sound” or more effectively manage distractions.

For health-and-safety organizations to have a larger impact, I suggest they might consider focusing not only on educating users on safer listening practices, but on educating users and designers on the importance — and possibilities — of good moral design. In line with my greater argument throughout this thesis, there are two ways this can be accomplished: (1) by making users more aware of headphone designs and digital applications that can assist them in listening comfortably and responsibly at the same

time; and (2) by reminding designers that, by taking morality seriously, they can produce new products that stand a good chance of becoming successful — and profitable.

With regards to the first, while scare tactics can be effective at spreading awareness of the risks associated with headphone listening, health-and-safety organizations could do more to help users actually *mitigate* these risks by directing them toward headphone designs and digital applications that make responsible listening decisions easier to make. Too often headphones are discussed or depicted in health-and-safety campaigns as a singular object — headphones — rather than a series of vastly different designs (noise-reduction, noise-cancelling, open-air, open-ear, etc.) that can be themselves be further augmented once connected to digital playback devices. By making users aware of these options, and instructing them on how to integrate certain hardware and software features together into ideal moral configurations, these organizations can assist users in preventing headphone-related hearing damage and accidents in a more comprehensive way. The goal here, in other words, would be to work together *with* technology in promoting responsible listening decisions rather than against it.

As for the design side, health-and-safety organizations might also consider coming up with strategies for motivating headphone and app development companies to consider pursuing moral design initiatives more aggressively. This could be achieved, for example, by establishing arms-length partnerships with third-party developers who are currently pursuing technologies in line with the organization's objectives, or by holding open design competitions meant to increase public and industry awareness of new moral innovations. The idea here would be to stimulate corporate interest in pursuing the

development of morally acceptable headphone technology, without having to challenge or restructure the existing political economic conditions of headphone design. In other words, rather than attempt to moralize the design process by forcing manufacturers to implement formal morality assessment procedures (which would delay production, add additional overhead costs, and ignore other organizational and economic constraints on the design process — all the while offering manufacturers very little in return for their efforts), the better strategy might be to try and moralize the design process “from without” by generating consumer *demand* for better moral design within the public, and then encouraging designers to recognize the potential in meeting these imperatives.

Finally, health-and-safety organizations need to become more reflexive about the role they themselves play in co-constructing headphone listening as a particular kind of moral activity. Fear campaigns in particular tend to reinforce the notion that headphone listening is a predominantly youth-oriented practice, and often imply that victims are the ones to blame when “bad things” involving headphones occur. Yet recent studies have cautioned against generalizing about which groups are at greater risk of accident since older demographics also listen regularly (cf. Lichtenstein et al., 2012), and many headphone designs — not to mention other factors (poor traffic infrastructure, bad drivers) — can be regarded as equal contributors to “good” and “bad” moral results. The goals of health-and-safety initiatives should therefore be to educate the public not only of the potential risks associated with headphone use, but of the “reality” of headphone listening as a practice that is enjoyed by — and affects — all age groups. That is, educational campaigns should be geared equally toward *non*-users and critics who, by

resisting headphones, contribute equally to shaping of headphone listening as a material and cultural practice (Oudshoorn & Pinch, 2003) — particularly by stereotyping headphone listeners and spreading misinformation about the extent and root of the “headphone problem.” As Springhall pointedly suggests, “moral panics often tell us a great deal more about adult anxieties, fear of the future, of technological change and the erosion of moral absolutes than about the nature of juvenile misbehaviour” (1998, pp. 160-1). By focusing on the sources of those panics, and not just their targets, educators can help the public to come to a more grounded understanding of the extent of the risks involved, and in doing so, dispel some of the prevailing myths that headphone listening is “essentially” safe or dangerous, respectful or antisocial.

## **Designing the Future**

It is clear, at least for the time being, that headphones are here to stay. While there are some very limited circumstances in which banning the technology might be possible and even advisable (e.g. for individuals operating motor vehicles) there are many more where such measures do not constitute a reasonable option. In those circumstances, it is important that we continue to educate users on how to listen as safely and morally as possible. But as I have suggested above, public education could go much further than it currently does.

To start, scare tactics should be replaced with more productive initiatives that take aim at the problem of design. For while “bad behaviour” certainly exists, it often comes about not because users are unaware of the dangers, or because they “want” to act

immorally, but because the technologies they use make making “good” decisions difficult. By taking aim at design, health-and-safety organizations would have a much greater chance of meeting their objectives: to make headphone listening safer and more responsible for all.

Of course, the challenges ahead are replete with moral issues of their own. At the moment, all of the most promising moral design options are also the most expensive. Effective noise-cancelling headphones are among the priciest consumer headphones on the market, and each of the apps described in this chapter require high-end smartphones and data plans well beyond the financial reach of many. This is deeply troubling as it suggests the beginning of a kind of moral “digital divide” in which only those with money will have the luxury of listening in safe and responsible ways. The goal of moral design must thus be not only to convert our present situation of obligation into a situation of choice, but to ensure this choice extends to all people regardless of their age or socioeconomic class.

The argument I have returned to throughout this thesis is this: if we can become better at designing morality into headphone–listener relations — rather than focusing solely on the regulation of technology (on one extreme) or on the education of users (the other extreme) — we will have a better chance of making sound moral decisions in the future. And it is in this way, I believe, that we will become better poised to heed Michael Bull’s call for headphone-related scholarship to become “an investigation of how we increasingly bring the auditory world closer to us ‘spatially’ and, hopefully, humanely” (2007, p. 160).

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