THE HI-FI MAN: MASCULINITY, MODULARITY, AND HOME AUDIO TECHNOLOGY IN THE U.S. MIDCENTURY

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ABSTRACT

Kelli Smith-Biwer: The Hi-Fi Man: Masculinity, Modularity, and Home Audio Technology in the U.S. Midcentury
(Under the Direction of Mark Katz)

Hi-fi home audio systems are modular—that is, they are made of a collection of interchangeable components such as turntables, receivers, amplifiers, and loudspeakers. At the advent of hi-fi culture in the 1950s, modular audio systems were marketed primarily to men while all-in-one console systems were advertised in women's and home magazines. As early as 1952, well-known audio critic Edward Tatnall Canby reinforced this gendered technological divide when he wrote, "Aunt Minnie can run a [console system] and so can three-year-old-sister Jane…Me I'm a hi-fi man of sorts and I want my stuff really separate…The separate-unit system is the thing for me."

In this dissertation, I introduce my concept of modular masculinity, a framework that reveals how post-war technological discourse reflected and encouraged an understanding of masculinity as flexible, reconfigurable, and dynamic. I show how the hi-fi system, with its separate, customizable components, facilitated a range of technological engagement that allowed men to explore and express a variety of masculine roles: moody musician, loving father, dutiful husband, resourceful carpenter, exacting engineer, and so on. Focusing on discourses around loudspeakers, cables, and tonearms, I examine the images and rhetoric around each to contextualize and analyze historic co-constructions of masculinity and sound technology. These case studies center on midcentury magazines such as *High Fidelity*, *Hi-Fi & Music Review,* and

Audio, as well as archival material including technical circulars, corporate ephemera, engineering notebooks from research labs, patents, and government publications.

Modular masculinity is a flexible framework for analyzing the social, political, and economic forces that shaped the ways men engaged with home audio technologies. Gender has never been a simple male-female binary: my framework reveals masculinity as a multivalent formation that develops both in dialogue with and independently from femininity. This study into the discourse surrounding midcentury hi-fi equipment illuminates complex constructions of music technology and masculinity that continue to influence marketing and consumer behavior today.

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My family and friends have helped me through this journey more than they can ever know. Melanie and Bradley Bower, Madeline and Nathan Steinmetz, and Melissa Gronske were always there to make me laugh and responded with enthusiasm to my late-night screen shots of bizarre hi-fi advertisements. Lynne and Bruce Biwer lent empathetic ears and shared valuable professional advice. My cats Gustav, SkiBo, and ZigZag kept me company through many hours of drafting. Finally, my mom Susie Smith, dad Jim Smith, sister Staci Smith, and husband Craig Biwer never, for a single moment, doubted that I could do this. You have all my love and this is for you.

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Introduction: Who is the Hi-Fi Man?

In 1988, *Stereophile* magazine—a well-established high-end home audio publication—polled its 45,000 readers about their demographics and buying behaviors. Nine thousand readers responded, giving the magazine an unusually rich look into the lives of audiophiles.[1] Editor John Atkinson began his analysis of the poll results with the gender distribution: "Only 1% of the readership appears to be female, so I will use the pronoun 'he' from now on. (My apologies to Hilary Paprocki and other valued female readers.)"[2] After growing to 60,000 subscribers by 1991, the magazine ran another survey. Again, Atkinson admitted that, "While the launch of the CD did bring more women into the audiophile fold…the proportion of *Stereophile*'s female readers has not changed since 1988, at just over 1%."[3] The 2021 *Stereophile* media kit—a package of publication specifications and audience demographic information made available to potential advertisers—shows its "male to female demographic" to be 99/1% (Figure 1). The dearth of woman-identifying *Streophile* subscribers will be unsurprising to those familiar with the world of hi-fi, but it is striking to see the depth and consistency of the gender disparity over the course of several decades. As a woman who calls herself an audiophile (and one of the 1% that subscribes to *Stereophile*), it is precisely these stark disproportions that I seek to understand.

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[1] John Atkinson, "Stereophile and You: John Atkinson Analyzes the Results of Our Readership Survey," *Stereophile*, October 1988, 69–71. The total response rate for the poll was 20% (9,000 of about 45,000 subscribers). This is far higher than the 1%–2% response rate magazines can typically expect from reader polls.

[2] Ibid., 71.

[3] John Atkinson, "As We See It: Whooooooo are you?" *Stereophile*, June 1992, 7.

Figure 1. *Stereophile* media kit indicating the general demographic information of its subscribers. AVTech Media, *Stereophile* Media Kit, January 2021, http://www.avtechmediausa.com/mediakit.stph.pdf, accessed 4 October 2022.

In this chapter I introduce the "Hi-Fi Man": the idealized consumer of home audio products. The term "Hi-Fi Man" was casually used in midcentury home audio publications, but I also deploy this caricature based on attributes imbued by contemporary historians, musicologists, ethnomusicologists, and scholars of sound and media. First, I give a short history of the hi-fi culture that I center in this project and briefly define "modular masculinity" as the framework I have developed to understand the relationships between sound objects, print media, and the co-

constructions of hi-fi and masculinity in the midcentury United States.[4] I then offer a portrait of the "Hi-Fi Man" as a means by which to define the subject of this project as well as some of its limitations. Finally, I present the work of psychologist and marketing expert Ernest Dichter, whose influential philosophies in motivational research directly shaped the strategies used in print media to sell products and ideas to 1950s consumers. I focus on Dichter's work to shed light on the messages manufacturers and magazine editors sought to convey through specially targeted imagery and rhetoric, and the ways imagination and aspiration are operationalized in hi-fi discourse.

Home audio technologies are not inherently masculine and have not always been marketed to men. As Mark Katz and Holly Kruse have chronicled, before the emergence of post-war hi-fi culture in the United States, home audio technologies were marketed heavily to women, who were typically the main decision makers in the purchase of music technologies, particularly phonographs.[5] Similarly, Roshanak Kheshti's study of sound collecting at the turn of the century reveals that bourgeois women were a rich market for recordings of Native and African Americans, arguing that these sound objects offered "a new domesticated other on whom the white female listener had a social leg up."[6] Susan Douglas shows that marketing tides started to turn after World War I with the market for "build it yourself" radios that targeted young boys.

[4] I fully explicate modular masculinity in Chapter 1.

[5] Holly Kruse, "Early Audio Technology and Domestic Space," *Stanford Humanities Review* 3, no. 2 (1993): 1–14; Mark Katz, *Capturing Sound: How Technology Has Changed Music*, rev. ed. (Berkeley: University of California Press, 2010), 58–59.

[6] Roshanak Kheshti, *Modernity's Ear: Listening to Race and Gender in World Music* (New York: New York University Press, 2015), 15–35.

This trend was fueled by the rising popularity of amateur radio building and operating that took place primarily in the workshops of middle-class men.[7]

Multi-component—or modular—home audio set ups burst into popularity after World War II as consumer electronics became smaller, more affordable, and more reliable. In a modular system, discrete components operate independently and can be combined, upgraded, and tweaked. The imagery and rhetoric of midcentury hi-fi magazines suggests that advertisers marketed modular home audio to middle-class, middle-aged, white men and positioned their products as the antithesis of radio-phonograph consoles, that is, systems in which components are built directly into a cabinet (Figure 2 and Figure 3). Console units were easy to use and designed to match household furniture, but their all-in-one design made them difficult to customize or repair. Marketing for console and modular home audio was thus deeply gendered. Women's lifestyle magazines touted the convenience and decorative appeal of console players, while power, control, and technical specifications dominated the pages of hi-fi magazines. Modularity—the technological advancement that facilitated the post-war emergence of hi-fi culture—meant that hi-fi enthusiasts could buy separate amplifiers, tuners, speakers, and record players and assemble them into customized listening systems.

[7]Susan J. Douglas, *Listening In: Radio and the American Imagination* (Minneapolis: University of Minnesota Press, 1999), 12–16, 65–70.

Figure 2. A father and son work together on a modular hi-fi system. The image accompanied an article in a women's magazine. Bob Jones and Bob Hertzberg, "More Music for Your Money," *Better Homes and Gardens*, December 1952, 56.

Figure 3. The advertised console set contains a radio, phonograph, and television in "exquisite cabinet styling." Admiral, Magazine Advertisement, *Town & Country*, May 1950, 11.

During and after World War II, sound technologies made substantial leaps in quality, and—partly through the perfection of late-Fordist mass-production practices—consumer electronics became smaller and more affordable.[8] This is not to say that hi-fi components were cheap. The hi-fi craze emerged amid the rise of the seemingly opposed forces of mass-consumerism and early Cold War U.S. American individualism. Modularity reconciled these forces: mass-produced consumer electronics like hi-fi components were easy to buy at the local department store, but just expensive enough to serve as markers of wealth.[9] And unlike the home appliances designed to facilitate cooking or washing—which experienced a similar post-war boom—a hi-fi system could be combined in custom arrangements based on individual taste. The unstated message in advertising these products to men was that buying, building, and listening to hi-fi was a demonstration of technological expertise *and* artistic refinement. Thus, manufacturers and advertisers constructed hi-fi home audio as a masculine hobby that fulfilled the nexus of men's artistic, scientific, and class ambitions.

Without the burdens of an economic depression or a global war, hi-fi home audio became so popular in the 1950s that "audiophile" and "high fidelity" became household words. As a 1957 *Women's Day* article reminisces,

> The Age of Hi-Fi began just before World War II, when radio and electronics engineers in various sections of the country began experimenting independently toward perfecting the reproduction of sound…

[8] Douglas, *Listening In*, 225–26; Lizabeth Cohen, *A Consumers' Republic: The Politics of Mass Consumption in Post-war America* (New York: Vintage Books, 2003), 116–21.

[9] For reference, the prices vary among the tonearms: The Pickering and Company 194D Unipoise was $59.85 in 1958 ($625.47 USD in 2023), the Weathers MC-1 was $55.95 in 1959 ($574.59 USD in 2023), the Rek-o-cut A-120 was $26.95 in 1957 ($289.81 USD in 2023), and the Metzner Starlight Model 01 was $22.50 in 1956 ($249.18 USD in 2023). Pickering and Company, Inc., Magazine Advertisement, *HiFi & Music Review*, April 1958, 40; Weathers Industries, Magazine Advertisement, *HiFi Review*, March 1959, 12; Rek-o-kut Company, Magazine Advertisement, *High Fidelity*, January 1957, 8; Metzner Engineering Corporation, Magazine Advertisement, *High Fidelity*, September 1956, 94. Inflation adjustments are from www.usdinflation.com.

> The engineers began building their sets in their homes, their friends and neighbors heard them, and presently the demand stirred the big manufacturing companies to plunge into large-scale production.[10]

By the time *High Fidelity* magazine—the flagship home audio publication of the fifties—began publishing in 1951, there was a quickly growing community of men who deemed themselves "audio-philes" and made a hobby of shopping for, tweaking, and listening to domestic sound technologies.[11]

Audiophiles and hi-fi critics alike have long wondered about the gender divide in hi-fi culture. A 1925 article in *Gramophone* wondered "Where are the Ladies?" while a commenter in a 2017 online forum asked "Why Don't More Women Develop Audiophile Interest?"[12] The editors of *High Fidelity* declared in 1953 "Ladies, you are welcome!" while boasting that the issue contained "no fewer than three articles, so help us, about women!"[13] Thinking back to the 99/1 gender divide described in the opening of this chapter, I contend that we can learn more about hi-fi and audiophile culture if we ask a different question—one that considers the 99% instead of the 1%: "Why men?"

[10] Richard Gehman, "Music Through the House: What Every Woman Should Know About Hi-Fi," *Women's Day*, December 1957, 42, 102–3.

[11] The hyphen used in the 1951 issue was quickly dropped in favor of the less cumbersome "audiophile."

[12] Scrutator, "Where are the Ladies?" *Gramophone*, June 1925, 39, quoted in Mark Katz, "Men, Women, and Turntables: Gender and the DJ Battle," *The Musical Quarterly* 89, no. 4 (2006): 589–99; Scott Powell, "Why Don't More Women Develop Audiophile Interest?" Quora.com, December 28, 2017, http://quora.com/Why-dont-more-Women-develop-audiophile-interest.

[13] "This Issue," *High Fidelity*, November-December 1953, 3. Despite "welcoming women" to the magazine, the phrase, "so help us" imparts a tone of both self-congratulations and defensiveness.

Masculinity, and white masculinity in particular, tends to be unmarked in historical research on sound reproduction technology. In her work on the history of marketing technology-themed toys to boys, Ruth Oldenziel pinpointed the trouble with the under-studied social co-construction of masculinity and technology:

> An exclusive focus on women's supposed failure to enter the field…is insufficient for understanding how our stereotypical notions have come into being; it tends to put the burden of proof entirely on women and blame them for their supposedly inadequate socialization, their lack of aspiration, and their want of masculine values. An equally challenging question is why and how boys have come to love things technical, how boys have historically been socialized as technophiles.[14]

Heeding Oldenziel's guidance, I center my analyses on the ways hi-fi fit into the larger U.S. American masculinity identity-building project, and was designated to be a part of a set of 1950s "masculine values." Despite contemporary nostalgic and misogynist claims that the midcentury was a "simpler time" when "men were men," post-war constructions of masculinity were complex and in flux.[15] As I will show, conceptions of masculinity were rapidly shifting to include white-collar, urban, suburban, domestic, and scientific masculinities. While some 1950s authors fretted that women had become too influential over their husbands and that white-collar work softened once rugged men, others celebrated involved fatherhood, companionate marriage,

[14] Ruth A. Oldenziel, "Boys and Their Toys: The Fisher Body Craftsman's Guild, 1930–1968, and the Making of a Male Technical Domain," *Technology and Culture* 38 (1997): 60–96; reprinted as "Why Masculine Technologies Matter," in *Gender and Technology: A Reader*, ed. Nina E. Lerman, Ruth Oldenziel, and Arwen P. Mohun (Baltimore: Johns Hopkins University Press, 2003), 41.

[15] For more on the constructed nostalgia for the 1950s and masculinity, see John Marshall Kephart III, "A Man Like the One That Married Dear Old Mom: Nostalgia and Masculinity in Late 20th Century American Culture," (PhD diss., University of Southern California, 2008), 158–71. For an analysis of the ways this nostalgia has recently been deployed in conservative politics in the United States, see Michael Kimmel, *Angry White Men: American Masculinity at the End of an Era* (New York: Nation Books, 2012), 171–80.

and the increased leisure time permitted by white-collar work.[16] Through historical interpretation of hi-fi discourse, I reveal 1950s masculinity as a contested construction.

Throughout this dissertation I ask: "How, why, and by whom was home audio masculinized?" and "How and why did midcentury men in the U.S. engage with home audio?" I examine advertisements, essays, patents, and corporate records to build out a holistic study of midcentury masculinity. In doing so, I show that constructions of masculinity were inflected by a sprawling complex of culture makers in manufacturing, government operations, publishing, advertising, engineering, and arts circuits. For example, I delve into the intricacies of design and marketing, or suburbanization and social reproduction, or Cold War investments in technical training, as a means by which to offer novel interpretations of hi-fi magazine content that can augment understandings of historic constructions of masculinity and technology in the United States.

I offer "modular masculinity" as a framework to analyze the range of masculinities at play in hi-fi culture, the relationships between systems and their constituent parts, and the ways historic technological discourses and gender constructions inform those relationships. (Figure 4). Edward Tatnall Canby, acclaimed audio critic, explicitly used the term "hi-fi man" to gender the consumption of modular systems:

> [Pre-built hi-fi systems] look like an old fashioned 'console' model, in modern costume. It isn't a 'system' at all, to the customer. Aunt Minnie can run it and so can three-year-old sister Jane. You don't have to assemble it, there aren't any bare wires, and you won't get shocks. No worries about impedances, inputs, and outputs. Not a trace of solder, no holes

[16] Philip Wylie famously complained of the "womanization" of the United States in *Playboy Magazine*, blaming the increased influence of housewives over the domestic domain. In contrast, psychiatrists and women's magazine editors such as Oliver English and Constance Foster regularly called for the increased involvement of fathers in child-rearing as a means by which to prevent "anti-social" behaviors. I delve into this polemic later in this introduction. Philip Wylie, *Playboy*, September 1958, 51–52; Oliver Spurgeon English, M.D. and Constance J. Foster, "What's Happening to Fathers?" *Better Homes and Gardens*, April 1952, 205.

> to be cut, no screws to be screwed. Not even a plug to be plugged. Just one, in to the 117-volt a.c. socket…Me, I'm a hi-fi man of sorts and I want my stuff really separate. I *like* bare wires and I enjoy hooking things up…The separate-unit system is the thing for me and for many a reader of this magazine, from professional to amateur. That is the present feature attraction of the audio business. Here is where the expansion has occurred, here is where the money has been made.[17]

Canby infantilizes and feminizes buyers of pre-built console units, suggesting that a preference for such systems was driven by lack of interest, fear, and technical incompetence. As a man, he thought himself innately predisposed to an interest in technical ventures. Companies could expect to profit from men like him because the "separate-unit system" is "feature attraction of the audio business."

[17] Edward Tatnall Canby, "Record Revue," *Audio Engineering*, August 1952, 30. Original emphasis, ellipses added by the author. In home audio, the term "impedance" is often used as a catchall shorthand for the total electrical resistance in the hi-fi set and is often applied to cables. Impedance is calculated using resistance, inductance, and capacitance. Cables do have characteristic impedance, but capacitance is the only factor that significantly impacts an audio signal travelling through a cable.

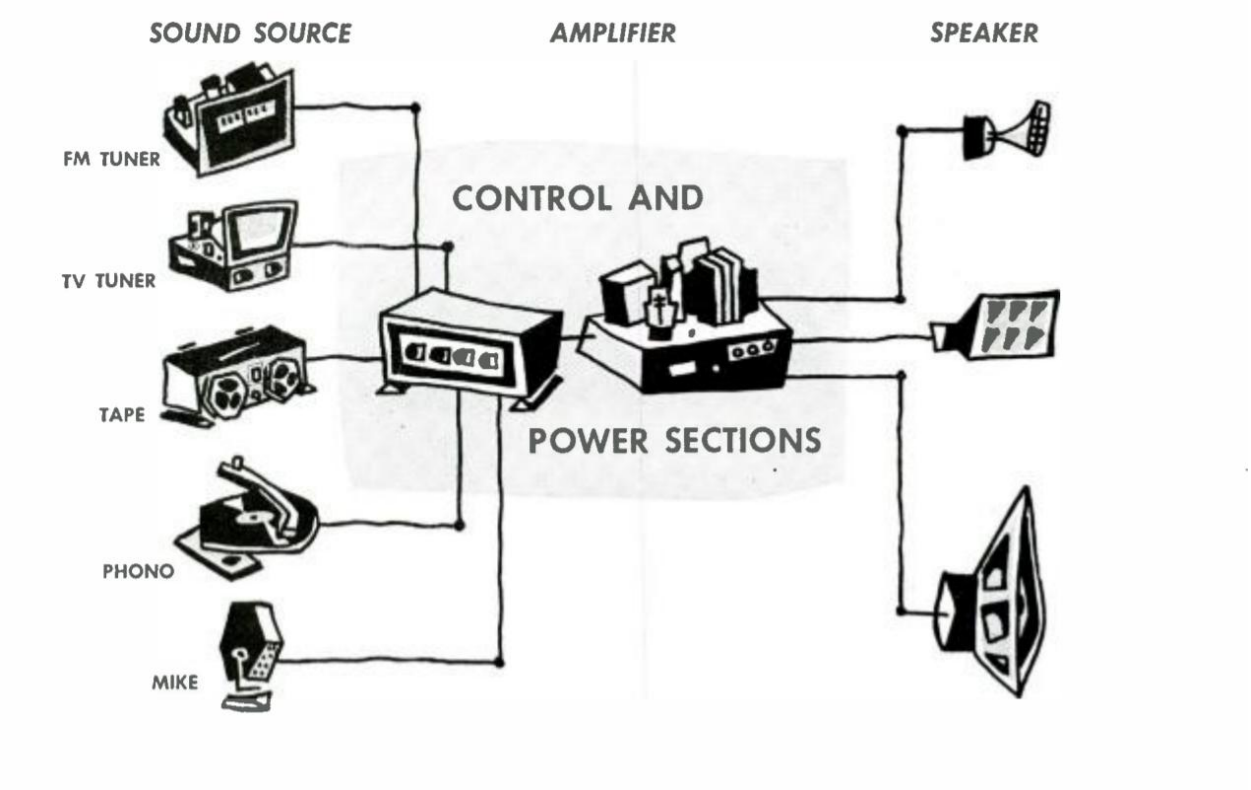

Figure 4. Illustration showing a modular system with examples of components. *High Fidelity*, January/February 1954, 39.

In my own study of hi-fi magazines, I found that manufactures, marketers, and audio critics visually and rhetorically masculinized hi-fi products, but the way they did so varied among components and depended upon the affordances of each device. Drawing on theorizations of modularity by media theorist Tara McPherson and historian of technology Andrew L. Russell, I show how the hi-fi system, with its separate, customizable components, facilitated a range of technological possibilities that allowed midcentury U.S. men to explore a variety of masculine roles: moody musician, loving father, dutiful husband, resourceful carpenter, exacting engineer, and so on. This framework allows me to analyze the social, political, and economic forces that shaped how men engaged with home audio technologies. Modular masculinity reveals how post-

war technological discourse reflected and encouraged an understanding of masculinity as flexible, reconfigurable, and dynamic. Gender has never been a simple male-female binary. This framework reveals masculinity as a multivalent formation that develops both in dialogue with and independently from femininity. This study into the discourse surrounding midcentury hi-fi equipment illuminates complex constructions of music technology and masculinity that continue to influence marketing and consumer behavior today.

For example, 1950s audio receiver advertisements tended to call upon the emergent romanticization of scientific progress and "space-age" technologies to masculinize sound engineering know-how. In contrast, discourses around amplifiers often employed imagery and language that appealed to athleticism and raw strength. The difference between the marketing trends for receivers and amplifiers can be traced to material and technological differences between the components. Receivers demanded relatively little electrical power and, once transistors and printed circuits hit the consumer market in the mid-fifties, were fitted with cutting-edge electronic features. Amplifiers, on the other hand, demanded too much power for the earliest developments in consumer electronics and required bulky, but reliable, parts like vacuum tubes and hand-wired connections for optimal operation. I contend that components, and the advertising trends that accompanied them, represented independent constructions of masculinity that interlocked to form an ever-changing modular masculinity. When these components came together in a fully-assembled hi-fi system, they operated both individually and collectively in a way that was informed by the buyer's self-image.

In a symbolic sense, hi-fi components came together to form a custom system that mirrored its builder, in which each object represented an aspect of masculinity. In this way, a hobbyist could enact multiple masculinities through the hi-fi system at once. The sensitive

tonearm and hulking amplifier might echo a man's desire to be musically expressive, but not at the expense of his physical prowess. For example, attribution of musical expertise and latent muscle is embodied by high fidelity icon, jazz musician Dave Brubeck. In *Time Magazine's* 1954 feature on Brubeck, he is described as, a "rugged individual" who is "peaceable as a lullaby."[18] Praised in the same article as "intellectual," "mysterious," and "modern," Like Brubeck, hi-fi users wanted to be (or were asked to be) many things at once: fathers, husbands, workers, musicians, technicians, craftsmen, and so on. In positioning the hi-fi system as an analog to a multi-faceted identity-building project, modular masculinity resists pigeon-holing the ways hi-fi users understood and constructed masculine identities. This creates room to acknowledge the complexity of masculine identities and build a generous vocabulary for the historical analysis of music making and masculinity.

While almost certainly not the first to use "audiophile," *High Fidelity* included the term on the front cover of the first issue with a banner reading, "Devoted to the interests of Audio-philes!"[19] In the editor's greeting, Charles Fowler explained that the magazine was meant for "a cross-section of America, united in a common interest: music, and the improved reproduction of music."[20] The gender of the presumed audience is made explicit in this same greeting, when Fowler admitted that the "best summation" of their readers was to be found "in a letter written

[18] "The Man on Cloud No. 7," *Time*, magazine, November 8, 1954.

[19] *High Fidelity*, Spring 1951, front cover.

[20] Charles Fowler, "As the Editor Sees It," *High Fidelity*, Spring 1951, 8.

by—who could do it better!—the *wife* of an audio-phile."[21] It becomes clear in this moment that *High Fidelity* was not only an audio magazine but also a men's magazine.

In her letter, Helen H. Barkalow submits her order for a year's subscription to the magazine for her husband, remarks that he is "delighted" at the arrival of a publication for home audio enthusiasts, and shares his path to becoming an audiophile:

> My husband is a very critical listener and very technically minded, period! He started as a youngster with a crystal set. Then, when he got into radios, he would sometimes have four of them in the house at once!…In Alaska, in 1947, he got completely fed up with radio reception, as it was very poor. He tried record players, big speakers, amplifiers, needles, etc., each time making an improvement…My husband has made everyone who hears his system very unhappy, because it is so much better than that with which they are familiar.[22]

Together, in the first opening pages of the first issue of *High Fidelity* magazine, Fowler and Barkalow summarized a set of gendered traits, characteristics, and assumptions that coalesced around high fidelity home audio in the early post-war U.S. As Barkalow described, her husband's path to hi-fi began in his childhood building crystal set radios, which were a type of early radio built out of inexpensive components. As historian Susan Douglas points out, beginning in the 1920s, radio building was a pastime marketed almost exclusively to men and boys. A 1923 advertisement for *The American Boy Magazine* (found in *Popular Radio Magazine*) claims that the monumental growth of radio equipment was,

> Directly attributable to the irresistible enthusiasm and contagious interest of boys. An overwhelming majority of radio sales are made to boys, to parents buying for boys, and to parents guided by boys. Right now, boys are recognized authorities on radio construction, installation, and operation…The radio manufacturer who is winning their interest and enthusiasm for his product, by advertising to them in

[21] Ibid., 9. Emphasis in original.

[22] Ibid.

> their own magazine, is feeling the results in increased sales in every corner of the country.[23]

The accompanying photo depicts a group of sharply dressed boys gathered around a home-built radio set with pennants sporting an H and a Y, indicating their ambitions to attend Ivy League universities (Figure 5). Advertisers in radio-centered magazines capitalized on the amateur radio craze and marketed radio knowledge as a means by which to gain access to respect, good schooling, lucrative employment, and a chance to climb the social ladder.[24]

[23] The Sprague Publishing Company, magazine advertisement, *Popular Radio*, December 1923, 29.

[24] Douglas, *Listening In*, 59–60.

Boys' Influence on Radio Buying Is Decisive

The growth of the radio business has been sudden, tremendous, and nation-wide. The demand for radio equipment has increased 60,000% in two years. To-day there are more than two and a half million radio sets in this country. And the radio business confidently anticipates even greater growth in the immediate future.

What has happened, and what will happen in radio, is directly attributable to the irresistible enthusiasm and contagious interest of boys. An overwhelming majority of radio sales are made to boys, to parents buying for boys, and to parents guided by boys. Right now, boys are recognized authorities on radio construction, installation and operation.

THE AMERICAN BOY
"The Biggest, Brightest, Best Magazine for Boys in All the World"

goes to five hundred thousand creators of the radio business. Over half a million dyed-in-the-wool radio fans, averaging 15½ to 16 years old, read it regularly from cover to cover. THE AMERICAN BOY hits them right when their radio interest is all-consuming; when their spending money is considerable, and when their knowledge of radio holds the respect and interest of their elders.

Their own buying power, already large, is ever increasing. Their influence on buying is decisive. The radio manufacturer who is winning their interest and enthusiasm for his product, by advertising to them in their own magazine, is feeling the results in increased sales in every corner of the country.

Copy reaching us by December 15th will catch the February issue.

THE SPRAGUE PUBLISHING COMPANY
(Member A.B.C.)
548 Lafayette Boulevard, Detroit, Michigan

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Figure 5. Advertisement for The American Boy Magazine describing the influence of boys' buying power in the radio manufacturing market. The Sprague Publishing Company, Magazine Advertisement, *Popular Radio*, December 1923, 29.

Marketing for crystal sets is an apt example of the ways early consumer electronics advertising designated reproduction as feminine and production as a masculine. In regards to the gendering of labor and (re)production, I lean on the theoretical work done by media and sound studies scholars who have deployed their arguments around a variety of sound reproduction technologies: pianolas in the 1910s (Marie Thompson), theremins in the 1920s and 30s (Clara Latham), telephones in the 1910s (Jonathan Sterne), phonographs in the 1910s and 1930s (Roshanak Kheshti and Kyle S. Bartlett), and radios in the 1940s (Susan Douglas).[25] One insight I draw from these excellent studies is that music technologies marketed to women were often framed as a way for women at home to reproduce musical works with ease, while those marketed to men and boys—like crystal radio sets—were a way to create new musical tools. Women's musical labor had no productive value outside the domestic sphere, while boy's DIY activities built *potential* for application in the public sphere and were therefore masculinized and valued as productive.

While significant gender dynamics in the telephone, radio, and phonograph industries unfolded during the 1920s, 30s, and 40s, the advent of modular audio changed ways in which consumers purchased and assembled their equipment. The 1950s in the United States are particularly important in the history of audiophile culture because it is the decade that witnessed the mass commercialization of what was previously a highly-specialized niche hobby. From my interpretive angle, modular hi-fi (like crystal radio set building) made consumption of mass-

[25] Marie Thompson, "Sounding the Arcane: Contemporary Music, Gender, and Production," *Contemporary Music Review* 39 (2020): 273–92; Clara Latham, "Instrument or Appliance? The RCA Theremin, Gender, Labor, and Domesticity," *The Journal of Musicology* 39, no. 1, (2022) 37–39; Jonathan Sterne, *The Audible Past: The Cultural Origins of Sound Reproduction*, (Durham, NC: Duke University Press, 2003), 228; Kyle S. Barnett, "Furniture Music: The Phonograph as Furniture, 1900–1930," *Journal of Popular Music Studies* 18, no. 3 (2006): 307–9; Kheshti, *Modernity's Ear*, 20; Douglas, *Listening In*, 16–17.

produced components feel like an act of production because the buyer could create something new from interconnected parts. The hi-fi industry, however, was more expansive than that of crystal set radios and sprawled to include components manufacturers, acoustics research laboratories, recording studios, record presses, publishing houses, and furniture designers. During these first frenetic years, hi-fi manufacturers, critics, and advertisers strategically coalesced long-standing technological and musical gender constructions into influential and persistent formations of masculinized music listening, buying, and building practices.

The Hi-Fi Man

To a musicologist, "high-fidelity" is an alluring subject of study because with "fidelity" comes insinuations of loyalty, proximity, and liveness. These are rich areas for study that have already spawned provocative scholarly conversations, especially in the connections made between object histories, sound reproduction, and gender by Roshanak Kheshti, Tara Rodgers, Jonathan Sterne, Emily Thompson, and Lucie Vágnerová.[26] These authors all usefully critique historical constructions of masculinity and technology, structured listening, and objective valuations of sonic experience. Studying masculinity is uniquely difficult because it is an examination of that which is so often unmarked. While never self-described as such, hi-fi magazines were marketed to and written for men, thus making them a rich resource for

[26] Kheshti, *Modernity's Ear*, 15–38; Roshanak Kheshti, *Switched-On Bach*, (New York: Bloomsbury Academic, 2019): 13–32; Tara Rodgers, "Tinkering with Cultural Memory: Gender and the Politics of Synthesizer Historiography," *Feminist Media Histories* 1, no. 4 (2015): 6; Lucie Vágnerová, "'Nimble Fingers' in Electronic Music: Rethinking Sounds Through Neo-colonial Labour," *Organised Sound* 22, no. 2 (2017): 250–58; Emily Thompson, "Machines, Music, and the Quest for Fidelity: Marketing the Edison Phonograph in America, 1877–1925," *The Musical Quarterly* 79, no. 1 (1995): 134–38.

masculinity studies. *High Fidelity* magazine, for example, does not announce that it targets a male audience, but even a cursory glance at the imagery, rhetoric, editorial team, and names of those writing letters to the editor, reveals that it is invested in the production and reproduction of U.S. American masculinity.

So, who is the Hi-Fi Man? Nineteen-fifties audio writers and advertisers used "Hi-Fi Man" to describe the suburban, middle-class, middle-aged, cisgender, and white everyman who enjoyed shopping for, researching, assembling, tweaking, and listening to a home sound system. Just as the U.S. American vernacular practice of appending an occupation to "man" tightens the relationship between a man's identity and his line of work (e.g., salesman, businessman, lineman, radioman, showman), "Hi-Fi Man" embeds the masculine identity-making project into specific consumption practices. I focus on the relationship between the Hi-Fi Man, the objects that constitute his sound system, and the media that molded that relationship. The Hi-Fi Man is the idealized figure of the midcentury home audio consumer, and as such is a helpful way to explore stereotypes, preconceptions, social constructions, and target markets.

I use this term because—unlike common terms like "audiophile"—it points to the specific historical constructions of midcentury masculinity that I analyze. The Hi-Fi Man is, then, a way to remind myself and others that I do not intend to draw a through-line between contemporary and midcentury expressions of masculinity. Of course, there are resonances across those seventy years, but an important part of my methodology is that I contextualize the gender constructions that I present within the media landscapes, marketing trends, government propaganda campaigns, and scientific and industrial developments of the 1950s. In sum, the idealized Hi-Fi Man was represented as U.S. American; middle-class, middle-aged, cisgender, and white; technically savvy; musically discerning; and individualistic.

The Hi-Fi Man is American. In her examination of gendered labor in twenty-first century U.S. electronic music culture, Lucie Vágnerová points out that the co-constructions of masculinity, home audio, and U.S. American identity persist, despite the fact that the majority of electronic sound technologies are built primarily by women in Mexico, China, Malaysia, and Taiwan.[27] In this dissertation, I tease out the roots of the dogged social constructions that Vágnerová presents by excavating the cultural contexts in which they emerged. I confine my study to the years 1948–1960 in the U.S. as it is during this timeframe that high-end modular home audio grew from a niche industry to a commercial phenomenon.

I focus on U.S. media because it allows me to shed light on specifically American—most often white American—negotiations of masculinity. This is an important political and cultural boundary because hi-fi was an international phenomenon and, as musicologist Tom Perchard and English and African American Studies scholar Tsitsi Ella Jaji show, the ways magazines produced and reproduced constructions of gender and technology varied in the global market. Jaji shows that audio technology advertisers in post-colonial Francophone Africa navigated shifting gender expectations by putting forth "schizoid representations" of African women as demure, deferent spouses who were savvy, independent consumers with substantial buying power.[28] Looking at roughly the same era, Perchard focuses on audiences for modern jazz in 1960s Britain: young, working-class men with money to spend. For these consumers, hi-fi home audio was a part of a masculinized domestic "sensorium" that valued rational, intellectualized, and modern home living aesthetics. Open architectural plans that "exuded masculine power,"

[27] Vágnerová, "Nimble Fingers," 251.

[28] Tsitsi Ella Jaji, *Africa in Stereo: Modernism, Music, and Pan-African Solidarity* (New York: Oxford University Press, 2014): 140–45.

synthetic textiles, geometric graphic design, modular hi-fi, and cool jazz were made mainstream in the post-war U.S. popular media but, as Perchard makes clear, were profoundly influenced by European artists and culture-makers.[29] This transnational cultural exchange thus generated a reimagined post-war construction of masculinity, design, and domesticity. Jaji and Perchard each point to a necessarily transnational mediascape, in which the United States is the "self-proclaimed" energetic center of post-war "American-style consumer capitalism and leisure culture" that disseminated the "capitalist dreams of self-actualization through consumption."[30] While I do approach the possibilities of a transnational study in my conclusion, this dissertation primarily examines the gears that turn "American-style" hi-fi consumer culture.

As the audio cultures that Jaji and Perchard study were shaped by national and political contexts, so too were those in the 1950s Unites States. I argue throughout this dissertation that the masculinities constructed in U.S. hi-fi media were tightly bound up with national phenomena including the frenetic growth of consumer electronics manufacturing, renegotiations of family dynamics, suburbanization, maturation of early Cold-War ideologies, emergence of the military-industrial complex, and post-war racial tensions, all fueled and amplified by the increasing influence of the popular press.[31] In addition to this whirlwind of forces at work in U.S. hi-fi culture, it is also important to note that the majority of audio components sold in the U.S. in the 1950s were manufactured in the U.S. by U.S. companies. While a handful of British, German,

[29] Tom Perchard, "Mid-century Modern Jazz: Music and Design in the Post-war Home," *Popular Music* 26, no. 1 (2017): 57, 67–68.

[30] Perchard, "Mid-century Modern Jazz," 57; Jaji, *Africa in Stereo*, 119.

[31] For more on the racial dynamics of the ways homemaking and family structures were represented in the midcentury popular press, see Dianne Harris, *Little White Houses: How the Post-war Home Constructed Race in America* (Minneapolis: University of Minnesota Press, 2013), 64–65.

and Italian manufacturers advertised regularly in hi-fi magazines starting as early as 1950, it would not be until the rise—and eventual dominance—of Japanese electronics manufacturing in the late 1950s and early 1960s that imported gear would pose serious competition to domestic companies. As I will demonstrate in later chapters, U.S. hi-fi advertisers and manufacturers capitalized on a moment in which consumerism was positively associated with progress. Thus, the gender constructions I present throughout this work are often couched in patriotism, nationalism, and U.S. American exceptionalism.

The Hi-Fi Man was a middle-class, middle-aged, cisgender, white man. I have come across only one advertisement that pictures a non-white hi-fi enthusiast: a 1958 spot for Acoustics Research (AR) that shows Louis Armstrong in his studio beside an AR-2 loudspeaker. The ad immediately introduces the famous Black American jazz musician in the headline, "Louis Armstrong in his den editing tape (Note his AR-2 loudspeaker at his left)."[32] Otherwise, aside from the occasional feature on a Black jazz musician, hi-fi magazines—especially advertisements—are entirely white. The racial representation of the Hi-Fi Man is a helpful entry-point to examining the differences between the world constructed in hi-fi magazines and the reality of consumer behaviors. An inherent difficulty with interpreting history through popular media is the persistent and intentional erasure of marginalized populations in image and text. Black buyers are not represented in *High Fidelity*, *Audiocraft*, or *Hi-Fi Review* not because they were interested in hi-fi home audio but because advertisers and magazine editors disregarded non-white audio consumers.

[32] Acoustic Research, Inc., Magazine Advertisement, *Hi-Fi & Music Review*, November 1958, 111. The ad notes that the photo of Armstrong was initially published in March 1958 in *Hi-Fi Music at Home*, a relatively obscure magazine.

This systematic erasure is in line with the racist and racially homogenizing practices prevalent in the midcentury popular media industry, but it is also due to the fact that advertisers white, middle-class buyers a fruitful target market with a disposable income for luxury consumer electronics. When looking through midcentury audio publications, it would be easy to assume that the only demographic interested in hi-fi are white men, but a more accurate characterization would clarify that this is the market magazines and advertisers *targeted.* As English and African American studies scholar, Valerie Babb, has written, "whites are the only personifications of privilege, social mobility, economic security, and cultural refinement" so "experiences and products that appear race-neutral are implicitly racialized" as white.[33] Building on Babb's argument, media and architectural historian Dianne Harris points out that, in the "racially divided Jim Crow era of the 1950s…nonwhites, it was assumed, had little access to surplus income or homeownership, and were therefore invisible to and rendered invisible by advertisers, publishers, or network executives."[34]

Black American newspapers and magazines provide ample evidence that their writers and editors had a lively interest in hi-fi home audio. This is unsurprising considering the ubiquity and accessibility of midcentury audio technologies. As described by critical theorist bell hooks, media representations operate within the "interlocking systems of domination that define our reality" which she referred to as the "white supremacist capitalist patriarchy."[35] The Hi-Fi Man thus participated in and benefited from the white supremacist capitalist patriarchy.

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[33] Valerie Babb, *Whiteness Visible: The Meaning of Whiteness in America* (New York: New York University Press, 1998), 122.

[34] Harris, *Little White Houses*, 62.

[35] bell hooks, "Cultural Criticism and Transformation," *Media Education Foundation*, interview, ed. Mary Patierno, Sut Jhally, and Harriet Hirshorn, 2005, 7.

The Hi-Fi Man was technically savvy. As Marc Perlman argues, many audiophiles were drawn to hi-fi because it helped them develop and practice technical skills.[36] Modular systems required users to research and select compatible parts, learn how to assemble them, and avoid obsolescence by swapping in updated parts. Through tinkering with their hi-fi sets, hobbyists learned the basics of acoustics, electrical engineering, and radio broadcasting. As I discuss in Chapter 3, due to a shortage of skilled scientific labor throughout the 1950s, the United States government worked closely with electronics industry leaders to encourage men and boys to foster technological interests and skills through hobbies like radio and hi-fi set building. Modular home audio, then, not only helped the Hi-Fi Man curate his listening experience, but was also framed by high-power culture makers and government propaganda as a productive pastime that contributed to the U.S. American mission to achieve global technological dominance.

On a less grand scale, I speculate that ever-improving technologies incentivized users to change out parts and add components over time, which allowed hi-fi manufacturers to encourage customer loyalty and repeat business: a far more lucrative business model than those that only involved one-time, high-priced purchases. Advertisers justified improvements as means to achieve flawless fidelity, which was—as Jonathan Sterne points out—a clever ploy that sent buyers in pursuit of an unquantifiable ideal.[37] This marketing strategy was so effective that a common jest in hi-fi discourse (and one that persists in contemporary audiophile culture) referred to audio enthusiasts as pathologically prone to compulsive gear shopping and record collecting. Literary authors, scholars, and critics alike guessed as to the motivations of the hi-fi addict, citing

[36] Marc Perlman, "Golden Ears and Meter Readers: The Contest for Epistemic Authority in Audiophilia," *Social Studies of Science* 34, no. 5 (2004): 785–86.

[37] Sterne, *The Audible Past*, 222.

everything from the subconscious allure of sensuous sonorities, to the promise of escape from everyday toils, to the aesthetic delights of record jackets.[38] Psychologist H. Angus Bowes "lightheartedly" speculated that, "to many [hi-fi] has a sexual connotation," and that, "perhaps in the twiddling of the knobs there may be a masturbatory equivalent."[39] In a more serious tone, Bowes clarifies that, while he did not buy into his own Freudian jokes, he did believe that it was no great wonder that given the, "threat of nuclear annihilation, the strain of competitive living, the struggle to keep up with the neighbors, and the inability to directly express hostility" caused many to turn to "audiophilic activities" to relieve aggression and anxiety.[40] There is no doubt some truth to Bowes's rather bleak assertion, but the Hi-Fi Man also stood to gain a degree of cultural clout by fashioning himself as a madman. As Ingrid Monson argues in her work on white hipness and jazz, the archetypal idea of the "artist" "represented…a purity of musical purpose" and that there is a long-standing, "romantic conception of the artist" that "link[s] the notion of genius with madness and pathology."[41] With these self-effacing characterizations as "eccentric" and "outsiders," hi-fi authors also implied that their readers had "greater perception of the nature of society" and maintained a closer relationship to music and the arts than "ordinary citizens."[42]

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[38] Thomas Mann, *Magic Mountain*, trans. H.T. Lowe-Porter, (New York: Alfred A. Knopf, 1927), 800–822; Mark Katz, "Beware of Gramomania: The Pleasures and Pathologies of Record Collecting," *The Record: Contemporary Art and Vinyl*, ed. Trevor Schoonmaker (Durham, NC: Duke University Press, 2010), 62–65; Carl Kohler, "The Man with The Golden Tonearm," *HiFi & Music Review,* February 1958, 60–61, 66, 78.

[39] H. Angus Bowes, "Psychopathology of the Hi-Fi Addict," *Diseases of the Nervous System* (June 1957): 233.

[40] Ibid.

[41] Ingrid Monson, "The Problem with White Hipness: Race, Gender, and Cultural Conceptions in Jazz Historical Discourse," *Journal of the American Musicological Society* 48, no. 3 (1995): 412.

[42] Ibid.

The Hi-Fi Man is a musician. It is difficult to tease out the technological and creative aspects of hi-fi from one another because, as this 1963 editorial from *High Fidelity* explains, science and art of home audio are inextricable: "In its broadest sense, 'high fidelity' is the integration of scientific knowledge and technological skill with a sensitive understanding of aesthetic values, to the end that an artistic experience may be fully communicated. It is in itself a creative act."[43] Unable to quantify fidelity or provide measurements to which buyers could aspire, manufacturers assured the Hi-Fi Man that while improvements could always be made, the exact quality of his system's sound was a matter of artistic judgement. A 1958 advertisement for a Fisher master controller (later referred to as receivers) encouraged the Hi-Fi Man to trust his ears and his knowledge of acoustics:

> No two ears hear music exactly alike. No two personal preferences in tonal balance are precisely the same, nor do the acoustical characteristics of any two surroundings duplicate each other exactly. The way the music sounds to YOU, in your normal listening environment, should be your most significant standard of performance.[44]

In a similar rhetorical move that connects musicality and engineering skills, another 1958 Fisher ad pictures a well-dressed man at a workbench laden with technical instruments. The overlay declares, "This man is making MUSIC!" It goes on to explain, "Although the test engineer makes his measurements in terms of percentages, decibel ratings, and oscilloscope patterns, in the *final* analysis, he is making MUSIC. It is the translation of his data into terms of clean, undistorted MUSIC that is the truly meaningful measure of quality for you."[45] These Fisher ads

[43] "As High Fidelity Sees It," *High Fidelity*, February 1963, 45.

[44] Fisher Radio Corporation, Magazine Advertisement, *HiFi & Music Review*, March 1958, 7.

[45] Fisher Radio Corporation, Magazine Advertisement, *HiFi & Music Review*, August 1958, 13.

maintained a consistent message across their advertising campaign that expanded conceptions of musicality to include engagement with domestic music technologies.[46]

Fisher was not the only brand to make a musician of the Hi-Fi Man. A 1959 Harmon Kardon tuner and pre-amplifier ad compares the operation of their tuner with performing in a chamber ensemble. Below a half-page photograph of a smiling man seated among members of a string quartet with a tuner in his lap, emphatic bold text declares, "YOU are the Fifth man in this Quartet."[47] An ad for Munston Manufacturing gives the Hi-Fi Man the ultimate sense of musical control by positioning him as the conductor of an orchestra: "There I was, reliving the exhilaration of the original recording. But now I had the opportunity to quiet the strings and bring up the blast of the kettle drum. With my new amplifier, the Munston Maestro, I felt I was not only listening to the orchestra—I was conducting it!"[48] As musicologist Mark Katz has argued in regard to early twentieth-century phonographs, sound reproduction technologies permitted men an appropriately masculine emotional and artistic outlet because "the phonograph essentially allowed men to engage in activities that had long been construed as feminine pursuits [the enjoyment of Western classical music at home, in this case], but in ways that encouraged mastery and exploration."[49] As one midcentury hi-fi enthusiast remarked in an interview with a market researcher, men might "admit" to playing the piano, but it was far easier to perform a sense of musicality (mediated by technological prowess, of course) by "discuss[ing] music" and

[46] For a discussion of the gendering of early domestic reproduction technologies, see Katz, *Capturing Sound:* 58–59.

[47] Harman Kardon, Magazine Advertisement, *High Fidelity*, January 1959, 83.

[48] Munston Manufacturing, Inc., Magazine Advertisement, *High Fidelity*, 1955, 47.

[49] Katz, *Capturing Sound*, 68.

"this Hi-Fi, I installed myself."[50] My interpretation of these advertisements indicates that brands like Munston, Fisher, and Harmon Kardon positioned the hi-fi set as a tool for musical expression made possible by the acquisition of technical and engineering skills.[51]

The Hi-Fi Man was individualistic. As a technology that was customizable and that facilitated self-expression, a hi-fi set allowed the Hi-Fi Man to distinguish himself from the homogenizing forces of 1950s mass-culture. Economic historian Lizabeth Cohen shows that midcentury consumption was framed by home goods advertisers as a way to express individual taste and identity. As Cohen explains, "as mass markets increasingly splintered, individuals gained more opportunity to express their separate identities through their choices as consumers."[52] Popular culture scholar Keir Keightley similarly shows that hi-fi consumption was a way for men to distinguish themselves from the feminized forces of mass-entertainment and mass-production, arguing that hi-fi was "cast as a high, masculine, individualistic art" that worked as an antidote against the "deadening routines of the corporate workworld," the "confining" conformity of suburban life, or feminizing television and popular media.[53] Cultural critic and "noted misogynist" Philip Wylie—a contributor to *Playboy* and *Esquire* magazines—

[50] Ernest Dichter, *A Motivational Research Study of The New Esquire: Magazine of "Shared Excitement*, 1958, 57, Ernest Dichter Papers, Hagley Museum and Library, Box 1, Folder 3A.

[51] Questions of genre, taste, and the fetishization of vinyl are outside the scope of this dissertation, but it is worth noting that record collecting was (and still is) a major aspect of hi-fi culture and masculine identity formation. See Dominik Bartmanski and Ian Woodward, "The Vinyl: The Analogue medium in the Age of Digital Reproduction," *Journal of Consumer Culture* 15, no. 1 (2015), 3–27. Genres that dominated the pages of review-oriented publications like *High Fidelity* include classical and jazz, but there was also a lively market for "foreign" records, which primarily included Caribbean and Latin American recording artists. See Janet Borgerson and Jonathan Schroeder, *Designed for Hi-Fi Living: The Vinyl LP in Midcentury America* (Cambridge: The MIT Press, 2017), 149–339; John Howland, *Hearing Popluxe: Glorification, Glamour, and the Middlebrow in American Popular Music* (Oakland, CA: University of California Press, 2021), 137.

[52] Cohen*, A Consumers' Republic*, 309.

[53] Keir Keightley, "'Turn it Down!' She Shrieked: Gender, Domestic Space, and High Fidelity, 1948–59," Popular Music 15, no. 2 (1996): 156.

decried the "Womanization of America," hyper-conforming white-collar office work, and beleaguered men who returned from their breadwinning duties to "effeminately" decorated homes and wives that were hostile to their tastes and needs.[54] As psychologist Julius Segal wrote for *High Fidelity* in 1955, engagement with audio gear helped the Hi-Fi Man access and express his true sense of self:

> In an age of speed and high tension, it is inevitable that—to varying degrees—we cannot always be true to ourselves…we find it necessary to repress emotions and attitudes which are, in reality, part of our real selves…with the aid of just the right tubes, dials, cabinetry, and machinery, we can realize an experience which is true in every detail.[55]

The Hi-Fi Man was thus seeking an authentic sense of self and masculinity. The irony here is that hi-fi gear was mass-produced on the same scale as televisions and console sets, only different in the fact that it was modular and could be custom assembled.

While the Hi-Fi Man is an idealized character, he was created by a set of living, working people and groups that sought to benefit socially and financially from the creation of this important target market. The historical protagonists of this story include publishers Milton Sleeper (the publisher of *High Fidelity* and *Hi-Fi Music at Home* magazines) and Charles Fowler (publisher and editor of *High Fidelity* from 1951 to 1957), audio critics Herbert Reid and Edward Tatnall Canby, engineers Harry Olson and Paul Klipsch, industry leader David Sarnoff (director of RCA from 1920 to 1970), and influential marketing researcher Ernest Dichter. Each of these individuals sought to grow the hi-fi market and actively participated—purposefully or indirectly—in the masculinization of home audio technologies. As I discuss in the next section, directed marketing and market segmentation were revolutionized during the U.S. midcentury,

[54] Keightley, "'Turn it Down!' She Shrieked,"155; Philip Wylie, *Playboy*, September 1958, 51–52.

[55] Julius Segal, "A Psychologist Views Audiophilia," *High Fidelity*, September 1955.

and advertisers learned to forge and reinforce powerful connections between consumers, magazines, their gender identities, and sound technologies.

Marketing to Men

Midcentury hi-fi sales were propelled by a variety of forces, but among the most influential was the advertising, criticism, and reporting done in magazines. The popular press—including general audience, hobbyist, shelter (home, garden, and décor), women's, and technical journals—evolved into a dominant culture-making industry in the years immediately following World War II. Magazine sales and subscriptions quadrupled between 1945 and 1959, and hobbyist magazines were no exception.[56] *High Fidelity* began with 24,000 subscribers in 1953 and closed the decade with well over 100,000 regular readers, while latecomer and competitor *Hi-Fi Music & Review* launched in 1958 with over 123,000 subscribers. Even *Audio Engineering*, less popular because of its highly specialized technical content, more than doubled in subscribers with 10,000 in 1948 and over 25,000 in 1958.[57]

Specialized hobbyist publications such as *High Fidelity, Audiocraft, Hi-Fi Music & Review*, and *Audio Engineering* make up the bulk of my case studies, but I cast a broad net to include women's and shelter magazines (*Good Housekeeping* and *Better Homes and Gardens*), Black American periodicals (*Ebony* and *Jet*), and general readership publications (*Time*, *Life*, and *Redbook*). As media theorist David Morley observes, an "inherent danger" of using

[56] *N. W. Ayer and Sons Directory of Newspapers and Periodicals* (Philadelphia, 1945, 1950, 1955, 1959).

[57] Ibid.

primarily journalistic resources is the scholar's dependence on "the lenses of the same media which, at other points, are the object of … analysis."[58] This is to say that the bodies, behaviors, and beliefs on display in hi-fi magazines are representations of the values, aspirations, motivations, and actions of readers. One way to address this "danger" is through contextualization. Inspired by historian of technology Thomas P. Hughes, I take advantage of archival materials produced by the "networks of power" outside of popular print culture, such as trade journals, manufacture's manuals and white papers, patents, corporate publications (catalogs, internal documents, and engineering notebooks), government publications, and marketing research journals.[59]

Another strategy for navigating the constructed imaginary of a magazine is to consider the various perspectives that emerge in its pages, including those from advertisements, articles, editorials, letters to the editors, and reviews. Dianne Harris asserts that one of the many prevailing attributes of 1950s magazines was the constant and consistent repetition of ideas. She argues that this insistent reiteration "did not necessarily determine reader perspectives," but it did "continually persuade and reinforce" certain societal conventions and desires.[60] Harris draws on the work of influential literary critic, Richard Ohmann, who pointed to the capitalist motivations of publishers when he remarked that magazines financially benefitted from "an interest in the

[58] David Morley, *Home Territories: Media, Mobility, and Identity* (London: Routledge, 2000), 8.

[59] The term "networks of power" comes from Thomas P. Hughes's foundational study on the implementation of electrical grids in the United States and Europe. Hughes stresses that histories of technology are histories of systems that must consider the interconnect-ness of the "technical matters, scientific laws, economic principles, political forces, and social concerns" that shape technological systems. Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880–1930* (Baltimore, MD: The Johns Hopkins University Press, 1983), 1–17.

[60] Harris, *Little White Houses*, 64.

brand named commodities advertised there."[61] These motivations were physically reflected in the content distribution in *High Fidelity*, with roughly 50% of the printed space dedicated to advertising in each issue.[62] In specialty magazines like those for hi-fi, advertisements served a multitude of purposes: they oriented readers to aesthetic trends, updated tinkerers on technological advances, and familiarized new enthusiasts to hobby-specific jargon. Despite their stunning variety of designs and gimmicks, underpinning every hi-fi advertisement was the repeated message that a purchase would make the buyer feel "smart," "in control," "powerful," "musical," and "accomplished," and, by implication, manly.[63]

I claim that manufacturers or advertisers used specific imagery and rhetoric to appeal to the masculinity of buyers, and thus produced gendered desires and values. I draw these conclusions through close readings of primary sources and historical contextualization of masculine identity formations. I should make clear that these gendered tactics were strategically deployed with the help of consultants, psychologists, and experts in consumer behavior who specialized in motivational research and directed marketing. Motivational research, pioneered by psychologist Ernest Dichter, is the study of unconscious attitudes and preferences that draw consumers to certain products or brands. Beginning in the mid-1930s in Vienna, Dichter began to use methods informed by Freudian psychoanalysis, including surveys, interviews, and group

[61] Richard Ohmann, *Selling Culture: Magazines, Markets, and Class at the Turn of the Century* (New York: Verso, 1996), 174.

[62] For example, in July of 1959, 60 of the 114 pages were advertisements or contained advertisements. In July of 1955, the ratio was similar, with 54 of the 98 pages containing advertisements. It was standard practice to split pages with both content and advertisements into three columns, with one or two of those columns dedicated to the article. In those cases, I counted the advertisement space as a fraction (e.g., 1/3 advertisement, 2/3 content).

[63] Fisher Radio Corporation, Magazine Advertisement, *HiFi & Music Review*, March 1958, 7; H.H. Scott, Magazine Advertisement, *HiFi & Music Review*, March 1958, 9; Harmon Kardon Stereo, Magazine Advertisement, *High Fidelity*, January 1959, 83.

discussions (which he later called "focus groups"), to help companies attract and maintain certain kinds of buyers.[64] In one of his earliest consultations, Dichter wrote a 1939 motivational report for *Esquire Magazine* (a men's magazines),

> It is not our prime concern to find out how often the *Esquire* man buys a new hat for instance or how many radios he owns nor are we interested in any other statistical data…What we want here in this analysis is a more immediate understanding of the personality of the *Esquire* man in one special behavior: his purchases. Buying being one of the major activities in modern life and by the same token an activity which allowed to a very high degree the expression of individual differences. It goes by itself that the way one does his buying is very often representative for his whole personality. We could almost say: tell me how you buy and I will tell you who you are.[65]

While most firms in the 1930s were using quantitative data to develop advertising campaigns, Dichter argued that qualitative data could be used to pinpoint and manipulate the needs and wants of consumers. Dichter, who was Jewish, fled from Vienna to the United States in 1938 to escape further persecution (he had already been arrested, interrogated, and labeled as a "subversive" by the Nazis) and continued his work in motivational research, gaining consulting contracts with *Esquire Magazine*, Proctor and Gamble, and Chrysler Motors. By early mid-1940s, Dichter's methods had gained the attention of both popular media and the U.S. trade press and in 1946 he founded the Institute for Motivational Research (which I will refer to as the Institute).[66]

While at the Institute, Dichter worked with a variety of men's magazines and product lines to find the best ways to make products appeal to certain demographics. A 1958 study done

[64] Daniel Horowitz, "From Vienna to the United States and Back: Ernest Dichter and American Consumer Culture," in *Ernest Dichter and Motivation Research: New Perspectives on the Making of Post-War Consumer Culture*, eds. Stefan Scharzkopf and Rainer Gries (London: Palgrave Macmillan, 2010), 41.

[65] Ernest Dichter, *The Buying Habits of the Esquire-Magazine Reader*, 1939, 13, Ernest Dichter Papers, Hagley Museum and Library, Box 1, Folder 3A.

[66] Horowitz, "From Vienna to the United States and Back," 41–42.

by the Institute for *Esquire Magazine* reveals that hi-fi was an important part of marketing to white, middle-class men. The report for the study included several survey questions that included hi-fi among other juggernaut product types: automobiles, alcohol, and men's apparel. Of sixteen questions provided on the market research questionnaire, four included hi-fi in some capacity. One question in the survey asked that respondents look at a "drawing of a man looking at a hi-fi advertisement in *Esquire*. Which of the statements do you feel is the one which is more likely running through his mind?" Respondents were asked to select one of three statements, 1) "I'll wait until they get cheaper," 2) "Perhaps that's the one I should get for my living room," and 3) "They sure have made great progress." The results showed that readers viewed hi-fi ads in this men's magazine as informative. As the report interprets the results,

> It is possible to say from this that an ad in Esquire is like the editorial content, and carries much the same weight for the subscriber. Especially today, when there is so much resistance to advertising, this willing acceptance of Esquire as legitimate information is a very real advantage...In a very real sense it is felt that Esquire is composed of articles, stories, cartoons, and ads. Most respondents speak about editorial material and ads in the same breath, without making a basic separation between them."[67]

It is not too far a speculative leap, then, to say that if readers trusted the ads in *Esquire*—a general audience men's magazine—as a source of information, then the ads in specialist technical magazines like *Audio* and *High Fidelity* would be held in similar, and perhaps even higher, regard.

Throughout the late 1940s, 1950s, and early 1960s, major sound and audio companies such as Stromberg-Carlson, Allied Radio, and Altec-Lansing contracted the Institute to help them improve the impact of their art, design, and messaging. The content of the reports generated

[67] Dichter, *A Motivational Research Study of The New Esquire*, 64.

for these audio companies reveals that hi-fi advertisers and manufacturers consciously masculinized home sound technologies. For instance, a 1955 report notes that an Altec-Lansing advertisement is presumably targeting "those with a technical interest in hi-fi equipment."[68] It goes on to advise that,

> Some feeling should be injected into the ads which will give the engineer or technician who recommends the product the impression that by recommending it he is boosting his own social and professional status… The technical buyer…wants to feel that he is the one who is exercising skill and that the manufacturer is his partner, his assistant. The combination of this appeal, perhaps "A tribute to your skill" with limited technical data, would improve the ad effectiveness.[69]

The report establishes the gender of the audience with both professions ("engineer" and "technician") and pronouns (Institute reports did not generally use the formal masculine pronoun when analyzing campaigns directed at women), and then goes further to designate the purchase of Altec-Lansing hi-fi components as an expression of social status, professional knowledge, and technical skills.

Similarly, in an analysis of advertisements from a series of Stromberg-Carlson ads, a 1956 report stresses that the company must "tap a deeper lying and still more influential" need for a man to express a "*sense of mastery*."[70] Dichter instructed Stromberg-Carlson to show that their sound and communications technologies, "extend [the reader's] power…they emit his ego—give him a sense of having immense power at his finger tips."[71] Dichter was canny about

[68] Institute for Motivational Research, Inc., "Altec Lansing Ads," March 23, 1955, Ernest Dichter Papers, Hagley Museum and Library, Box 24, Folder 649E.

[69] Ibid.

[70] "Stromberg-Carlson Institutional Advertising—A Creative Analysis," Institute for Motivational Research, Inc., June 1956, 7, Hagley Museum and Library, Box 29, File 783E.

[71] Ibid.

how to communicate such a message, warning that this "personal motivation…must be handled with considerable care" because "few businessmen would be willing to acknowledge that they are purchasing expensive new equipment…in order to enhance their own sense of power."[72] The report suggests "relatively impersonal" language and provides an example: "Put yourself in a position to make those decisions quickly and wisely. Secure all the facts you need and put them in perspective by making maximum use of a system of electronic controls specifically designed by Stromberg-Carlson to meet your needs."[73] Following this example ad text, the report also notes that the "mastery appeal need not always be developed even as explicitly as this…It can be communicated symbolically, for example by an expression of pride and mastery on the face of a mature executive who is making use of Stromberg-Carlson controls."[74] This advice to subtly attract the attention of male readers is essential to the close readings and critiques I put forth in this dissertation because it shows an explicit and demonstrable effort on the part of magazine advertisers to use co-constructions of masculinity and technology to sell products.

I linger on Dichter and his motivational advertising methods because his psychological and sociological approach to consumer behavior—along with similar psychoanalytical work on market segmentation by contemporaries Pierre Martineau and Edward Bernays—was influential in 1950s United States print culture and inflected the media I examine in this dissertation.[75] The gendered content of hi-fi magazines was not simply an artifact of the subconscious holdings of

[72] Ibid., 8.

[73] Ibid., 8.

[74] Ibid., 9.

[75] Lawrence R. Samuel, *Freud on Madison Avenue: Motivation Research and Subliminal Advertising in America*, (Philadelphia: University of Pennsylvania Press, 2010), 61, 76, 142–48.

an artist or the bias of a misogynist editor, but rather represent a shrewd understanding of market dynamics. Dichter referred to magazines as a "lens" through which "kinds of orderliness are created out of the complex and bewildering chaos which the contemporary world calls 'reality,'" arguing that the challenge magazines faced was in getting its "readership to realize that its needs and the magazine's version are consonant."[76]

Following Dichter's claims, the men who purchased and read hi-fi magazines chose to engage with the constructions represented in those publications. With this important point, Dichter acknowledges the readers' role as co-creators of the imagery and rhetoric that aligned with their identities, desires, and ambitions. Because publishers sought to appeal to the widest possible body of readers, they entered a cultural feedback loop in which they reworked associations between masculinity and hi-fi as the demands of the customer base shifted and evolved. Hi-fi magazines thus reinscribed the connection between masculinity and hi-fi while simultaneously broadening the methods by which the two could be brought together.

Chapter Overview

Chapter 1 provides a history and explanatory outline of my concept of modular masculinity. As both an analytical method and a period-specific paradigm shift in technology design, modularity serves dual roles as an organizing concept for this project and novel theorization of historical conceptions of gender. I put modularity into practice in chapters 2, 3, and 4. In Chapter 2, I use advertisements, reviews, and articles about loudspeakers to shed light

[76] Ibid., 8.

on the midcentury shift in men's roles in the home, with a specific focus on suburbanization and domestic space. Chapter 3 delves into the history of and discourses around audio cables and plugs. I bring together patents, corporate histories, technical publications, and content from hi-fi and homemaking popular magazines to illustrate the ways advertisers and manufacturers aligned amateur hi-fi set building with professions in the emergent military-industrial complex (such as engineering and laboratory research). Chapter 4 focuses on the ways in which tonearms are ambiguously gendered in 1950s hi-fi discourses and did not fit neatly within midcentury constructions of masculinity. Within the framework of modular masculinity, cables, loudspeakers, tonearms, and other components come together in a fully-assembled hi-fi system, and operate both individually and together in a way that is informed by the buyer's self-image.

I chose these particular components because they gave me the opportunity to efficiently contextualize varying formations of masculinity and, in turn, demonstrate the mechanics of modular masculinity. They allow me to illustrate how masculinity and femininity were used together to theorize a technological component (in the tonearm chapter) as well as to probe historiographical narratives around domesticity and masculinity (in the loudspeaker chapter). The masculinization of technical skill is a well-tread topic in music studies, but I found cables to be an understudied musical object that also served as a useful analog for contextualizing the sprawling connections between the hi-fi, the consumer electronics industry, the demands of the early military-industrial complex. These components and their attendant discourses permitted me to explore a variety of historical narratives that informed 1950s formations of masculinity, as well as the ways they interact and interlock within the framework of modular masculinity.

I acknowledge that components that I do not address in this dissertation—such as tape machines and amplifiers—are also rich with interpretive potential. But I believe they would be

more fruitfully examined in a broader study that I will undertake in the future. Tape machines were already a fixture in most well-appointed hi-fi rigs, but the reliable and affordable Japanese models that became available in the late 1950s represent a transnational marketing breakthrough that would eventually prove to be a significant challenge to the dominance of U.S.-based manufacturers (and the masculinities they had cultivated around their products). Amplifiers were among the last hi-fi components to be transistorized and, due to their physical heft and association with signal strength, were often characterized as burly and rugged. In this way, amplifiers are the muscle of the hi-fi system, and provide an opportunity to highlight formations of masculinity that were found in 1950s adventure literature and film. Thus, tape machines and amplifiers will serve as ways to further demonstrate the many identity formations that figure into modular masculinity.

The process by which I selected the magazine advertisements and articles to highlight in my analyses varied from chapter to chapter but, due to the number of advertisements in each magazine issue, this work was not so much a matter of selection as much as it was *paring down.* For each case study, I gathered and grouped together materials with similar visuals and themes, then—in the interest of efficiency—chose to feature those which supported as many points of my arguments as possible. I sought to avoid "cherry-picking" by not looking for exceptional examples, but rather by casting a wide net, gathering as much relevant material as possible, looking for patterns, and then hunting down the historical contexts that formed those patterns. Through the contextualization methods I deploy in these case studies, I illuminate the process by which certain home music technologies became essentialized as masculine. In the next chapter, I introduce the framework I use to make sense of the Hi-Fi Man and the myriad of masculinities that hi-fi magazines deployed to create him.

Chapter 1: Modular Masculinity: The Architecture of the Hi-Fi Man

Before I began this dissertation project, I was reading through some Stereophile.com forum posts and ran across a quip that I could not shake. In a reflection on audiophiles and their sentimental attachments to certain brands, one commentor wrote: "I think that with all the choices in equipment and music out there, one's hi-fi rig is very individualistic and can tell a lot about them and who they are."[77] What would my Klipsch loudspeakers say about me? They had some of the best specifications and ratings within my budget, but there were several brands that I bypassed in favor of the trademark copper cones and brushed black steel of my preferred towers. I was certainly biased because I liked the reputation Paul Klipsch had as an engineer with a notoriously low tolerance for pseudo-scientific claims and jargon-laden advertising. Maybe I liked the warmth that the color of copper cones evoked, even though the material likely has no bearing on sound quality (indeed some find the sound of Klipsch to be too bright and harsh). Or perhaps I was attracted to the stark design of the marketing materials which, for me, made it feel as if I was making a smart choice by buying something without unnecessary frills. If I were asked by a fellow audiophile, I would probably cite the accessible price or flexibility within a home theater system as the reason for my choice but, in reality, my choice had far more to do with how I identified with the marketing materials and popular history of the brand.

[77] Comment written by DaveinSM in response to Herb Reichert, "Know Thyself: Audio Existentialism," *Stereophile.com*, 21 July 2014, https://www.stereophile.com/content/know-thyself-audio-existentialism, accessed 4 October 2022.

Although posed in a twenty-first century forum, this comment resonates with my work on historical hi-fi cultures: What exactly can a person's hi-fi rig tell you about them? With Ernest Dichter's work in midcentury motivational research in mind, I sought to make sense of the Hi-Fi Man and his relationship with his gear, and how that relationship was shaped by hi-fi media. My contribution to the growing body of work on gender and sound technologies is to peer into the cracks of carefully crafted marketing campaigns to forward conceptions of masculinity that are more inclusive, generous, and generative. Thus, I sought to devise a framework for understanding masculinity and hi-fi together. I call this framework "modular masculinity."

Modularity is an organizational system that has been used in home building, factory design, computer operating systems, and myriad of other complex structures. In a hi-fi system, each component is a module, so buyers can customize their set up by individually selecting a record player, amplifier, loudspeakers, and so on. These modules are designed to be interchangeable, so the hobbyist could easily switch out old speakers, try out a new tape machine, or make tweaks to their record player. Modularity permits personalization and thus the chance to build a system that is a reflection of oneself.

I conceived of modular masculinity with the idea that midcentury men were attracted to hi-fi because it gave them a sense of agency and allowed them to express many different identities at once. Modular masculinity rejects the homogenizing depiction of white, middle-class, midcentury masculinity as a simple monolith and uses object studies and print media (the very same sources that often seem homogenizing) to shed light on the many, independently operating aspects of the Hi-Fi Man. Modular masculinity makes sense of the many conflicting

messages, images, and symbols put forth in hi-fi media.[78] I deploy modularity as a tool for the analysis of gender and technological objects by examining a series of hi-fi components, their historical discourses, and the ways they come together as a part of a masculine identity-making project.

As I showed in my introduction to Ernest Dichter in the previous chapter, advertisers used psychosocial motivation to determine how to segment the market, that is, how to make certain products attractive to certain consumers. Lizabeth Cohen suggests that "marketplace segmentation…lent marketplace recognition to social and cultural divisions among Americans," and "accentuated differences among and within social groups."[79] The late-twentieth century tendency to aggressively categorize oneself and others within a taxonomy developed by marketing firms seeped into contemporary discourse around masculinity in the United States. Buyers experienced pressure to tie their identity to the products they purchased, but each marketing campaign coded their product with a slightly different social construction of gender depending on its features, affordances, and qualities. Thus, products like hi-fi gear were masculinized in a variety of ways and it is the nuances of those variations that I seek to contextualize. The gender constructions that permeate hi-fi discourse are multi-dimensional and, as my characterization of the Hi-Fi Man shows, rife with contradictions and tensions. For this reason, I develop modular masculinity as a framework for navigating a multivalent understanding of masculinity.

[78] Jaji, *Africa in Stereo*, 121, 116–22.

[79] Cohen*, A Consumers' Republic*, 309–10

In what follows, I define and contextualize modularity as it relates to hi-fi technologies, the U.S. midcentury and masculinity. I first provide a basic explanation of modularity and its technological relevancy to hi-fi culture. I then consider the history of modularity as a design concept, as well as its prevalence in U.S. midcentury popular culture and hobbyist electronics. I theorize modular masculinity as an analytical approach for understanding how and why men engaged with audio technologies. I close the chapter with a discussion the limits of this framework, particularly in regards to the examination of race and hi-fi culture. The three case studies that constitute the body of this dissertation each investigate one aspect of masculine identity in the 1950s, but this explanation of modularity provides the architecture that undergirds the case studies.

What is Modularity?

Modularity is the technology and design concept that brings hi-fi into the hands and hearts of home audio enthusiasts. Publications like *High Fidelity* and *Hi-Fi Music & Review* catered to an audience of readers that built home audio systems with parts that best suited their listening practices, spaces, and tastes.[80] Hi-fi builders had the chance to choose among a multitude of styles, brands, and configurations to find gear that fit their space, budget, and listening needs. After assembling these modules, users could continue to replace, repair, add, and upgrade their system. A hi-fi rig could range in complexity from a simple turntable-amplifier-

[80] *HiFi & Music Review* started in February 1958 and changed its name to *HiFi Review* in January 1959, *HiFi/Stereo Review* 1961, and *Stereo Review* in 1968. These are the same magazine with the same editorial teams, but for the sake of accuracy, I will cite the publication by different names based on publication year. All audio magazine texts and images were accessed via the digital archive at www.worldradiohistory.com, unless otherwise stated.

receiver-loudspeaker setup to full-house, multi-speaker installation controlled with wired remote controllers.

Modularity as a design principle is applied to hi-fi in a rather different fashion than it is to the construction of a house or a piece of furniture. Modular bookshelves have components that are prefabricated and identical to one another; this differs from something like a hi-fi receiver, which is a complex technology in its own right. Hi-fi components are integrated technologies that fit into a larger modular system—a characteristic that is common among modular consumer technologies. DIY hi-fi kits popularized by companies like Heathkit did enable audiophiles to assemble complex devices like amplifiers and tuners, but the building experience was curated with detailed instructions and specially crafted parts that were not always interchangeable.[81] While hi-fi began as a hobby exclusive to engineers and experts, it became commercially viable because of a certain degree of "black boxing"—or hiding of some technical functions from consumers. A hi-fi system, then, is modular *up to a point*. This is an important feature of modularity because it empowered the hobbyist to research device features but did not require professional-level technical knowledge.

The modules of a modular system are self-contained devices with distinctive functions. A record player, for instance, picks up the sound of a record and sends it as an electrical signal to the rest of the hi-fi system. With my current home system, I can purchase almost any kind of record player that has an RCA stereo output and be confident that it will be compatible with the rest of my rig. Among the most impressive technological feats on display in modular systems is

[81] To clarify, electronic components like vacuum tubes and phono plug ports were often from third party suppliers and were interchangeable, but the cases and boards to which everything was soldered were proprietary and custom built for the kit.

that every element is entirely compartmentalized and specialized, and yet widely compatible. A component affects the sound signal as it flows through it but it does not affect the function of other components. In an integrated machine, like a mechanical clock, the movement of a gear directly impacts the movements of the rest of the components of the clock. If that gear malfunctions, it affects the function of the rest of the components in the watch. If a component malfunctions in a hi-fi system it may change the quality of the sound (or stop it all together), but it does not affect the function other components. The components are compartmentalized, with each performing its discreet role. A module cannot hear the other modules; it can only hear the signal.

The purpose of modular organization is to streamline, simplify, and make sense of complicated processes and ideas. As historian of technology, Andrew L. Russell, details, modularity is apparent in a nascent form in the 1790s United States, when parts standardization allowed weapons manufacturers to quickly produce guns that used interchangeable and universal parts.[82] This also simplified repair and maintenance, as it was more efficient to remove and replace a broken barrel than it was to purchase an entirely new, handmade gun. Modularity as a design concept emerged in the 1930s when it was theorized by civil engineer Albert Farwell Bemis as a unit of standardization for architectural building components. Within a decade of his proposal home builders and architects applied Bemis's idea to the prefabrication and manufacturing of architectural elements and home furniture components. [83]

[82] Andrew L. Russell, "Modularity: An Interdisciplinary History of an Ordering Concept," *Information and Culture* 47, no. 3 (2012): 257–59.

[83] Walter Gropius, quoted Gilbert Herbert, *The Dream of the Factory-Made House: Walter Gropius and Korad Wachsmann* (Cambridge, MA: The MIT Press, 1984), 318.

During the 1940s, collaboration between the United States Navy, National Bureau for Standards, and consumer electronics industry would help modularity would leap from the shelter trades into sound technology manufacturing. In the final months of World War II, the U.S. Navy tasked a research team at the National Bureau for Standards with developing new strategies for speeding up the manufacture of electronic parts. "Project Tinkertoy," as it came to be called, was the first application of modular building concepts to electronics manufacturing. As a 1954 promotional video describes, "Modern warfare has developed an insatiable appetite for electronics. With the Korean War came shortages: shortages at electronic production plants. Unmistakable evidence that we must radically improve production methods to assure the future security of our country."[84] The future of warfare technology depended on the fast, cost-effective, and resource-friendly manufacture of complex electronics. The bottleneck in electronics manufacturing was that electrical components such as resistors, capacitors, and vacuum tube sockets (transistors would not enter the market in full force until 1954) had to be hand-wired and soldered together by technicians. Project Tinkertoy developed a standardized interface for electrical components, which allowed for automated manufacturing, testing, and assembly of circuits. The modular products of Project Tinkertoy were declassified in 1954 and touted as a major advancement in the field of electronics in promotional videos, dissertations, and specialized hobbyist magazines (Figure 6).

Modular electronic design had an early relationship with sound technologies, as the first devices developed for public demonstration were portable radios and record players (Figure 7).[85]

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[84] *Project Tinkertoy*, film produced ca. 1954 by the United States Navy, made available by Periscope Film LLC, https://www.youtube.com/watch?v=jnoY9Qk6cBg, accessed 15 December 2022.

[85] Component audio technologies existed in a rudimentary form before World War II, as users could connect phonographs to radios with the patented "phono" RCA plug to make sure of the radio's superior amplification and

Complete with clear plastic sides to show off the modular circuits, these models were not (to my knowledge) made available for commercial sale, but were used in presentations for government officials, industry leaders, and media outlets. As familiar technologies with relatively simple electrical circuits, radios and record players were ideal devices to show that modular electronics were reliable, and compact. Indeed, the devices were "so rugged that a radio could be flung against a wall and still play."[86]

built-in speakers. Earlier yet, phonograph owners in the late 1920s could purchase electric proto-loudspeakers that were slightly louder than acoustic loudspeakers and could be placed a small distance away from the phonograph unit. A good example of such speakers can be found in a Rola Company advertisement for their new line of "cone reproducers." *Talking Machine World*, January 1928, 55.

[86] "1953: Pioneering Modular Electronics," *National Institute for Standards and Technology*, 100th Anniversary Website, http://www.100.nist.gov/ph_post-war.htm, accessed with the Internet Archive 3 October 2022.

PROJECT TINKERTOY

CIRCUIT

Modular units, machine made and automatically assembled, may revolutionize electronics.

Basic concept of the new method of fabrication and assembly. See text for details.

MODULES

WAFERS

"PROJECT TINKERTOY" — the revolutionary modular design and mechanized production of electronic parts—may well comprise the building blocks of the electronic world of the future.

Developed by the National Bureau of Standards, Washington, D. C., this new approach to electronic fabrication involves the "modular design concept" of mounting adhesive carbon resistors, printed circuits, and other miniaturized components on standard, uniform steatite (ceramic) wafers. The wafers are then stacked together, like building blocks, to form a "module." This module will perform all the functions of one or more electronic stages. It is a standardized, interchangeable subassembly with all the requirements of an electronic circuit, plus the factors of ruggedness, reliability, and compactness.

Individual modules may be combined to form major electronic subassemblies.

Until recently, the modules were assembled by hand. In fact, several private industrial plants are experimenting with this method. But recently, scientists at the National Bureau of Standards have enhanced this approach to electronic manufacture by setting up a completely mechanized production line not only for making the small parts and the wafers, but for putting them together to form the modules. A machine has been developed which stamps out 2800 wafers every hour. The wafers then receive the prefabricated parts automatically. Resistors, capacitors, etc.,

Figure 6. Color feature celebrating modularity and Project Tinkertoy, with graphic showing different types wafer modules. "Project Tinkertoy," *Popular Electronics*, May 1955, 40.

Figure 7. Portable record player (left), front of radio (top-right), and back of radio (bottom-right) made with a clear case to display the modular electronics developed in Project Tinkertory. National Institute of Standards and Technology, U.S. Department of Commerce, image #17431, https://www.nist.gov/image-17431, accessed 28 September 2022.

In the midcentury worlds of home design, electronics, and—in the 1960s—computing, terms like "module," "component," and "prefabrication" became conceptual buzzwords that evoked modernity, efficiency, customizability, and cutting-edge technological progress. In 1956—only two years after Project Tinkertoy was declassified—a *Popular Electronics* advertisement for a modular radio-building kit read, "You have read about the Navy's 'Project Tinkertoy.' You have heard about 'Module' construction in military electronic applications. This remarkable new pre-fab technique is now available to you—for the first time—in the first civilian product to feature *both*: PRINTED CIRCUITRY and MODULAR COMPONENTS. Here is an exciting opportunity to work with one of the latest developments in modern

electronics and learn about the new, fabulous module technique."[87] A similarly breathless 1961 ad for microphones in *Audio Magazine* boasts that it features: "The years-ahead concept of modular flexibility" meaning that "you buy only the features you actually need—and need never compromise on quality just to meet a price. That's *true* modular flexibility, and you get it *only* from University."[88] A 1958 Ampex advertisement from *High Fidelity* brought together the aesthetic and technical dimensions of modularity:

> Though any of the individual units [tape-machine, amplifier, and speaker] can be incorporated smoothly into your own system, the combination of the three provides a level of performance not possible to achieve by any other means...The Ampex A121-SC Modular home music system was designed to satisfy not only the needs of the audio perfectionist, but also the increasing desire for a system that is as pleasing to the eyes as it is to the ears.[89]

Modularity, one of the most influential design concepts of the midcentury, carried a distinct weight in audio discourses and became increasingly familiar during the 1950s to readers of specialist magazines like *High Fidelity*, *Audio*, and *HiFi Review*.

[87] *Popular Electronics*, October 1956, 91. Printed circuits are devices that, instead of wires connecting each component, have a conductive metal printed onto a circuit board that connects embedded components. Printed circuits were also developed amid World War II and would become an important step toward the mass-production, miniaturization, and integration of consumer electronics.

[88] University Speakers, Magazine Advertisement, Audio, February 1961, 67.

[89] Ampex, *High Fidelity*, Magazine Advertisement, February 1958, 14. It is worth clarifying that hi-fi companies and hobbyists were manufacturing and buying modular sound systems before the concept of modularity was widely applied to electronics. "Component audio" was a more common term in the late 1940s and 1950s, before "modularity" gained buzzword status. In home audio, computing, software design, and anywhere else modularity has been deployed as an organizing concept, the terms "component" and "module" tend to be either interchangeable or designated as different strata within a system. For example, in some contemporary software coding languages, a module is comprised of components, which are in turn comprised of smaller operations called "objects." In others, components are comprised of modules. To confuse things further, a late 1950s or early 1960s hi-fi magazine article might refer to a small electronic component (e.g. a resistor), that combine to make an electronic module (a transmitter), which is a part of an audio component (a radio), which is a part of a hi-fi system.

Modularity as a Technology

Like science and technology historian Andrew Russell, I position modularity as a familiar and powerful "mode of knowledge production and organization" among the mostly male readers of hi-fi hobbyist magazines.[90] While Russell outlines the interdisciplinary history of modularity, media studies scholar, Tara McPherson applies modularity to social, racial, and academic shifts in the U.S. midcentury, arguing that, "technological formations are deeply bound up with our racial formations, and that each undergo profound changes at midcentury."[91] She clarifies that she is not proposing a causal relationship between technology and U.S. race relations, but rather that "both represent a move toward modular knowledges, knowledges increasingly prevalent in the second half of the twentieth century."[92] Thinking on a more granular scale, economist Richard Langlois argues that individuals "modularize themselves" in that they "may harbor multiple identities" and "choose to emphasize different identities in different circumstances."[93] Like marketing researcher Ernst Dichter had argued 80 years before, companies that depend on a customer's identification with the cultural cachet of a product —such as those in the fashion, luxury, and hobbyist industries—must consider the ways consumers might compartmentalize parts of their identities when shopping for particular products. In all of its applications—from factory design to cognition studies—modularity is a tool to organize and understand complex systems.

[90] Russell, "Modularity," 260.

[91] Tara McPherson, "U.S. Operating Systems at Mid-Century: The Intertwining of Race and UNIX," in *Race After the Internet*, eds. Lisa Nakamura and Peter A. Chow-White (New York: Routledge, 2012), 33.

[92] Ibid.

[93] Ibid., 1, 10.

It is reductive to only think of modular audio in strictly capitalist terms. Hi-fi was also a site of creativity and musicality. For those who did not receive musical training, or who did not permit themselves the joys of amateur music making because it was still stigmatized as too effeminate, exploring the nuances of sound with new combinations of gear was an expressive, musical act. Underpinning most technical jargon-laden advertisements and advice columns was a fascination with beautiful sound. It important to remember that it was only 1947 when Harry F. Olson, lead acoustical engineer at RCA Laboratories, demonstrated that listeners preferred full-frequency reproduced sound. Before 1947, recording studios and radio broadcast stations filtered everything over 5000 Hz because of a long-standing belief that full-frequency reproduced sound was distracting and offensive.[94] Men entering adulthood and middle-age in the 1950s went from the crackle of the 1930s family radio and the limited-frequencies of the 1940s phonograph, to the wonder of full-frequency, multi-channel, entirely modular home audio. As the case studies in this dissertation will show, many audiophiles conceptualized their relationship with their hi-fi set with the same reverence, passion, and desire for mastery as an instrumentalist might for their piano.

Modular Masculinity

Modular masculinity is a framework for analyzing the social, political, and economic forces that shaped understandings of the ways men engaged with home audio technologies. With modular masculinity, I challenge historical binaries, essentialisms, and myths while working

[94] Harry F. Olson, "Frequency Range Preference for Speech and Music," *The Journal of the Acoustical Society of America* 19, no. 4 (1947): 549–55.

within a profoundly gender normative media world. As it is operationalized in this dissertation, a modular approach allows me to extricate and take a deep dive into one component of midcentury masculinity at a time while, on a higher level, accounting for the role of that component in an expansive (and expanding) gender architecture. A modular hi-fi system cannot make sound without tonearms, cables, or loudspeakers, but those components operate completely independently of one another. The case studies that follow are modules that can also be reordered or read out of the context of the dissertation, but together form an argument that does different work than its constituent parts. Each study delves into a specific formation of masculinity and, when experienced as whole, they interlock to show that a Hi-Fi Man might embody a number of masculine identities. Modular masculinity operates under the assumption that every identity is complex and influenced by a network of intertwined forces.

The development of modules is not possible without first establishing an architecture that determines the goals and rules of the system. While one of my goals is to provide a generous and generative examination of masculinity, I always proceed with the knowledge that hegemonic masculinity is an oppressive and power-seeking force. While gender theorists like Eric Anderson, Mark McCormack, Tristan Bridges, and C.J. Pascoe have explored the ways in which contemporary white, heterosexual men challenge hegemonic masculinities by drawing on queer, feminine, and Black identities, they also show that these "hybrid" or "inclusive" masculinities do little to challenge gender and racial inequalities.[95] Indeed, Bridges and Pascoe argue that, in

[95] Eric Anderson and Mark McCormack, "Inclusive Masculinity Theory: Overview, Reflection, and Refinement," *Journal of Gender Studies* 27, no.5 (2018): 547–56; Tristan Bridges and C.J. Pascoe, "Hybrid Masculinities: New Directions in the Sociology of Men and Masculinities," *Sociology Compass* 8, no. 3 (2014): 246–58. R.W. Connell and other have also productively revisited the concept of hegemonic masculinity several times since it was first popularized in the 1980s. See James W. Messerschmidt, "The Salience of Hegemonic Masculinity," *Men and Masculinities* 22, no. 1 (2018): 88; Demetrakis Z. Demetriou, "Connell's Concept of Hegemonic Masculinity: A

many cases, this "bits and pieces" approach to the expression of gender identity can conceal and deepen inequalities.[96] Bridges and Pascoe offer the cautionary note that pluralist approaches to masculinities studies risk losing sight of oppressive patriarchal structures. Even when I encounter images, phrases, or ideas that challenge the masculinist identity making project in hi-fi discourse, I maintain sight of the fact that white, hegemonic masculinities remain a site of power and oppression.[97] For example, I acknowledge the evolution of men's roles in homemaking in the 1950s, but use loudspeaker advertising to show that men drew on historically masculine trades—such as carpentry—to maintain a sense of ruggedness and independence in the domestic sphere. In this case, the popular media that encouraged men to be involved with keeping the home still sought to maintain a gendered social stratification. They were not, in turn, empowering women to explore roles in masculinized realms. The architecture undergirding modular masculinity creates room for the depth of inquiry required to see the intricate gears of hi-fi culture without losing sight of the power structures that drive them.

Hi-fi magazines had relatively small distribution numbers (an order of magnitude smaller than major publications like *Redbook* or *Esquire*), and appealed to a specialized audience.[98] The readers were presumed to be a base of professional, college-educated, middle-class, middle-aged white men. One might suspect that the marketing for this subscriber population would contain

Critique," *Theory and Society* 30 (2001): 343–47; R. W. Connell and James W. Messerschmidt, "Hegemonic Masculinity: Rethinking the Concept," *Gender & Society* 19 (2005): 849–57.

[96] Bridges and Pascoe, "Hybrid Masculinities," 247. The phrase "bits and pieces" quote is Demetriou, "Connell's Concept of Masculinity," 2001, 350.

[97] Connell and Messerschmidt, "Hegemonic Masculinity," 838–40.

[98] In 1959, *High Fidelity* magazine had a reported a distribution of 91,227 issues, *Hi-Fi Music & review* reported 92,500, and *Audio* reported 24,104 issues. In comparison, *Redbook* reported and *Esquire* both reported over 1 million subscribers in 1959.

similarly homogenous representations of masculinity, but I have found it to be quite the contrary. Hi-Fi Men are proud fathers teaching their sons to wire crossover networks, husbands wooing wives with fashionable speaker shelves, professional scientists seeking creative outlets, musicians soldering plugs, and deskbound businessmen wielding hammers and hacksaws. A modular framework allows the disparate masculine identities represented in hi-fi magazines to exist together without being at odds with one another.

Magazine publishers and advertisers were aware of the role media played in consumer identity-building projects. Ernest Dichter argued that magazines provided a "lens" through which their reader chose to see the world. These publications provided a controlled environment in which readers could "rehearse" relationships and purchases. As Dichter describes, rehearsal of purchase is when, "the consumer not only looks at, or takes notice of the ad, but mentally buys or uses the product. 'Suppose I buy this Chrysler,' he may think to himself, or simply sort of own it for a minute, unconsciously, without even formulating the thought in his conscious mind."[99] In this process, the reader asks, "Who buys this product? Am I the type of person who buys it? What will it say about me if I buy it?" Hi-fi buyers, then, asked themselves these questions with every component they purchased. A system that might have a dozen parts (or more!) is a physical symbol of the influence of hi-fi media on the decisions, aspirations, and limitations of the Hi-Fi Man.

Advertising took advantage of such associations, especially in a cultural moment in which consumption of mass-produced goods was an act of identity formation.[100] Modular hi-fi

[99] Dichter, *A Motivational Research Study of The New Esquire*, 68.

[100] Lizabeth Cohen coined the term, "consumers' republic," which she describes as the phenomenon that distinguished United States post-war consumption and materiality as act of citizenship and patriotism that was

set ups generated an infinite number of technological possibilities for consumers and brought the Do-It-Yourself dynamic to the fore of hi-fi culture. Advertisers capitalized on modularity and used the variety of components to appeal to a variety of masculine stereotypes. In the first issue of *High Fidelity*, editor Robert D. Newcomb claimed that, "Loyalty to a particular type and make of amplifier is as much a matter of deep-seated conviction among audio-philes as that of a baseball fan for his chosen team, or a fisherman to his favorite rod."[101] For Newcomb, an audio component was a reflection of self, place, history, and community and the culmination of years of the experience. A sound system comprised of differently masculinized components thus served as a symbol of the multitude of masculinities that constituted the midcentury hi-fi consumer. [102]

In this way, the hi-fi set and its constituent parts represent the masculinized identity of their builder. Of significance to this study is the tendency for manufacturers, editors, contributors, and advertisers to associate certain technological devices and affordances with certain masculine characteristics. Vital to this framework is that each case study of this dissertation—and the masculinities I describe in them—is a module, that is, a small, interchangeable part of a larger architecture. In this way I acknowledge, compartmentalize, and can maneuver within the many demands and concerns of midcentury men.

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encouraged by both public policy and market forces. Cohen, *A Consumers'* Republic, 75. Leerom Medovoi describes the ways in which post-war anti-communist sentiment combined with Fordism to create a dichotomous culture of mass-consumer conformity and voracious individualism. Leerom Medovoi, *Rebels: Youth and the Cold War Origins of Identity* (Durham, NC: Duke University Press, 2005), 95.

[101] Robert D. Newcomb, "What to Look for When You Buy an Audio Amplifier," *High Fidelity*, Summer 1951, 40.

[102] Indexing of self through sound technologies is not specific to hi-fi components. As Judith Peraino argues in her work on cassette mixtapes, audio technologies uniquely afford curations of identity that challenge "unified subjectivities." Judith Peraino, "I'll Be Your Mixtape: Lou Reed, Andy Warhol, and the Queer Intimacies of Cassettes," *The Journal of Musicology* 36, no. 4 (2019): 432.

Black American Hi-Fi Culture and the Limitations of Modular Masculinity

A limit to the component-based structure of this dissertation and to modular masculinity writ large is that modular gear tends to be advertised only in the overwhelmingly white specialty hobbyist magazines. There were hi-fi ads and discussions of audio gear in 1950s Black American publications such as *Ebony* and *The Chicago Defender*. However, there was not extensive discussion of specific components—like loudspeakers—and critical engagement with these important resources requires a different analytical approach than that which I deploy in this dissertation.

Very few Black audiophiles were depicted in hobbyist magazines but Black American publications indicate a thriving interest in hi-fi music and gear. In her history of midcentury suburban development, Dianne Harris directly tackles issues of consumerism, whiteness, and representations of race in print media. She shows that, while flagrantly racist images and terms were not common in the images and rhetoric of 1950s, "women's and shelter magazines" such as *House Beautiful* and *Better Homes and Gardens* carried implicit and explicit messages about "who might rightfully consider the privilege of homeownership."[103] In this view, middle-class whiteness is defined *against* perceived racial differences. Magazines signaled whiteness with evocations cleanliness, order, privacy, solitude, and quiet. These representations "cultivated and substantiated" specific ideas about race and class and associated whiteness "with the ability to purchase commodities and the promises they embody of affluence, ease, safety, and sanitation."[104]

[103] Harris, *Little White Houses*, 59.

[104] Ibid., 60, 161.

While hobbyist magazines like *High Fidelity* almost never discussed or depicted Black audiophiles, Black writers and magazine editors showed a lively interest in hi-fi home audio. Advertisements for home audio products run in the 1959 November and December issues of *Ebony*—among the longest-running Black general readership magazines in the United States—exemplify this broad-ranging trend, blazing in color across full-page spreads. *Ebony's* content is generally upbeat and comparable to the tone and content of contemporaries *Life* and *Redbook.* While not targeted specifically to women, the overwhelming number of advertisements for women's hair, skin, and clothing products makes clear that women made up an important part of the readership.

The assumed gender of readership is important to the ways hi-fi manufacturers marketed their products. Popular magazines, like *Ebony* and *Redbook*, exclusively feature console audio units, that is, devices in which all components—turntable, speakers, amplifiers, etc.—are assembled neatly into one large piece of furniture. The players often served as stereo and storage, as they frequently featured cabinets for a record collection. Although marketed as "high fidelity"—with the price tag to match—consoles were valued primarily for their ease-of-use. Sound quality of consoles varied and "hi-fi" was more of a catch-all term for any type of home audio stereo unit. I linger on these details because the ads for consoles in *Ebony* are admittedly not the same as those in hi-fi hobbyist magazines, nor are the customers who bought them. What is interesting about the 1959 issues of *Ebony* is the sheer number of console advertisements. For comparison, *Better Homes and Gardens* typically ran one or two console ads per issue, while *Redbook* typically ran one and, on occasion, none. The December 1959 issue of *Ebony*, on the other hand, ran eight console ads and the November issue ran seven.

Ebony magazine is also the rare general readership magazine to have run an advertisement for DIY stereo equipment. In both November and December of 1959, Heathkit ran a small, black-and-white spot: "Build your own Stereo Hi-Fi! It's easy, it's fun…High fidelity STEREO sound can be yours at 50% or more. Heathkit step-by-step instructions, written especially for beginners, assure swift and successful assembly" (Figure 8).[105] Heathkit bought substantial advertising space in hi-fi hobbyist magazines, often two or more pages for their various stereo kits. Their ads typically show fathers assembling products with children and wives or listening to the stereo together with friends and family. The *Ebony* Heathkit ad, however, shows a white woman—specifically blonde bombshell actress Venetia Stevenson—working on the kit on her own, with the wires, electronic components, and soldering iron scattered around her. Holding a pencil to her manual, she smiles as she assembles her stereo kit alone. An illustration below the photo shows another white woman kneeling with her ear next to the stereo speaker and cradling a record sleeve, with other sleeves piled at her feet.

[105] Heath Company, Magazine Advertisement, *Ebony*, November 1959, 182.

Figure 8. Heathkit Company, Magazine Advertisement, *Ebony*, November 1959, 182.

While Heathkit does occasionally feature women in some of their other ads, it is rare to see a woman working on her kit alone. More typically, she is working next to her husband or grinning in the background as he flaunts his handiwork. The way the language of the copy emphasizes the ease-of-assembly might be construed as implying that the kit is "so easy a woman can do it," but the rhetoric is not all that far from that used in the audio hobbyist

magazines. With the company's focus on education and accessibility, much of their copy reassures buyers that their instructions are clear, concise, and easy-to-follow.

I can only speculate as to why Heathkit chose to use a photo of a white model in a Black magazine: the choice might have been a money-saving measure because whiteness was unmarked and a white woman was assumed to be a suitable stand-in for all women. I have not yet located evidence supporting any firm claims about the race of models for hi-fi ads, but other advertisers with large budgets sometimes did two photoshoots: one with black models and one with white models. Examples of this includes Ipana Toothpaste and PepsiCo, who, in December of 1959, ran advertisements in *Ebony* and *Redbook* with identical copy, but with black models in one and white models in the other. Chicago Metropolitan Mutual Assurance Company ran an illustration of a white couple in *Redbook* and, in *Ebony,* the exact same illustration with the couple shaded with darker skin.[106] Other advertisers, such as Hammond Organ and Heathkit, did not change their models in any way, and simply ran ads with white subjects.[107]

In other types of Black publications, like newspapers, hi-fi is so ubiquitous that it is mentioned in everything from features of local businesses to milk advertisements. In the *Chicago Defender*, for example, hi-fi emerges frequently as a familiar household hobby enjoyed by Black families. A PET Milk advertisement from 1958 features the bright and attractive Mattison family and establishes their credentials as smart consumers by pointing to Mr. Mattison's job as a Washington D.C. "club manager and food connoisseur." The ad takes care to mention that "All of the Mattisons are music enthusiasts. Joel built the family hi-fi set himself, wiring speakers into

[106] Chicago Metropolitan Mutual Assurance Company, Magazine Advertisement, *Ebony*, November 1959, 18.

[107] Hammond Organ, Magazine Advertisement, *Ebony*, November 1959, 13.

several parts of the house. He also built a small hi-fi set for the children."[108] In this unlikely alignment between evaporated milk and home audio, the advertisement uses hi-fi to elevate the image of the family by drawing attention to Mr. Mattison's technological prowess and facilitation of family musical consumption. Even his daughters, aged 2 and 5, could participate in this activity by operating their own little set (Figure 9).

In a longer article run in the *National Edition* of the *Defender* features Black electronic engineer and owner of a high-fidelity dealership, Jerome E. Morgan, and the custom installation that he designed for his customer, Truman K. Gibson.[109] A photograph that accompanies the article depicts the multi-component sound and television installation nestled into shelving built specifically for Gibson's home (Figure 10). A second photograph shows Gibson's daughter, Karen, smiling and putting a record on the record player and highlighting the title of the article: "Music for Everyone at the Same Time." The article portrays two middle-class Black men, Gibson and Morgan, who have together designed a system that is technologically complex enough to bring high fidelity sound to every room in the house, but that is also attractive and simple enough to fit into the everyday rhythms of the domestic space.

[108] PET Evaporated Milk, Newspaper Advertisement, *The Chicago Defender (National Edition)*, May 24, 1958.

[109] Anonymous, "Hi-Fi Opens a New World of Music: Music for Everyone…At Same Time," *The Chicago Defender (National Edition)*, June 12, 1954, 17.

All of the Mattisons are music enthusiasts. Joel built the family hi-fi set himself, wiring speakers into several parts of the house. He also built a small hi-fi set for the children.

Figure 9. PET Milk advertisement featuring the Mattison family with their hi-fi set. *The Chicago Defender*, June 12, 1954, 7.

Hi-Fi Opens New World Of Music

A vast new world of music and listening pleasure can be brought into every home by the simple installation of high-fidelity equipment.

There is as much difference in the quality of music through the ordinary radio reception and that received over high-fidelity equipment as there is between riding in a Model T Ford and a 1954 Cadillac.

This is the opinion of Jerome E. Morgan widely known radio, television and electronic engineer and designer.

Morgan is head of "MARCO" (Midland Appliance & Radio Corporation) 4643 South Cottage Grove ave., which has made an outstanding reputation in the radio-television servicing field, and is in the front rank of color television and high-fidelity equipment.

Morgan makes frequent demonstrations of the difference between the music received over the ordinary radio and high-fidelity equipment. As Truman Gibson, jr., says, "The difference is amazing."

In explaining high-fidelity recently to a group that inspected Marco's workshop and assembly room, Morgan emphasized that a high fidelity installation can be made for those who have but little money to spend as well as for those in search of expensive equipment.

CUSTOM DELUXE INSTALLATION designed by Jerome E. Morgan and installed by Marco shows unit from which music is piped to Hi Fi speakers into the living room, bedrooms, kitchen and baths. Any of the five instruments can be directly switched into individual rooms. . . . AM radio, FM radio, TV, Record-Changer, Tape-Recorded. When desired three different programs can be piped into three different sections of the apartment simultaneously. A separate program for the den, a separate program for the living room and a separate program for the bedrooms. Photo left: A 24-inch custom television set with Hi Fi record changer, record compartment, FM and AM tuner, concertone tape recorder, Hi Fi Amplifier and control panel. At right: Truman K. Gibson jr., and daughter, Karen, enjoy deluxe unit. Note two loud speakers.

Music For Everyone ...At Same Time

Figure 10. Newspaper article featuring Truman K. Gibson and his daughter enjoying their custom-built sound system. *The Chicago Defender*, May 24, 1958, 4.

On the surface, the language, images, and descriptions of Black men's engagement with hi-fi bears many similarities to the entirely white depictions in hi-fi hobbyist and women's magazines. The notable difference is the emphasis on the career achievements of the Black audiophiles featured in the advertisements and articles. The PET milk advertisement, for example, takes care to mention Mattison's career running one of the most exclusive clubs in Washington D.C. and couches his musical expertise in the connoisseurship required for his high-status job. Similarly, the description of Gibson's built-in installation celebrates Morgan's success in the electronics industry and serves as a thinly-veiled marketing opportunity for Morgan's electronics business, MARCO (Midland Appliance & Radio Corporation). Shortly after the author provides the address for his storefront and they also include the endorsement that, "[MARCO] has made an outstanding reputation in the radio-television servicing field, and in the front rank of color television and high-fidelity equipment."[110] Just as hi-fi advertisements capitalized on middle-class white men's aspirations for class uplift, advertisements in *Ebony* and *The Chicago Defender* participate in a similar trend by using Black men's professional and financial triumphs to establish their musical and technological authority.

A notable exception to the exclusion of Black hobbyist voices in hi-fi magazines is Ralph Ellison's essay, "Living with Music," first published in December 1955 in *High Fidelity.*[111] Published only two years after his novel *Invisible Man* received the U.S. National Book Award, "Living with Music" lingered on the productive tensions that form when walls (real and

[110] Ibid.

[111] Ralph Ellison, "Living with Music," *High Fidelity*, December 1955, 60–2, 128, 130, 132. "Living with Music" was the name of the *High Fidelity* essay series and several other guest contributors to the magazine published articles with the same title. Ellison also kept the title when he republished the essay in his collection, *Shadow and Act* in 1964. My analysis of "Living with Music" benefits greatly from Alexander Weheliye's 2005 study, Alexander Weheliye, *Phonographies* (Durham, NC: Duke University Press, 2005), 112–23.

imagined) cannot fully prevent sound from coming through. He drew out several binaries—acoustic and amplified, jazz and western classical, competition and collaboration, past and present—to show that the power of sound is most apparent when it permeates walls and forces reckoning between seemingly opposed subjects. He framed his essay with an autobiographical reflection on living in a small urban apartment, surrounded by the noises of the jukebox of the bar next door, the bar clientele noisily loitering at all hours, the din of a neighbor's phonograph, and—most importantly to the essay—the warbling of an amateur singer who lived on the floor above him.[112]

In the course of the essay, Ellison discovered that he could drown out the vocalist's rehearsals with the "new electronic world" of high fidelity. In the construction of his sonic refuge, Ellison became swept up in the gadgetry and pursuit of audio fidelity. Evoking the crystal radio kits of his childhood, Ellison breathlessly recounted the excitement of purchasing, assembling, and upgrading his home audio system in his tiny apartment.

> I heard David Sarser's and Mel Sprinkle's Musician's Amplifier, took a look at its schematic and, recalling a boyhood acquaintance with such matters, decided that I could build one. I did, several times before it measured within specifications. And still our system was lacking. Fortunately, my wife shared my passion for music so we went on to buy, piece by piece, a fine speaker system, a first-rate AM-FM tuner, a transcription turntable and a speaker cabinet. I built half-a-dozen or more preamplifiers and record compensators before finding a commercial one that satisfied my ear, and finally, we acquired an arm, a magnetic cartridge, and—glory of the house—a tape recorder. All this plunge into electronics, mind you, had as its simple end the enjoyment of recorded music as it was intended to be heard.[113]

[112] Ellison, "Living with Music," 60.

[113] Ibid., 61.

At first waging a "War of Decibels" on the singer upstairs by blasting art songs and arias at full volume, Ellison and his neighbor eventually got to know one another and became friendly acquaintances. She complimented his sound system, inquired as to the artists he played, and, as he explained it, "she marked the phrasing of the great singers I sent her way, she improved her style. Better yet, she vocalized more softly, and I, in turn, used music less and less as a weapon and more for its magic with mood and memory."[114] Alexander Weheliye observes that Ellison's essay represents an important counterexample to the conception of hi-fi as a specifically suburban phenomenon, and that it describes geographical considerations that appear unique to multi-family dwellings such as apartment buildings. Acknowledging that the battle between Ellison and the singer could be read as a differently oriented "battle between the sexes" (since the singer is female), Weheliye asserts that the battle is more determined by geography than gender. He argues that tightly-packed urban spaces operate within a different sonic framework from that of the oft-described suburbs. For Weheliye, Ellison transformed his domestic boundaries using audio and, via the sonic porousness of urban living, enforced his musical values and practices to shape the music making of those around him.

Weheliye directs his critical eye to the ways in which sound technologies and recorded sound factor into expressions of Black modernity and reveals a history of gender, race, and technology that contests the popular media's construction of the Hi-Fi Man. Like Ellison's *High Fidelity* essay, articles in Black publications did important work to disrupt the narrative put forth by hi-fi advertisements that ignored Black consumers and their purchasing power in the 1950s hi-fi craze. Sustained study of representations of masculinity and home audio like those forwarded by Ellison and depicted in publications like *Ebony* and *The Chicago Defender*

[114] Ibid., 130.

promises to generate new understandings of hi-fi. As a tool devised to understand how whiteness (among other characteristics) came to be so tightly associated with hi-fi culture, modular masculinity is limited in its application to co-constructions of Black masculinity and sound technology. However, in explicitly marking modular masculinity—as white, as male, as middle-class, and as heteronormative—I hope to open up possibilities for a more expansive and inclusive understanding of midcentury U.S. home audio consumption and encourage frameworks that help us account for the full spectrum of music-technological engagement.

Chapter 2: Loudspeakers: DIY, Suburbia, and Domestic Masculinity

Loudspeakers have always had an uncomfortable place in the U.S. American living room. Well before the midcentury hi-fi boom, decorators and tastemakers acknowledged the cultural and educational benefits of phonograph while disparaging the "undeniably ugly," "interloping," and "harsh" amplification horn that flared up from the instrument and disrupted parlor decor.[115] To make the phonograph more appealing to women—who were the leading buyers of musical devices—manufacturers stowed the horn from away from sight and touted the device as an accoutrement to genteel dwelling spaces more akin to an elegant sideboard than a cutting-edge piece of sound technology. By 1912, "internal horn" phonographs were dominating sales, despite the fact that relegating horns to the innards of a cabinet dampened and distorted the sound: a marketing tactic that set feminized domestic aesthetics against the masculinized desire for sound quality and technological progress. *Gramophone* columnist and co-founder Compton MacKenzie blamed this marketing strategy for stunting the growth of sound technologies. In 1925, he lamented,

> The wretched fact remains that precious years have been wasted, precious years during which we might have made such an advance towards perfection, precious years during which the gramophone was allowed to become a synonym for all that was vile in the world of sound…I allude to the substitution of the internal for the external horn. The latter offended against gentility. People were ashamed of the gramophone and wanted it not to look like a gramophone. Hence all the camouflage with elaborate cabinet work. Hence the abominable distortion of sound by the internal amplifier. There is no

[115] Barnett, "Furniture Music," 307–9; William Laurel Harris, "The Phonograph as a Piece of Furniture," *Good Furniture*, July 1918, reprinted in *New Amberola Graphic* 63 (1988): 4–9.

> comparison between the quality of the sound developed by an external horn and that developed by an internal amplifier. But music was sacrificed to gentility...[116]

MacKenzie pitted gentility—a term laced with implications of shallow feminine prudery and concern for appearances—against the musical and technological pursuit of perfect sound. He exaggerated the effects of internal horns on acoustic research (indeed, many leaps in sound quality research were made during this time, including the development of the coil and cone electric speaker), but in doing so he provided an early example of rhetoric that policed the boundaries between masculine and feminine, professional and domestic, and progress and aesthetics as related to music technology in the home.

This inclination to disguise home audio technology continued well after the popularization of less-intrusive electric loudspeakers. Beginning in the 1920s, formal reception parlors began to fall out of fashion, in favor of post-World War II open floorplans with larger, less specialized rooms.[117] With ground floors that served as kitchen, living room, recreation room, and den, efficient use of space became a top priority for 1940s and 1950s homemakers. Midcentury designers crammed audio components into walls, coffee tables, side tables, and buffets in hopes of maintaining a homey feel, devoid of technological clutter. Horns built into cabinets and speakers built into consoles represented the desire to enjoy the convenience and pleasure of home audio without interfering with traditional decorating practices, overcrowding living spaces, or populating living spaces with laboratory equipment—a desire that marketers, manufactures, and the popular press constructed as feminine and domestic.

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[116] Compton MacKenzie, "The Gramophone: Its Past, Its Present, Its Future," *Proceedings of the Musical Association* 51 no. 1 (1924): 99–100.

[117] For more on the decline of the formal parlor, please see James A. Jacobs, "Social and Spatial Change in the Post-war Family Room," *Perspectives in Vernacular Architecture* 13, no. 1 (2006): 70–85.

The all-in-one console design was challenged during the post-war hi-fi craze as the horn, once crammed into the cocoon of the cabinet, metamorphosized into the loudspeaker and re-emerged into the domestic living space as a distinct and separate audio component. Technically speaking, loudspeakers are also cabinets, but they are specifically engineered to house multiple speaker cones and control the direction and resonance of amplified sound. Speakers were large and could not be used as shelves or storage, which meant that substantial stretches of living room floor space were dedicated exclusively to sound reproduction. The loudspeakers that gained popularity in the post-war period brought with them crisp sound, more powerful bass notes, sensitive volume controls, and, as freestanding components, a portability that allowed customers to tinker with the acoustics of the listening space.[118] These new technologies afforded a sense of mastery over the personal listening experience and a perceived connection to the scientific progress of sound engineering that consoles or cabinet units could not provide. As home consumer stereo sound technologies entered the marketplace in the mid-1950s, hi-fi writers further stoked this idealization of sonic command by encouraging audiophiles to rearrange their listening rooms to optimize the balance of two or more speakers.[119] Component loudspeakers

[118] Magnetic coil-and-cone loudspeakers, as developed by Edward Kellogg and Chester Rice in the mid-1920s, continue to dominate the loudspeaker market. Electrostatic speakers are available, particularly in high-end audio, but never achieved the same mass-marketability as coil-and-cone. Loudspeakers for outdoor public address systems were commercially available in the U.S. in the 1910s, but it was not until the mid-1920s that products designed for in-home use were available. Limiting factors for in-home use included vacuum-tube amplifier sensitivity and the availability of home electricity. As electrification became more affordable and widespread throughout the late twenties and thirties, so too did vacuum tube amplifiers become more capable of controlling the low power levels suitable for indoor listening. For technical information on the development of coil-and-cone technologies, see Chester Rice and Edward Kellogg, "Notes on the Development of a New Type of Horn Loud Speaker," *Transactions of the Spring Convention of the American Institute of Electrical Engineers* (1925): 461–73; Oliver Read and Walter Welch, *From Tin Foil to Stereo: Evolution of the Phonograph* (Indianapolis: Howard W. Sams, 1959), 255–74; Percy Wilson and G.W. Webb, *Modern Gramophones and Electrical Reproducers* (London: Cassell and Company, 1929), 173–92. For more on the cultural reception of early loudspeakers, see Kyle Devine, "A Mysterious Music in the Air: Cultural Origins of the Loudspeaker," *Popular Music History* 5, no. 28 (2013): 5–28.

[119] In his theorization of the stereophonic "sweet spot," Tony Grajeda posits that newly emerging stereophonic technologies were accompanied with marketing rhetoric that positioned audiophiles as "masters" of their "acoustic

met Compton MacKenzie's 1925 demand for control, mastery, power, and scientific progress—traits that align with hegemonic masculine value systems—but audiophiles, manufacturers, and advertisers still needed to fit the devices into shared domestic spaces.

The uncomfortable place of the living room loudspeaker (and phonograph horn before it) has long been marked by a gendered negotiation of the presence of sound technologies in shared living spaces. The component loudspeaker, however, rose to popularity at the same time that young couples were settling down after the World War II and destabilizing conceptions of the patriarch's place in the home. Responding to widespread concerns about fathers' absenteeism during the Great Depression and war years, psychologists, medical professionals, and popular media encouraged returning G.I.s to settle down with a family, contribute to home maintenance, spend leisure time with their children, and treat their wives as collaborators in all things domestic (albeit, maintaining distinctly traditional gender roles).[120] In a 1952 *Better Homes and Garden* article, medical doctor Oliver Spurgeon English and parenting advice specialist Constance J. Foster celebrated the newest American parents, "Young G.I. husbands are proving to be earnest, interested, responsible fathers who take a developmental attitude toward their children, instead of either a defeatist or traditional one…These men know how to bathe, burp, and pin a professional 'four-fold.'"[121] As Michael Kimmel notes, the broadening of fathers' roles in the home was an important reframing of masculinity compared to the decades preceding the war. A masculine

domain," and encouraged them to rearrange furniture, tweak speaker positions, and even move walls to "restructure the home" and optimize the hi-fi listening experience. Tony Grajeda, "The 'Sweet Spot'": The Technology of Stereo and the Field of Auditorship," in *Living Stereo: Histories and Cultures of Multichannel Sound*, eds. Paul Théberge, Kyle Devine, and Tom Everett (New York: Bloomsbury Academic, 2015), 39.

[120] Robert L. Griswold, *Fatherhood in America: A History* (New York: Basic Books, 1993), 183–84; K.A. Cuordileone, *Manhood and American Political Culture in the Cold War* (New York: Routledge, 2004), vii.

[121] English and Foster, "What's Happening to Fathers?" 205.

presence in the home served as a preventative measure against raising "anti-social" or "deviant" children. The fear of the "anti-social" reached broadly into medical, educational, and popular literature and included fears of homosexuality, inter-racial relations, communism, and generally disruptive behavior. Involved fathers were a tool to repress transgressive behavior and to maintain the status quo. As such, involved fathers and domestic masculinity were also a political tool of patriarchy, white supremacy, and anti-communist paranoia.[122] With the rapid growth of post-war suburbanization, growing homeownership was accompanied by a new industry around Do-It-Yourself (DIY) hobbies that were marketed largely to men. While women maintained their roles in caregiving, laundry, cleaning, and cooking, homeownership added an array of men's domestic work including lawn care, building maintenance, and installation and repair of consumer electronics.

Thus, the external loudspeaker came of age amid an unstable domestic atmosphere. The hi-fi speaker of the midcentury was a conspicuous object of pride for some, a site of strained tolerance for others, and, for many, a symbol of masculinized domesticity. I show here that hi-fi magazine advertisements, advice columns, and essays depicted speakers as objects that mediated and facilitated masculine cooperation in the domestic sphere: husbands and wives shopped for loudspeakers together, women beamed at men building enclosures, fathers taught sons how to install speaker cones, nuclear families gathered around the speakers under the light of the Christmas tree, and neighbors shared acoustic engineering tips over cocktails on the back patio. Speakers not only take up space—they are also the only *sounding* component of the system, and

[122] Kimmel, *Manhood in America*, 202–17; Barbara Ehrenreich, *The Hearts of Men: American Dreams and the Flight from Commitment* (New York: Anchor Books, 1983), 14–28.

therefore require attention as objects that acoustically resonate and permeate.[123] In this chapter, I take up the loudspeaker as an object of domestic resonance—a device that generated sympathetic vibrations between the masculine and feminine subjects as they exist in the feminized private sphere. Loudspeaker discourses help us better understand the ongoing negotiation of masculine belonging in the domestic landscape and soundscape of the midcentury home and family.

Midcentury hi-fi discourses modeled masculinized domestic harmony and positioned the loudspeaker at the nexus of craftsmanship, technological acumen, and familial harmony. These marketing tactics were articulated within a cultural moment characterized by suburbanization, DIY home improvement, and broadened masculinized modes of participation and contribution to domestic life. In this chapter, I bring together histories of suburbia, consumer culture, hi-fi media, and masculinity, and domesticity. First, I consider DIY and home-improvement marketing and the ways it played into men's leisure practices, like stereo kit building and speaker enclosure carpentry. I follow this survey of DIY practices with a close reading of a 1958 University Loudspeaker advertisement to explicate the visuals used to signal prosperity and contentment, while also reinforcing music technology's role in mediating men's shifting family roles and duties.

Midcentury suburbs are infamous for not only their materialist, misogynist, and conformist tendencies, but also their racist histories. Practices like redlining and blockbusting made it nearly impossible for Black families to buy homes in the highest value neighborhoods, and thus difficult to build the long-term wealth that would benefit white families for generations

[123] Loudspeakers are the only *purposefully* sounding devices in the system. Unintentional sounds creep into the signal, such as hum from an amplifier, hiss from a dull tonearm stylus, or pops from a scratched or dirty record.

to come.[124] It is also important to reiterate that "Black" and "urban" are not necessarily inextricable from one another. While it was substantially easier for white buyers to acquire newly built homes, millions of Black buyers also moved out to the suburbs and into single-family homes.[125] That Black audio enthusiasts are not represented in the pictures of the gleaming modern living rooms and back yard cocktail parties of hi-fi magazines says less about Black buyers and more about the biases of those generating the art for high fidelity marketing. Thus, the story of midcentury audio technology and race is not necessarily divided by urban and suburban, lo-fi and hi-fi, but rather by those who chose to tell the story.[126] I expand upon the ways Black Americans engaged with hi-fi in the 1950s and the limits of modularity in Chapter 1. I would also like to acknowledge my experience with and implicit knowledge of the midcentury suburb are informed by my own whiteness. The limitations to my engagement with the suburban experience are not a reflection of the available resources or oral histories, but a result of the limits of this project and my expertise, which do not extend to ethno-suburban ethnography.

Men in midcentury hi-fi magazines like *High Fidelity*, *Audiocraft*, and *Hi-Fi Music & Review* were almost exclusively depicted in domestic spaces. Thus, hi-fi discourses illustrated a multiplicity of ways of being masculine *and* engaged members of the home, the family, and the community. Drawing on cultural history, gender theory, and media studies, I offer a reading of hi-fi, loudspeakers, and modularity that highlights popular idealizations of domesticity and

[124] While white families enjoyed incentivization programs and easy access to mortgages, Black Americans were systematically shut out of buying new homes through a set of governmental, community, and banking practices that are collectively referred to as "redlining."

[125] For more on the legal and institutional forces that made it difficult for Black and Brown families to acquire property during the post-war suburban boom, see Richard Rothstein, *The Color of Law: A Forgotten History of How Our Government Segregated America*, (New York: Liveright Publishing Corporation, 2017), 59–75.

[126] Harris, *Little White Houses*, 62–65.

togetherness in the U.S. midcentury. The suburb, the home, and the nuclear familiar unit were important sites of identity formation that shaped consumption of audio technologies and listening activities. I examine loudspeaker discourses, with particular attention paid to literal and metaphorical connections between DIY culture, home building, and crafting of domestic masculinities. As potent symbols of home entertainment, private enjoyment, and DIY craftsmanship, loudspeakers indicated hi-fi's multivalent position in the physical and sonic spaces shared by suburban families, and are an illustrative analog to men's renegotiation of their masculine place in the private sphere.

Hi-fi media tells a myriad of stories about midcentury masculinity and contemporary scholars are continuing to nuance representations of audiophiles and midcentury hi-fi enthusiasts.[127] I lean into the story that tells of the idealization of harmony and the desire for masculine realization through the cultivation of a prosperous, respectable, and peaceful home. My position both deviates from and is informed by scholarship that frames loudspeakers (and hi-fi more broadly), as a divisive force in the home. For Keir Keightley, the loudspeaker was a tool of control and power deployed in this "battle of the sexes" and represented the gendered sonic boundaries built between men and women, husbands and wives, and fathers and families. Keightley's observations are certainly accurate, perhaps even more so in contemporary high-end audio, in which terms like the "Wife Acceptance Factor" still circulate in internet audio

[127] Marc Perlman, "Consuming Audio: An Introduction to Tweak Theory," in *Music and Technoculture*, ed. René Lysloff (Middletown: Wesleyan University Press, 2003), 346–48; Perlman, "Golden Ears and Meter Readers," 783–85; Paul Théberge, Kyle Devine, and Tom Everette, *Living Stereo: Histories and Cultures of Multichannel Sound* (New York: Bloomsbury, 2015), 24–25; Tim J. Anderson, *Making Easy Listening: Material Culture and Post-war American Recording* (Minneapolis: University of Minnesota Press, 2006), xix; Kieran Downes, "Perfect Sound Forever: Innovation, Aesthetics, and the Re-making of Compact Disc Playback," *Technology and Culture* 5, no. 2 (2010): 305–6; Axel Volmar, "Experiencing High Fidelity: Sound Reproduction and the Politics of Music Listening in the Twentieth Century," in *The Oxford Handbook of Music Listening in the 19th and 20th Centuries*, eds. Christian Thorau and Hansjakob Ziemer (New York: Oxford University Press, 2019), 395–98; Keightley, "'Turn it Down!' She Shrieked,"149–77; Vágnerová, "'Nimble Fingers' in Electronic Music," 250–51.

forums.[128] Keightley and I pull our case studies from the same magazines, but we critique different sets of articles and imagery. Instead of separating audiophiles from their partners and children, I reveal the rich analytical possibilities available when the men represented in hi-fi culture are considered members of the heterosexual nuclear family.

Customizing "Ordinary"

The midcentury witnessed mass suburbanization. As Lizabeth Cohen and Richard Rothstein detail, a heady mix of a post-war housing shortage, federal incentivization, propaganda, and popular culture fanned the desire for millions of families to move into newly-built, single-family homes in neighborhoods that sprung up on the outskirts of metropolitan areas.[129] As first-time homebuyers, white families were helped along by the low prices of new homes, no-interest loans for returning G.I.s sponsored by the Department of Veteran Affairs, easy-to-acquire fixed 30-year mortgages, and growing demand for well-paying industrial and professional labor.

The suburban boom facilitated a thriving culture of home building and remodeling, which shared a modular ethos with hi-fi. While elite architects, authors, and cultural critics decried the stifling repetition of suburban building styles, Dianne Harris argues that closer examination reveals a striking variety in floorplans, building accents, lawn design, and décor at both the regional and individual level. As I do here with home audio systems, Harris shows that the

[128] For more on the phrase "Wife Acceptance Factor" and gendered gatekeeping in the contemporary audiophile community, see Kelli Smith, "Masculinity, Misogyny, and the Rhetoric of Online Musical Discourse," (Master's Thesis, Michigan State University, 2018), 45–70.

[129] Cohen, *A Consumers' Republic*, 113–29; Richard Harris, *Building a Market: The Rise of the Home Improvement Industry, 1914–1960*, (Chicago, University of Chicago Press, 2012), 229–38.

"ordinary architecture" of the suburbs was tweaked and customized by new homeowners in an effort to express individual tastes and identities, while still meeting the demands of patriotism, respectability, and cleanliness.[130] The growing desire for personalization was facilitated by developments in modular home building technologies and federal propaganda campaigns selling the dream of U.S. American exceptionalism through consumer capitalism.[131]

Home builders simultaneously expedited and individualized new constructions by integrating modular technologies into home building techniques. Just as hi-fi enthusiasts could mix-and-match their audio components, midcentury architects and manufacturers developed pre-designed and prefabricated home materials that could be assembled in a variety of formats. Builders could customize newly built homes without designing entirely new floorplans, thus generating a sense of personalization while benefitting from the expediency and affordability of mass production. Families had the option to buy a lot in a new suburban neighborhood and, from a lumber supply company or a local builder's catalogue (like those pictured in Figure 11), select a home to build on that land. With the base plan selected, the family could add a car port, garage, fireplace, basement, pool, guestroom, screened-in porch, or central air conditioning; the builder also typically had a selection of finishes for paint, wallpaper, cabinets, and flooring. From the outside, the houses often looked similar, but the *process* of selecting and building was sensationally novel to young families who had only ever lived in rentals that they could not customize or create from scratch.

[130] Harris, *Little White Houses*, 161–62. Harris further demonstrates that these ambitions were framed intentionally as white, middle-class identity projects, designed specifically to distance white families from Black people, communities, and identities.

[131] Ibid. See also, Cohen, *A Consumers' Republic*, 127–28.

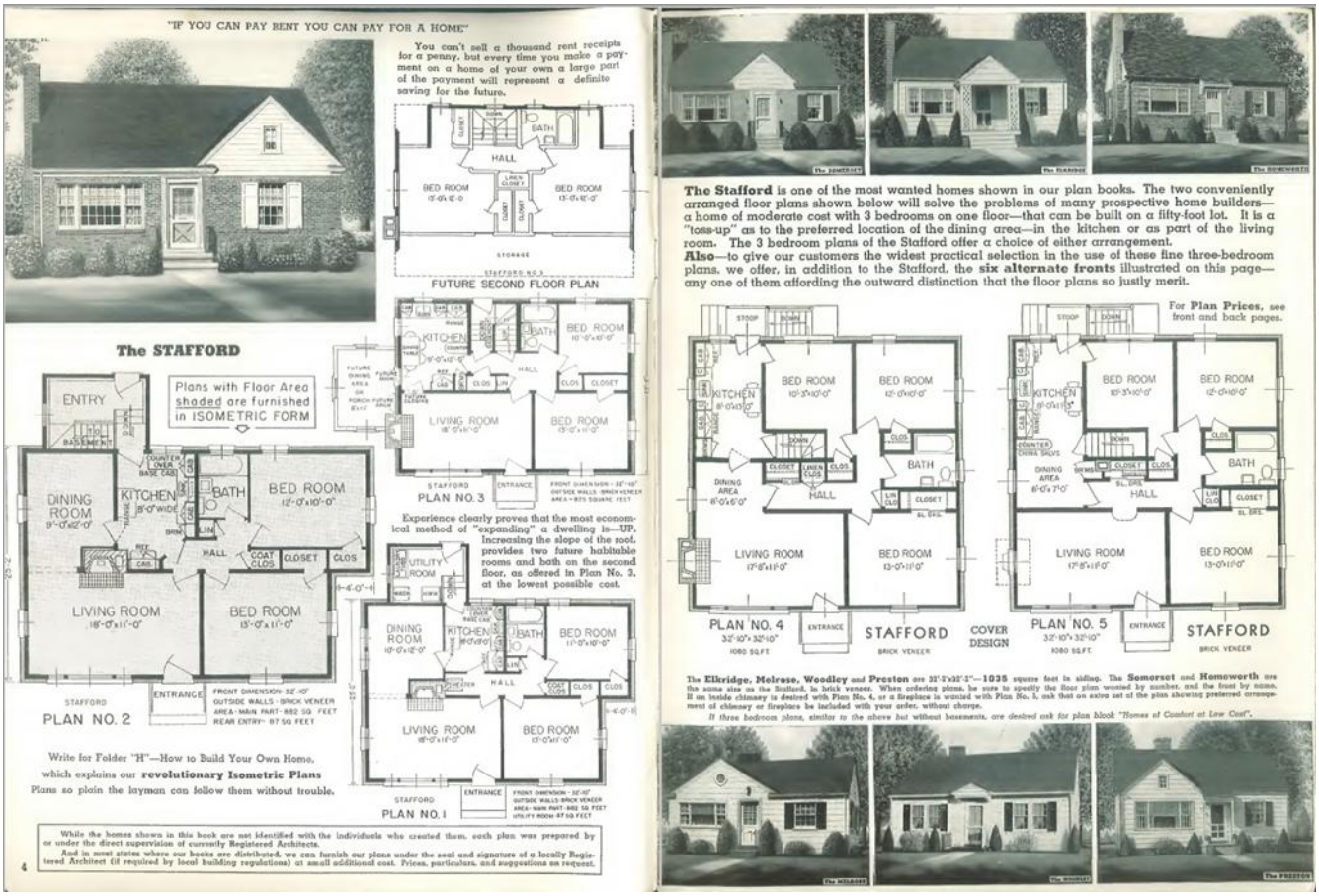

Figure 11. A 1953 home floorplan catalogue with plans for future expansions and alternate exterior finish options.

Selecting each component of their home gave these families a sense of control and agency over their housing options that they had not experienced during their lifetime. Moreover, for some, buying a suburban new build was one of the surest ways to secure housing. As a longtime resident of Park Forest, Illinois—a planned community near Chicago that blossomed between 1948 and 1955—Leona DeLue reminisced in a 1980 oral history,

> The war was over and it was time for us to get back to whatever kind of home we were going to have. Park Forest to us was just a marvelous thing, because we had a place to live and nobody else would give us a place to live. In Chicago...you were supposed to pay under the table for some broken down chairs and tables and pay a lot to get an apartment, if there was such thing as an apartment...My husband had lived for those five months at the Morrison Hotel by himself we

> were living with my mother and father. So, Park Forest, construction camp or otherwise, meant a great deal to us.[132]

Elaine Garretson, who moved to Park Forest around the same time, shared DeLue's relief: "So, we came in with four little, tiny children and no money. We had trouble with trying to find a place to live...So we drove endlessly...down to Park Forest...We moved from a 10-room house [rental] into this and Jim was so relieved, we never got out."[133] In recalling their decision to move to Prairie Village, Kansas, near Kansas City, Dr. William and Mrs. Cecile Wu found familiarity in their new home's floorplan. Dr. Wu explained, "I like the windows, it reminded me of home in China in some ways...The ceilings [in the other houses are] flat and low, I like a high ceiling and things like that."[134] When the interviewer asked if the other houses were "open on the inside," Mrs. Wu responded, "We didn't see any...The Mosses have a nice one, you'll see that. But that was more—they had beams.[135] The Wus were familiar with their neighbor's homes and aware of the smallest differences, like the additional beams added to "The Mosses" vaulted ceiling, that set their home apart from others in their neighborhood. Modular structural

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[132] Leona Delue, "Park Forest Oral History Project," September 25, 1980, interview by Betty Myers, transcription accessed via the Park Forest Historical Society 15 February 2023, http://www.idaillinois.org/digital/collection/pfpl/id/56/rec/3.

[133] Elaine Garretson, "Park Forest Oral History Project," interviewed by Cecelia Anderson, August 30, 1980, transcription accessed via the Park Forest Historical Society 15 February 2023, http://www.idaillinois.org/digital/collection/pfpl/id/51/rec/1.

[134] As Harris and Rothstein show, historical representations Dr. and Mrs. Wu's presence as Chinese suburbanites is uncommon, but not as uncommon as Black suburbanites. Many Asian Americans experienced discrimination and exclusion, particularly in the aftermath of World War II. This history is complicated by the tendency to frame Asian Americans as "model minorities," a contemporary phenomenon that has roots well before the midcentury. Rothstein shows that many suburban neighborhoods had restrictive covenants specifically forbidding sale to Black buyers, but with built in flexibility for high-earning and well-respected buyers from other minority groups, such as Italians, Jews, and East Asians.

[135] Dr. William Wu and Cecile Wu, "Johnson County Museum Oral Histories," February 18, 1995, interviewed by Abigail Tilford, transcription accessed via the Johnson Country Museum 15 February 2023, https://www.jocohistory.org/digital/collection/oralhist/id/198/rec/1.

components like decorative beams were significant to young families designing their suburban homes.

Adding to this sense of agency, some base floor plans were designed to be addended. Builders and DIY home improvement resources encouraged homeowners to continue customizing their homes after move-in day by moving walls, finishing basements and attics, and building entire second floors. Mrs. Wu recalled remodeling their home several times since their arrival to Prairie Village in 1954, noting that, "Most people [added on] …Their families got bigger."[136] Another Prairie Village resident, Harold Brown, recounted his many addition ventures:

> Now I'm one of those building kind of people. I keep building on to my home as with five kids you have to. When mother-in-law came to live with us after we moved here, I converted the porch into a bedroom and built it out. When my three boys started to getting too big in the small room, we built that thing way out. In fact, we have three little rooms within that room. It came time, we needed a little more room, we put a family room and pushed the garage out, so that we're talking about three buildings on to our home.[137]

Remodeling was always possible for those who owned their home, but was made easier yet with midcentury developments in materials and design. Inner walls, once reinforced with heavy and hard-to-remove lath and plaster, were now built with wooden frames and drywall. These lightweight walls were easily built, torn down, and relocated at a homeowner's whim without a massive hit to their pocketbook. Remodeling in the suburbs was so widespread that some builders offered remodeling inspiration in marketing materials for homes that had not yet been built. The same floor plan catalogue shown in Figure 3511 advertised "expansible" building

[136] Ibid.

[137] Harold Brown, "Park Forest Oral History Project," 1980, interviewed by Mark Mershon, transcription accessed via Park Forest Historical Society, http://www.idaillinois.org/digital/collection/pfpl/id/116/rec/1, accessed 15 February 2023.

plans, designed to be addended to as the family grew: "Two *NEW* original 'Expansible' Plans, which provide for expansion 'OUTWARD,' are offered for those who prefer to make a 'small beginning' by first building the basic portion of what will eventually be a modern 'rambler.' All on one floor, with or without basements and a choice of alternate exteriors, we believe these new 'Expansibles' will meet the requirements of the most discriminating."[138] As I discuss further in the next section, hi-fi advertisements also used expandability to make high-dollar purchases feel more accessible. This marketing strategy depended on the buyer's optimism and assumption that they would eventually accrue the financial means to upgrade. Inherent is the faith in the American Dream, that is, through regular hard work and fiscal responsibility the average person could expect ever-increasing prosperity. If or when these outcomes manifested was not of concern to home and hi-fi manufacturers; more important was that these aspirations felt within reach when a family first bought into the expandible system.

One of the most exciting aspects of homeownership was, simultaneously, the permanence of settling down in a family home *and* the freedom to design and reimagine the house. Like hi-fi loudspeakers—hulking in the corners of living rooms, sometimes bolted inside walls or into ceilings—the house appeared fixed and unmoving, but the resident amateur craftsman restlessly configured and reconfigured the home's interior. Sometimes the impetus to remodel came from a desire to learn and demonstrate carpentry skills, follow fashions, and "keep up with the Joneses" so to speak. Sometimes it came from the need to rework hastily conceived, mass-constructed floor plans that were not practical for growing post-war families. Sometimes it came from newly available affordable tools, kits, and instructional guides that made hobbyists more comfortable

[138] Standard Homes Company, "Homes You Can Build Yourself," floor plan catalogue, 1953, 4.

with taking on otherwise intimidating projects.[139] The midcentury building and customization crazes likely emerged from a blend of these phenomenon.

Building Hi-Fi

The social, political, and economic dynamics that spawned the midcentury enthusiasm for identity formation through home customization can also be credited for generating the trends in building and personalizing hi-fi home audio systems. These parallels were particularly neat among DIY loudspeaker discourses in hi-fi hobbyist magazines. In the midcentury, hi-fi loudspeakers were frequently sold without their enclosures, the box that holds the speaker cones in place. With advanced engineering, enclosures can also improve acoustic features such as resonance, clarity, and directionality. Buyers could select their tweeters, mid-ranges, and woofers (speakers that specialize in high, middle, and low sound frequencies, respectively) individually, perhaps even from different manufacturers, and affix them in enclosures built to accommodate a variety of speaker types. It was only in the late 1960s that all-in-one, manufacturer specific enclosures came into vogue, resulting not only in a boom in enclosure acoustic technologies, but also brand-specific speaker aesthetics, such as Klipsch's copper and matte black stylings or McIntosh's towers featuring numerous, multi-sized tweeters. Pre-built units with the cones installed were certainly available in the 1950s, and massively popular in console stereo sets, televisions, and portable record players. Manufacturers that advertised in hi-fi hobbyist magazines, however, cashed in on the sense of frugality, customizability, and hands-on

[139] Risto Moisio, Eric J. Arnould, and James W. Gentry, "Production Consumption in the Class Mediated Construction of Domestic Masculinity: Do-It-Yourself (DIY) Home Improvement in Men's Identity Work, *Journal of Consumer Research* 40, no. 2 (2013): 299–301.

craftsmanship that accompanied modular loudspeakers and enclosures. These interlocking characteristics—frugality, customizability, and craftsmanship—were represented in advertisements, essays, and cartoons as desirable masculine traits specifically oriented towards domestic and familial responsibilities. Even more, kits helped to develop the technological skill set required to set up crossover networks and acoustically balance speakers. This expertise, in this case, is a pathway to expressing individuality in that a man might use his electrical and acoustic engineering skills to create an individualized listening experience. Building loudspeakers served at once as home-improvement and self-improvement.

As the largest, most prominent, and most aesthetically flexible component of the hi-fi system, loudspeakers could visually signify financial success or could blemish otherwise gracefully appointed living rooms. Concerns for living room décor were (and still are) often positioned as a feminine issue, but there is also a clear masculine investment in creating well-crafted speaker enclosures that complement their surroundings. Equally as often as the "disapproving wife" trope, the beaming wife appears admiring the masterfully wall-mounted speakers or the neatly finished mahogany enclosure. Thus, the story told among the pages of hi-fi magazines is not just of a hobby for the neurotic tinkerer, but also one for someone who wants to learn new skills and creatively contribute to the enjoyment of music in the family home.

Despite the glossy depictions of luxury homes and highbrow taste-making that dominated the pages of hi-fi magazines, the frequent mentions of penny-pinching buying options betray an audience of financially aspirational readers. Hi-fi undoubtedly appealed to elite professionals—such as doctors, lawyers, engineers, and orchestral conductors—but alongside these readers were younger, middleclass salespeople, electricians, bricklayers, and entry-level office workers. As frequent allusions to affordability indicate, there was substantial demand for frugal high fidelity

audio options, with the expectation that the buyer's wealth would grow over the next several years. While young, white, suburban families were set up to build wealth, they were not typically wealthy. The buying power of the average family was growing, but household luxuries were purchased over time, with some amount of planning and saving. The aspirational tone of hi-fi magazine advertisements is an artifact of and response to the financial optimism of the readers and buyers, but is also couched in the understanding that the readers may not have the capital to make major luxury purchases (yet). Thus, hi-fi manufactures balanced issues of limitation and aspiration by offering multiple buying levels with strategies including tiered packages, building-block systems, and DIY kits.

The DIY market emerged in the early 1950s and was a full-on marketing sensation by 1954.[140] DIY products for men, however, occupied an ambiguously gendered space that required careful handling by manufacturers and advertisers. Matters of home décor and furniture appointment had typically been relegated to the feminine sphere, with masculine intervention only at times that required a handyman. Advertising for 1920s lumberyards even emphasized the importance of appealing to women during sales calls, as women were the bookkeepers and decision-makers regarding all things domestic.[141] It was not until the post-war era that home maintenance and repair became popular for amateur hobbyists in lieu of on-call professional contractors. The rise of the DIY industry, then, marks a moment of gendered reckoning: a masculinization of thrifty homemaking with arts and crafts, but carefully rebranded to avoid overt overlap with feminizing domestic work.

[140] Harris, *Building a Market*, 2.

[141] Ibid., 91–93.

Audiocraft Magazine—a spin-off of *High Fidelity* done by the same editing and publishing team—was created specifically for those dedicated to DIY audio. In the first issue of *Audiocraft*, the editors advised,

> Read *Audiocraft* if you're particularly interested in hi-fi as a hobby and plan to do-it-yourself where home reproduction of sound is concerned. Read *High Fidelity* if you're interested especially from a listening angle, if you want to keep 100% up-to-date about music itself, if you want expert reviews of nearly all the long-play records released. Read *both* if you'd like to cover the whole field.[142]

Audiocraft was short-lived, however, running for 37 issues from November 1955 to November 1958. The final issue offers no indication as to its fate—which is unusual considering the intimate and personal tone of the publication compared to larger journals. Audiocom, Inc.—the parent company to *High Fidelity* and *Audiocraft*—was sold to *Billboard Inc.*in late 1957, and it is possible that the change in ownership prompted a reorganization of the publications. Indeed, *Audiocraft* often sold below the suggested 35 cent-per-issue price and had a substantially smaller publication base. Smaller, even, than *Hi-Fi Music & Review*, *HiFi Music at Home*, and *Audio*, which contained content and advertising that overlapped substantially with *High Fidelity*.[143]

Audiocraft's articles are distinctive because they move away from record-centered listening activities, and prominently feature two aspects of DIY hi-fi: carpentry and electrical work. These two skill sets tapped into long-standing masculinized professions—woodworking and engineering—and reworked them into domestic leisure activities for amateurs. The inaugural issues of *Audiocraft* introduced what would be a standing essay series in which George Bowe—a

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[142] "Kissin' Cousins!" *Audiocraft*, December 1955, 11.

[143] *Hi-Fi & Stereo Review* burst onto the magazine scene with 123,953 copies distributed in 1959. To compare, *High Fidelity* had 76,123 in 1958 and 91,227 in 1959, and *HiFi Music at Home* had 33,000 in 1958 and 44,285 in 1959. *Audiocraft* did see growth, with 19,949 in 1957 and 20,699 in 1958, but perhaps it was not enough to entice *Billboard* to continue with the hyper-focused content. *N. W. Ayer and Sons Directory of Newspapers and Periodicals* (Philadelphia, 1945, 1950, 1955, 1959).

hi-fi enthusiast and radio personality with a handyman show—encouraged his readers to consider the joy of woodworking:

> Simple cabinetwork, including many types of hi-fi enclosures, can be done very effectively by the amateur craftsman with good hand tools and the ability to follow a good working plan…Wood is a most gratifying material with which to work. It is yours to shape, assemble, and finish to give you lasting beauty, strength, and acoustical value—a product of your very own craftsmanship.[144]

Throughout his championing of cabinetry, Bowe's rhetoric appealed to the masculinity of the reader from a few different angles. Woodworking was affordable, especially with hand tools, and had a low barrier to entry that could, with time, become a point of pride and mastery. It was a way to make the modular hi-fi set up even more individualized, as it is "yours to shape, assemble, and finish."[145] Finally, Bowes drew on the pervasive assumption that something handmade is of greater "beauty, strength, and acoustical value."[146] Here, Bowe tapped into common male insecurities about an inability to properly maintain a house or discern mass-produced electronics from high-end components while reassuring the reader that, if they are orderly of mind and tenacious, they too could be a master craftsman.

Bowe's approach lined up in many ways with the advertising for enclosure kits. In a 1956 ad for a Stephens Tru-Sonic speaker kit, the copy read,

> Now you can build your own authentic Stephens Tru-Sonic speaker enclosure with a new Stephens kit. To everyone else it will sound exactly the same as our factory assembled enclosures. To you, it will sound even better because you had the thrill of assembly. Naturally, there is a saving. Provision too for additional speakers. Kits come in four models. Each with step-by-step illustrated instructions

[144] George Bowe, "Tips for the Woodcrafter," *Audiocraft*, November 1955, 16, 44.

[145] Ibid.

[146] Ibid.

> on woodwork, speaker installation, and connections. Start now in high fidelity by building your own speaker enclosure.[147]

A distinct difference between Bowe's claims and the tone of this ad copy is that Stephens sidestepped the issue of hand-made superiority by embedding the "authenticity" of the kit in the brand name and not in the fact that it is assembled by the buyer. The manufacturer maintained a sense of ownership over the quality of the product by staking claim to the sonic properties of the finished cabinet, but allowed the buyer the pride and "thrill" of handiwork. As a high-end brand (this ad was located on the back cover of the magazine, which is expensive prime real-estate), Stephens had to balance the marketability of DIY enclosure kits with controlling the engineering quality and reputability of their brand (Figure 12).

[147] Stephens Tru-Sonic, Magazine Advertisement, *Audiocraft,* November 1956, back cover.

Figure 12. “To you, it will sound even better because you had the thrill of assembly.” Stephens Tru-Sonic, Magazine Advertisement, *Audiocraft*, November 1956, back cover.

Jensen Manufacturing Company developed a similar line of DIY enclosure kits and used similar language to the Stephens ad: "The Jensen *authentic high fidelity* speaker system kits give you the same high-quality matched loudspeaker components used in Jensen's factory assembled complete reproducers"[148] (Figure 13). The text that precedes this sentence, however, reinforces not only the quality of the finished produce, but also the instructions for the kit itself. Indeed, the DIY booklet is 36 pages long, with "complete drawings" and "easy to follow instructions for woodwork, speaker installation, and connecting up."[149] This advertisement sold kits, a booklet, and an experience. DIY kits did save some money for the buyer (a point to which I'll return), but the marketability of kits like these leaned on ideas of fun, leisure, and learning new skills. The joy of assembling an enclosure did not come primarily from being able to customize it (a surprisingly rare marketing point), but rather to simply learn how it fits together. Like a child's hands-on science experiment, kits served as a way for hi-fi buyers to learn the reasoning behind the inside structures of an enclosure, how to configure crossover, or the best positioning for the various speaker types.[150]

[148] Jensen Manufacturing Company, Magazine Advertisement, *Audiocraft*, January 1956, 2.

[149] Ibid.

[150] In fact, Heathkit, another popular kit brand, also sold radio building kits in children's magazines well into the 1970s and 1980s. Both of my parents remember Heahtkit well enough to have recalled it by name in casual conversation.

BUILD YOUR OWN JENSEN HI-FI SPEAKER SYSTEM

IT'S EASY WITH JENSEN'S NEW COMPLETE SPEAKER KITS AND DETAILED CABINET CONSTRUCTION AND ASSEMBLY MANUAL!

KT-31 IMPERIAL KIT
3-way system. The ultimate in performance. Specially designed 15" "woofer", compression type mid-range and "supertweeter" units. 800- and 4000-cycle crossover networks, intrarange equalizer, special controls, brackets, cables. Recommended enclosure 25 cu. ft. in back-loading folded-horn. 16 ohms. 35 watts. $184.50

KT-32 TRI-PLEX KIT
3-way system. Superlative performance in moderate space; approx. 10 cu. ft. suggested. 15" "woofer", compression type mid-range and "supertweeter" units. 800- and 4000-cycle crossover networks intrarange equalizer, controls, brackets, cables. 16 ohms. 35 watts.....$169.50

KT-21 CONCERTO-15 KIT
2-way system. An outstanding system with 15" "woofer" and compression type "tweeter". 2000-cycle crossover network and balance control, bracket and cables. 10 cu. ft. enclosure suggested. 16 ohms. 30 watts $99.50

KT-22 CONCERTO-12 KIT
2-way system. Excellent performance in scaled-down size (recommended enclosure as small as 6 cu. ft.). Like KT-21 except 12" "woofer". 16 ohms. 25 watts.....$73.60

KDU-10 TREASURE CHEST DUETTE KIT
2-way system. Special 8" "woofer", compression driver "tweeter" and frequency division for compact reproducer (1½ cu. ft. Duette enclosure or 2½ cu. ft. Bass-Ultraflex type.) Includes wiring materials. 8 ohms. 20 watts.....$24.75

KDU-11 TABLE DUETTE KIT
2-way system. Specially designed for chair side or table TV use. May also be used in 1½ cu. ft. Duette enclosure. Heavy duty 6" x 9" "woofer", compression driver "tweeter", frequency division unit and wiring materials. 3-4 ohms. 20 watts.....$21.75

KDU-12 BUDGET DUETTE KIT
2-way system. For maximum results at lowest cost. May be installed in table or 1½ cu. ft. regular Duette or in 2½ cu. ft. Bass-Ultraflex enclosures. 6" x 9" "woofer" direct radiator "tweeter" frequency dividing unit plus wiring materials. 3-4 ohms. 15 watts.....$10.50

KTX-1 RANGE EXTENDER SUPERTWEETER KIT
Adds smooth, clean highs from 4000-cycles to limits of audibility to any single unit, coaxial or 2-way system. Complete with crossover network, balance control and cable. For systems rated up to 35 watts.....$43.75

Cabinart (G & H Wood Products) utility enclosures are available for all except KT-31 and KTX-1 Kits.

BIG 36 PAGE BOOK WITH 18 ENCLOSURE DESIGNS

Complete instructions for building self-contained or built-in single speaker and 2-way and 3-way speaker systems: "Duette", Bass-Ultraflex and Back-loading Folded Horn cabinets. Includes parts lists and speaker data for all types of enclosures.

Get Your Copy Now For Only 50c

If you want a hi-fi system with the stand-out performance for which Jensen speakers are famous . . . plus the fun and saving of "do it yourself" . . . and the advantage of being able to adapt each basic design to your exact needs for a built-in or free standing speaker enclosure, then be sure to get your copy of Jensen's big new 36 page Manual 1060 now!

Explains fully the advantages and relative performance of 18 different speaker systems you can build or build-in with Jensen hi-fi speaker kits. Tells you how to start in high fidelity on a low budget with a real 2-way speaker system that can cost under $20 complete! Shows how to build a hi-fi speaker in table form to improve your TV or to use as an attractive useful furniture piece.

Manual 1060 gives you complete drawings for cabinet work plus easy to follow instructions for woodwork, speaker installation and connecting up. Tells how to make the latest in "Bass-Ultraflex" and back-loading folded horn enclosures. You can build any of Jensen's fine reproducers from the incomparable Imperial to a low cost Duette. Manual 1060 is priced, postpaid at only 50¢.

Ask Your Dealer for Manual 1060 or Order Direct from Jensen

The JENSEN *authentic high fidelity* speaker system kits give you the same high-quality matched loudspeaker components used in JENSEN'S factory assembled complete reproducers: you "do it yourself" and save. It's easy to select and order the kit you want. Everything is in *one* package. Every Jensen kit comes to you packed in a single carton with all the matched components, special mounting brackets and wiring materials ready for easy installation. Instructions are simple and clear —no previous experience or technical skill required.

Sold by good High Fidelity dealers throughout the world.

ARE YOU BUILDING OR REMODELING YOUR HOME? SHOW YOUR ARCHITECT OR CONTRACTOR THE TYPE OF SPEAKER ENCLOSURE YOU WANT IN MANUAL 1060 AND FIND OUT HOW VERY LITTLE IT WILL COST TO BUILD IN THE FINEST IN JENSEN AUTHENTIC HIGH FIDELITY.

Jensen MANUFACTURING COMPANY
6601 South Laramie, Chicago 38 • Division of The Muter Co., in Canada, Copper Wire Products, Ltd., Licensee
Dept. N

2 AUDIOCRAFT MAGAZINE

Figure 13: Husband and wife are shown building speakers together. In the lower right-hand corner, the text recommends showing the booklet to contractors for custom built-ins in new homes. Jensen Manufacturing Company, Magazine Advertisement, *Audiocraft*, January 1956, 2.

Bowe justified this educational angle in his article in the second issue of *Audiocraft*, in which he supplements his initial list of hand tools with instructions on how to use hand saws and hammers without sustaining injury. He reminisces:

> Grandpa loved to work with wood, and his creations were attractive and substantial. Since those days I have often wondered why he suffered so many minor cuts and bruises…I think that Grandpa would have benefitted considerably if someone had passed along to him the rudiments of proper handling of the basic tools. The right way is not only the safer way, but the route to better workmanship.[151]

Bowe walked a delicate line in this passage: His regard of his grandfather is adoring and complimentary, but he reveals that the use of hand tools was not passed on to him from his grandfather. This admission should make us question our twenty-first century assumption of the men of the "Greatest Generation" as innately handy. Bowe's advice presumed that the readers had no experience with carpentry tools and require direction in basic skills such as aligning a nail and swinging a hammer. This passage is a micro-study in the enthusiasm with which suburban young families (the market that Redbook labeled "young adults") in the midcentury distinguished their positivist-oriented "progress" from quaint pre-war bumbling. This demographic, which included the readers of *Audiocraft*, acknowledged the rough-hewn handiwork of their parents and grandparents, while building and moving into new homes, establishing nuclear family units, embracing new consumer technologies, and forgoing familial advice in favor of learning from hi-fi experts.[152]

Many speaker manufacturers capitalized on this restless energy, as well as this demographic's forward-looking tendencies. Electro-Voice marketed the "Speaker Building

[151] George Bowe, "Tips for the Woodcrafter," *Audiocraft*, December 1955, 8.

[152] "In The Suburbs," *On Film, Inc.*, *Redbook*, promotional video, 1957.

Block Plan" that "lets you improve your basic system a step at a time, fitting your purchases to your budget"[153] (Figure 14). This step-by-step plan included a modular enclosure and cable design that permitted buyers to add more speakers to the unit as the buyers' financial or housing situation changed. As the ad described,

> START with the Electro-Voice Aristocrat corner folded-horn speaker enclosure…
> SET UP your enjoyment by adding, driver, crossover and level control…
> COMPLETE your integrated Electro-Voice reproducing system by adding *all* components listed to your basic coaxial speaker in the Aristocrat enclosure. Separate controls for the Brilliance and Presence ranges compensate for room acoustics and individual tastes.[154]

University brand speakers also latched onto this marketing trend with their "Progressive Speaker Expansion" or "PSE" plan. A 1958 University ad used a questions and answer format, in which four different buyers ask questions like, "Why is PSE never obsolete" and "How is PSE easy on my budget?"[155] Note that the budget question is next to an image of a woman (Figure 15). The step-by-step instructions drive home the idea that a lone cone and enclosure is perfectly satisfactory, but that features like "hypersonic" tweeters should be the end-goal of a hi-fi buyer, and that "the deluxe multi-speaker system you want tomorrow" can be "started today.[156]

This sales strategy capitalized on the fact that hi-fi equipment was pricey and that money was a limiting factor for many ambitious hobbyists. Building out step-by-step plans like these not only made saving up for and buying expensive hi-fi speakers more approachable, but also invited the buyer into an ecosystem of components. Once someone started with one of these

[153] Electro-voice., Inc., Magazine Advertisement, *High Fidelity*, January 1957, 50.

[154] Ibid. Ellipses added by the author.

[155] University, Magazine Advertisement, *High Fidelity*, June 1958, 100.

[156] Ibid.

plans, they would be more likely to continue buying from that manufacturer, because the parts were best matched to the enclosure, crossover networks, and other speaker cones.[157]

[157] Amid all the snake oil advice, matching speaker cones is actually quite important. Problems with standing waves, uneven crossover, and distortion are harder to identify and fix with mismatched cones. These problems are less apparent with tweeters, but noticeable with mid-ranges and woofers.

Figure 14. "For high fidelity that grows one economical step at a time." Note that a woman is depicted wearing a casual house dress and using the system with ease. Electro-Voice, Inc., Magazine Advertisement, *High Fidelity*, January 1957, 50.

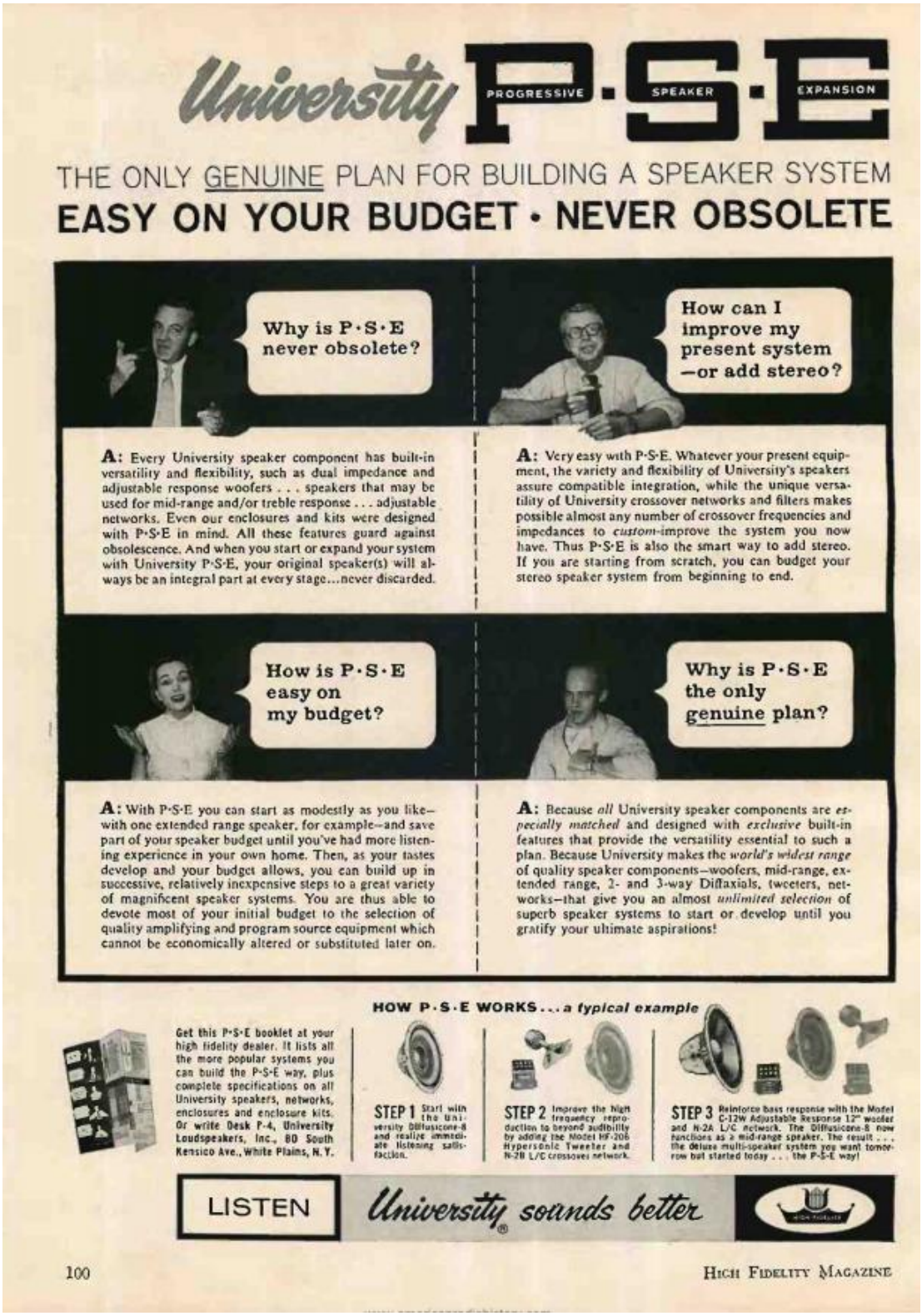

Figure 15. University Speakers, Magazine Advertisement, *High Fidelity*, June 1958, 100.

Step-by-step plans also evoke the suburban building plans that included remodeling inspiration in marketing materials for homes that had yet to be built. These similar phenomena, on the ground level, were effective ways to establish returning customers: just as buyers were more likely to buy speakers that matched the enclosure brand, home buyers could return to the contracting company that built their home to help redesign and remodel the interior. Both spoke to a desire for and expectation of changeability and flexibility made possible by modularity.

One strategy that is apparent in the above University and Electro-voice advertisements is framing the enclosure kits as a money-saving compromise with the woman of the home. In the University advertisement, for instance, the three men "ask" questions about technical specifications or the authenticity of the plan, while the one woman asks about budget. Similarly, in the Electro-voice example, the words "one economical step at a time" float over a woman practically dressed in a plaid, collared dress—a fashion that was popular for day-to-day casual tasks like running errands, but not going out dancing or hosting dinner parties.[158] This visual detail signals the financial accessibility of the product with the promise of building up to a high-end system.

Like Electro-voice, Heathkit used costuming to build layers of identities into buyer choices. In a two-page ad that ran across several audio magazines throughout 1957, a young heterosexual couple was depicted on the first page wearing leisure clothing: the woman in pants and a blouse, the man in a casual button-down and trousers (Figure 16). The products depicted to

[158] Although the plaid dress is depicted as casual in this image, it is still more formal than most women would have worn to do work around the house. In this way, the advertisement communicates sensibility and accessibility, but remains aspirational for middle-class buyers.

the right are three stereo enclosures that, "can be built in just one evening!" The text emphasizes that kit building does not just save money, it is "great fun" too,

> "We're building a Heathkit…because it's such great fun…and because we get so much more for our money!" Every day more and more people (just like you) are finding out why it's smart to "do-it-yourself" and save by building HEATHKIT high fidelity components. These people have discovered that they get high-quality electronic equipment at approximately one-half the usual cost by dealing directly with the manufacturer, and by doing their own assembly work. It's real fun—and it's real easy too! You don't need a fancy work shop, special tools or special knowledge to put a Heathkit together. You just assemble the individual parts according to complete step-by-step instructions and large picture-diagrams. Anyone can do it![159]

Upon turning the page of the magazine, the reader finds the same couple on the reverse page, except now they are clad in evening wear, with the woman wearing cinched-waisted, scoop-neck gown and white gloves. The man—in a full tuxedo with a black bow tie—holds the same pose as the previous page, with his hands in pockets and gazing thoughtfully at the components, turned slightly towards the woman in an easy, but protective posture. She stands in the foreground, with her hand touching her chin, in careful consideration of the audio parts before her.

[159] Heathkit, Magazine Advertisement, *High Fidelity*, February 1957, 96.

"Wee' building a
HEATHKIT...®
BECAUSE IT'S SUCH GREAT FUN . . . AND BECAUSE WE GET SO MUCH MORE FOR OUR MONEY!"
Every day more and more people (just like you) are finding out why it's smart to build their own Heathkit electronic equipment. These people have discovered that they can actually save 50% or more by doing it at approximately one-half the usual cost by dealing directly with the manufacturer, and by doing their own assembly work. It's real fun—and it's real easy too! You don't need a fancy workshop, technical knowledge or special tools to put a Heathkit together. Just follow the clear, detailed instructions and large picture-diagrams. Anyone can do it!
Heathkit Model SS-1 Speaker System Kit
This high fidelity speaker system is designed to provide superb reproduction of all audio signals from 50 to 12,000 CPS within ± 5 db. Two high-quality speakers are employed in a 4 cu. ft. bass reflex enclosure. Impedance is 16 ohms, and power rating is 25 watts. Can be built in just one evening. Shpg. Wt. 30 lbs. $39.95
Heathkit Model SS-1B Speaker System Kit
This kit is identical to the model SS-1 described above, except that it employs a 15" woofer and a super-tweeter to provide superb response of both speaker systems is ± 5 db from 35 to 16,000 CPS. Impedance is 16 ohms, styling matches SS-1. Shpg. Wt. 80 lbs. $99.95
HEATHKIT "LEGATO" SPEAKER SYSTEM KIT
Months of painstaking engineering by Heath and Altec-Lansing engineers has culminated in the design of the "Legato" speaker system. The result is a new kind of high fidelity sound, so natural, even the most critical listener will be amazed. The system employs a true theatre-type speaker and a high-frequency driver with sectoral horn combine to cover 25 to 20,000 CPS. Response is ± 5 db. A 16 ohm impedance will assure you of the smooth, flat audio response so essential to faithful reproduction. Choice of two beautiful cabinet styles below.
"Legato" Traditional Model HH-1-T
Shpg. Wt. 231 lbs. $325.00
"Legato" Contemporary Model HH-1-C
This fine cabinet features straight-line and design to blend with your modern furnishings. Slim, tapered legs add a striking attractive stature to the graceful cloth to produce an overall appearance of perfect and predefined for simple assembly. Supplied in finished unfinished. Specify finishes when you specify imported white birch for Shpg. Wt. 231 lbs. $345.00
HEATH COMPANY
A Subsidiary of Daystrom, Inc.
BENTON HARBOR 8, MICHIGAN

Make yours a HEATHKIT®
It's Easy (and fun) to Plan Your Own Hi-Fi Installation
By Choosing the Heathkit Components That Best Suit Your Particular Needs.
As the world's largest manufacturer of electronic equipment in kit form, Heath Company can provide you with a maximum variety of units from which to choose. Heathkit amplifiers, for example, include 10 different models ranging in power from 7 watts to 25 watts, some with preamplifiers, and some requiring a separate preamplifier. You can pick your speaker system from four outstanding high fidelity units ranging in price from only $39.95 to $315.00. You can even build your own Heathkit TV set! Whatever your requirements of an audio system, or about planning your particular hi-fi installation, don't hesitate to contact us. We will be pleased to assist you.
MATCHING CABINETS . . . The Heathkit Model AM-1 Amplifier and Preamplifier are housed in matching cabinets which are also available for the complete high fidelity system.
MODEL AM-1A
MODEL AM-1
MODEL AM-1P
PRE-ALIGNED TUNERS . . . A unique feature of the Heathkit AM and FM Tuners is the fact that both units are pre-aligned at the factory. Not only are the antenna coils, the RF and mixer transformers pre-aligned at the factory, but even front-end component are mounted on the chassis at the factory to assure you of easy kit assembly.
HEATH COMPANY
A Subsidiary of Daystrom, Inc.
BENTON HARBOR 8, MICHIGAN
EASY TIME PAYMENTS . . . We invite you to take advantage of the Heath Time Payment Plan on any order amounting to $80.00 or more. Just 10% down and the balance in twelve monthly payments. WRITE FOR COMPLETE DETAILS.

Figure 16. Heathkit Company, Magazine Advertisement, *High Fidelity*, February 1957, 96.

The two pages (really the front and back of the same page) advertised two different types of products offered by Heathkit. On the first is the DIY enclosure, and the casual dress of the couple indicated exactly the purpose of the kit: to generate creative fun for the whole family. The collective pronouns suggest that a couple might team up and spend a weekend together in the living room assembling their new speakers. Anyone who has put together furniture with their partner knows that the "fun" advertised here is optimistic at best, but bringing the woman into the experience eases the connection of DIY and masculinity because it indicates compromise, cooperation, and companionship. DIY, then, was framed as a smart, strategic maneuver to bring hi-fi into the home in a fashion that minimizes friction with the "better half."

On the reverse side with the formal dress, practicality was supplanted by savviness, as the couple customizes their stereo to fit their home. As they select one of Heathkit's five amplifiers or four speaker systems (ranging in price from $39.95 to $345.00) they exercise their technological know-how and research to make the exact custom choice that suits their needs. This level of modular customizability offered buyers the chance to distinguish themselves from the neighbors, while buying mass-produced consumer electronics. Over the course of two pages, Heathkit offered the man of the family an opportunity to demonstrate craftsmanship, technical knowledge, and financial success while also spending time with his spouse and appeasing her with thrifty buying choices.

Embedded in the association between women and budgeting was the desire for familial harmony. There were, as others have indicated, advertisements that characterize wives as nagging or henpecking, but underpinning many advertisements is the desire for compromise, peace, and accord. Heathkit was a popular manufacturer that built its entire brand on hi-fi kits and consistently used imagery of families building sets together. Illustrations of hi-fi units

bringing families together recalled imagery from early phonograph advertisements in which listeners would sit as an audience to a recorded "concert" with the father-figure is positioned in a patriarchal role, presiding over the listening session (Figure 17). In other Heathkit ads, teams made up of fathers and sons or wives and husbands, were depicted dutifully huddled together at their workbenches to solder and nail together their hi-fi speaker sets (Figure 18). This trend was not limited to Heathkit, and it is worth noting that the cover of the aforementioned 1956 Jensen booklet depicted a man and woman pair, with their pants cuffed and sleeves rolled up, assembling their Jensen enclosure kit as a team. In both the Jensen and Heathkit ads, the woman is holding some vital part of the kit (a speaker and a soldering iron), while the man looks on with a smile. These advertisers thus bridge the gendered question of the DIY kit by literally bringing a both a man and a woman into the picture.

These images of cooperation between husbands and wives should not be mistaken for the normalization of equitable partnerships. As Lynn Spigel points out in her study on television and post-war conceptions of domesticity, entertainments like hi-fi building and TV viewing were "supposed to bring the family together but still allow for social and sexual divisions in the home."[160] While women may have participated in hi-fi building projects and had some say when buying gear, loudspeaker discourse made it clear that the process was to be initiated and guided by the husbands. As I explicate in the next section, hi-fi was a mean by which the father and husband could (re)assert himself as the patriarchal head of the household.

[160] Lynn Spigel, *Make Room For TV: Television and the Family Ideal in Post-war America*, (Chicago: University of Chicago Press, 1992), 37.

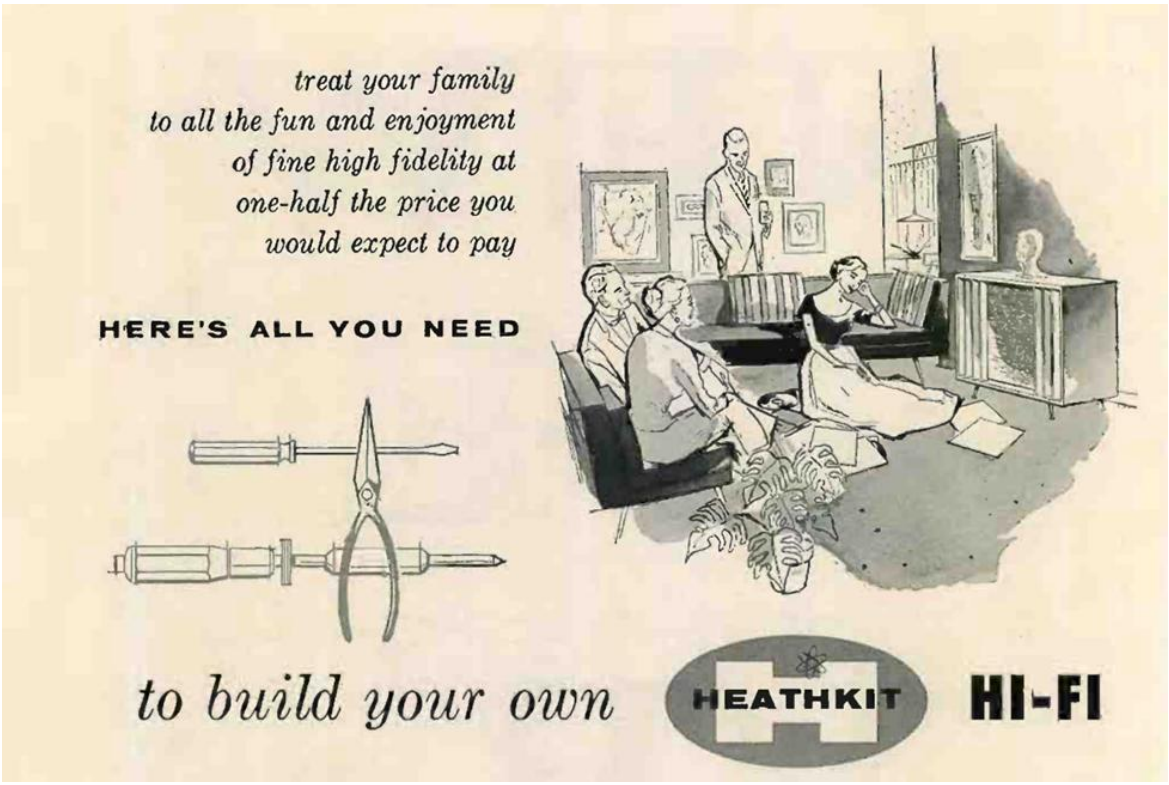

Figure 17. A family is gathered around a hi-fi set. Heathkit Company, Magazine Advertisement, *High Fidelity*, October 1957, 148.

Figure 18. Heathkit Company, Magazine Advertisement, *Hi-Fi & Music Review*, March 1958, 58.

"The Family All Together"[161]

As new floorplans for homes grew smaller and more open, spaces traditionally gendered as male—such as the den or the office—disappeared in preference for living spaces for the whole family. Keir Keightley claims that the living room became a sonic battleground, in which children and wives were depicted creating a racket with televisions, console radios, and kitchen appliances, and fathers sought solace and reprieve in high fidelity systems.[162] This "battle of the sexes" trope was certainly popular, but just as common (if not more common) were images of women, teenagers, heterosexual couples, families, and neighbors enjoying the hi-fi set alone or together. While father might enjoy the hi-fi after a long day work, he also bestows it—as the resident audio expert—upon his family and neighbors.

As a 1958 *University Speakers* advertisement illustrated, for example, hi-fi equipment was also a tool to reinforce familial harmony and celebrate the breadwinning and technological accomplishments of the father figure (Figure 19). This ad is dense with representations of family dynamics and lifestyle aspirations, and the strategies it uses to appeal to hi-fi buyers are common throughout hi-fi discourses. Running in the summer issues of *High Fidelity* in 1958 and 1959, the ad depicts a family enjoying an afternoon in the backyard of their suburban home. The children smile admiringly while the mother helps serve food that the father has grilled. The family is positioned by their inground pool; the large windows and clean lines of their midcentury modern-style house are visible in the background. The advertisement font eschews the popular

[161] This title comes from the name of a 1958 RCA Victor Record of the same name. The album was a collection of Boston Pops Orchestra Recordings advertised in *High Fidelity* magazine in 1955. The Boston Pops Orchestra, *The Family all Together* (RCA Victor, 1955), LM-1879i*;* RCA Victor, *High Fidelity*, December 1955, 77.

[162] Keir Keightley, "Low Television, High Fidelity: Taste and the Gendering of Home Entertainment Technologies," *Journal of Broadcasting and Electronic Media* 47, no. 2 (2003): 237–38.

flowery scripts and states in bold, unadorned letters: “Bach or Bebop While You Barbecue.” Near the top of the image, almost as an afterthought that looms above the family, the advertised loudspeaker is affixed to a corner of the porch roof.

Figure 19. This ad ran in the summer months of 1958 and 1959 in both Hi-Fi Review and High Fidelity. University Speakers, Magazine Advertisement, *High Fidelity*, June 1959, 26.

Like other elements of this image—the pool, the grill, the turf, and the modern house—this advertisement was selling the dream of financial success, knowledge, and technical prowess. The DIY element was vital in two ways, the first being that these ads targeted middle-class consumers who had the leisure time to make hobbies of things like lawn care and hi-fi. Secondly, building and tinkering were coded as masculine activities appropriate for men to do in their family leisure time, and prefabricated modular units streamlined assembly for those with little technical experience. Thus, advertisers used modularity to negotiate achievability and aspiration in hi-fi marketing.

The outdoor loudspeaker in the "Bach or Bebop" ad appealed to the hi-fi buyer in a similar fashion to the grill on which the father is preparing dinner. As *Esquire* contributor Harry Botsford declared in 1953, "When a barbeque goes into operation, it automatically becomes a masculine project. After all, outdoor cooking is man's work."[163] Propane grills in the 1950s were also a modular technology, requiring mechanical skill to assemble and operate without blasting a smoking crater into the lawn turf. Masculinity is tested and expanded here, as the father is engaged with homemaking and recreational time with the family, but in a fashion that connects to technicity, outdoorsmanship, and meat-grilling virility.[164]

While loudspeakers did not pose much of a safety hazard, wiring them from the porch to a receiver and amplifier in the home required forethought and expertise. The advertisement makes clear that these are auxiliary speakers, meaning that they would be an addition to an already complex indoor listening system and would require a "master control" and amplifier that

[163] Philip Wylie, *Playboy* 1957, 77.

[164] Harvey Levenstein, *The Paradox of Plenty: A Social History of Eating in Modern America* (Berkeley: University of California Press, 1993), 104–5.

can handle multiple sets of speakers. To have high fidelity outdoor speakers would have required the skills of a professional technician, or a knowledgeable hi-fi enthusiast with time and money on their hands.

Some hi-fi advertisements portrayed solo listeners as attending to "music as it was meant to be heard," garnering the often oft-repeated scholarly critique that hi-fi culture propagated structured listening practices.[165] As with my preceding interventions, there is some truth to this claim and so this critique is warranted, but hi-fi discourses also acknowledged the realities of day-to-day living and depicted a range of practices beyond solitary and studious listening. Just as popular were images of groups or individuals near the stereo doing other things like cooking, sewing, reading, or chatting (Figure 20). In women's magazine, *Better Homes and* Gardens, columnist and self-declared audiophile Burton Hillis reflected on the endearing noisiness of his home life:

> The hubbub of home is the hit tune of the week when—your knob-turning sparks the dog's wild clamor and your kitchen queen's beloved belittling: "Humph! You'd think WAS somebody!" …that basement racket is Junior fixing the shelf his mother has been after you to mend for a week…that kitchen scolding is the kids getting what they deserve for raiding their mom's new-made cooking before dinner. So, dutifully, you add a fatherly, "Children, mind your mother!"—and snitch a couple for yourself.[166]

Hillis's musings are breezy and joyful, and he betrays an intimate delight in the distractions around him. For Hillis, even the little irritations—like the racket of a family pet barking or the chiding of a wife—are an indication of the harmony, prosperity, and peace he is able to provide

[165] Axel Volmar productively outlines and critiques issues of structured listening, hi-fi culture, and masculinity. See, Volmar, "Experiencing High Fidelity," 149.

[166] Burton Hillis, "The Man Next Door," *Better Homes and Gardens*, April 1957, 396.

his family. He is listening to music, but he foregrounds familial "clamor" and celebrates the din of a nuclear togetherness. Depictions of distracted listeners indicate that, despite narratives of lone enthusiasts who long for "pure" and "silent" listening experiences, the sounds of family were not only more realistic, but also another desirable form of consuming music. Thus, the outdoor speakers in the "Bach or Bebop" ad pipe in hi-fi music, like the grill and the beautiful home, are indexes for a man at peace who can provide for his family and develop his own technical and musical interests in his leisure time.

Figure 20. Family gathered while laughing and listening at Christmas time. Norelco Speakers, Magazine Advertisement, *High Fidelity*, December 1956, 41.

The playful alliteration that leads the ad, "Bach or Bebop While You Barbecue," evokes both musical and gastronomical omnivorousness, notably mentioning the western classical canon and jazz in tandem. [167] Hi-fi magazines tended to promote close listening to a wide range of musical genres and a knowledge of jazz indicated that someone is "in the know."[168] The genres also indicated a modularity of taste, in which listening to bebop and Bach are both equally acceptable but not interchangeable ways of demonstrating one's masculinity. It is a bit surprising the advertisers chose to alliterate "Bebop." A more likely pairing might have been "Brubeck," as Dave Brubeck was (and still is) enormously popular with hi-fi enthusiasts. In a 1954 *Time* magazine feature, the cool jazz artist is described as a doting family man who is, "normally as peaceable as a lullaby." However, the author continues that,

> Brubeck has been known to come off the bandstand in the middle of a number and threaten to silence a noisy customer with his muscular hands, which, until a few years ago, were expert at roping cattle. But it has been quite a while since he has been forced to such extremes with audiences. Nowadays, people listen.[169]

This description exemplifies modular identity formation in practice. Like the father in the advertisement, Brubeck was not defined by any one masculine stereotype, but rather was a collection of identities that mutually reinforce one another. All components were necessary and no component functions independently.

Depictions of domestic masculinity are particularly easy to spot in speaker ads because they are the primary reason for family and friends to gather. However, this phenomenon is not

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[167] Richard A. Peterson and Roger M. Kern, "Changing Highbrow Taste: From Snob to Omnivore," *American Sociological Review* 61 (1996): 900–7; Paul Elvers *et al.*, "Exploring the Musical Taste of Expert Listeners: Musicology Students Reveal Tendency Toward Omnivorous Taste," *Frontiers in Psychology* 6 (2015): 1252.

[168] Phil Ford, *Dig: Sound and Music in Hip Culture* (New York: Oxford University Press, 2013), 119–21.

[169] "The Man on Cloud No. 7," *Time Magazine*, November 8, 1954.

exclusive to speakers. This Bell advertisement, for example, exclaimed that "Bell Has Everything You Want," including a "rich saddle tan finish," a "modest cost," and touch controls that "women will like most of all!" (Figure 21) This last quip about the touch control is an example of the sexist advertising trope that claims a device is "so simple a woman could do it," but it implies that while the woman can operate the tuner, it is the father's job to choose and install it. Not only does the AM/FM tuner have "everything you want," but so does the man in the image: He has a modern home with trendy furniture and carpeted floors, a happy (and well-behaved) child, and a fashionably-dressed wife. He and his wife are cradling and gazing adoringly at the tuner like a baby. Family portraits typically depict the mother holding the infant, but here, the component is *his* baby and *his* contribution to the domestic sphere. I also contend that the three tuner models on the right panel each indicate a way in which he might further express his role in the family. Each aligns with a different but equally valid and laudable patriarchal attribute: power, versatility, and thriftiness. Bell was advertising a tuner by drawing on the father's varying roles in the home.

Figure 21. Bell Sound Systems, Inc., Magazine Advertisement, *HiFi Music & Review*, March 1958, 43.

Conclusion

To return to Burton Hillis's quip: "The hubbub of home is the hit tune of the week when—your knob-turning sparks the dog's wild clamor..." Hillis's stereo is the conduit through which we experience the cacophony of his happy home. Like the men in the hi-fi advertisements, he used audio technology to orient himself in the familial din and celebrate his domestic form of masculinity. That masculinity could take different forms in different spaces indicates greater flexibility than is usually attributed to gender roles in the U.S. midcentury. This plasticity is important to acknowledge and analyze because dismantling monolithically constructed historical understandings of hegemonic masculinity paves the way for more nuanced and meaningful critiques of patriarchal systems of stratification, discrimination, and oppression.

Modularity is a way to organize this process of dismantling because it permits simultaneous compartmentalization and reconfiguration of identities as they are formed and represented in audio technology discourses. Here, loudspeakers serve as a point of entry to and analog for the outward expression of the Hi-Fi Man's relationship to his home, community, and family and the ways in which that home life is compartmentalized away from his professional and social life. As the ubiquitous symbol of sound, the loudspeaker is a necessarily outward sonic and visual expression of masculinity, but it is also a passive device that forms the façade for the rest of the hi-fi system. The power, quality, and content of the sound signal is manipulated by every other component before it reaches the speaker cones, exemplifying the interdependence of every component of a modular system. Modular masculinity renders legible the discrete components of masculine identity and the ways in which they interlock and depend on one another. I build out a relationship between the loudspeaker and domestic masculinity to demonstrate that, while family and home were omnipresent in midcentury print discourses, they

are but one compartment of an ongoing masculine identity project. Through this modular understanding of the loudspeaker and domestic masculinity we can learn both *how* a Hi-Fi Man might situate himself among his family and *who* he might be at home.

Chapter 3: Tangled Technologies: Audio Cables and Midcentury Scientific Masculinity

In her 1953 essay, "I am a Hi-Fi Wife," Eleanor Edwards jested that her husband suffered from an infection of the "high fidelity virus." This "mild form of insanity" drove men to spend recklessly on equipment and allowed audio cables to run amok under carpets, in walls, and along baseboards. She suggested that wives should find their own "constructive hobby," because "it's good, too, to be occupied during the times when your afflicted spouse is buried in tubes, wires, and soldering irons with no attention to spare on you beyond an occasional grunt."[170] Just as cables distract and possess Edwards's hi-fi husband, they dominate the title art that accompanies the essay (Figure 22). Taking up most of the article's first page, the cartoon depicts a kneeling husband, screwdriver in pocket, peering into the back of a speaker enclosure. Resistors, vacuum tubes, and capacitors are scattered on the floor. A mess of wires underscores the disarray as they wind through the drawing, up a towering speaker, and eventually out of view. The artist—*High Fidelity* art director Roy Lindstrom—uses these thin lines to evoke clutter, play, and movement. The cables link the hi-fi components, bring a sense of chaos, and guide the eye through the jumble of gear.

[170] Eleanor Edwards, "I am a Hi-Fi Wife," *High Fidelity*, Nov-Dec 1953, 44.

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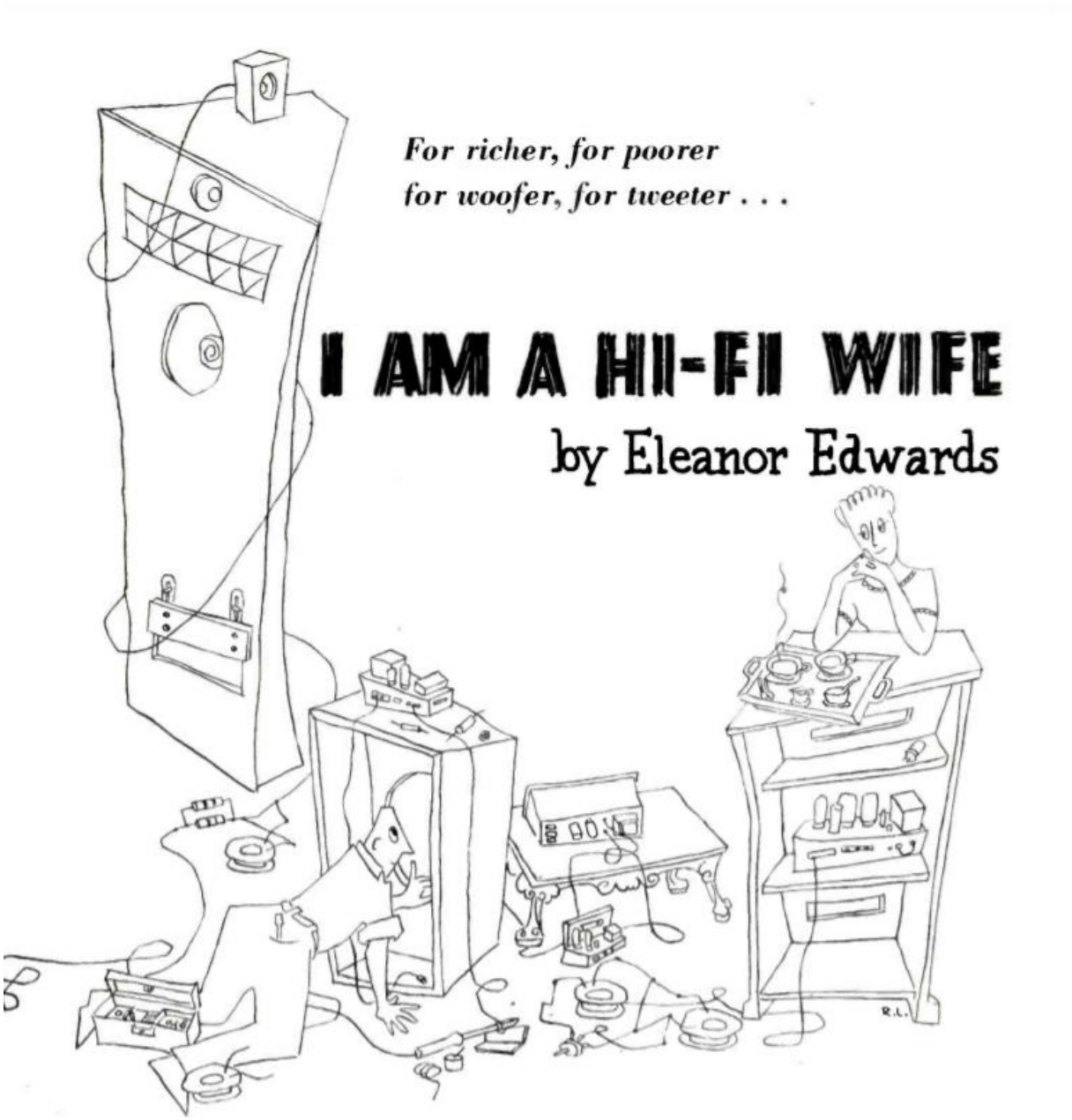


Figure 22. The “hi-fi wife” looks on in affectionate exasperation as cables and components clutter the floor around her husband. Eleanor Edwards, “I am a Hi-Fi Wife,” *High Fidelity*, November–December 1953, 44.

Edwards framed the hi-fi gear obsession as an explicitly masculine endeavor when she explained that "this affliction proceeds with incredible speed in the male cranium."[171] In a biological-deterministic tone common to the U.S. midcentury, Edwards implied that men have a naturally-born proclivity for tinkering with cables and connectors.[172] In this view, a hi-fi wife might be able to develop a taste for stereo records, but proactive engineering tasks—such as troubleshooting the source of unwanted hum or rewiring a faulty tuner—are presumed to be activities exclusive to the hi-fi husband. Indeed, Edwards insinuated that a woman would not become invested in hi-fi on her own and couched any interest a woman might take in sound technology in what was ultimately her husband's hobby. Edwards's essay also illustrates—in an exaggerated fashion—the ways the hi-fi components like cables embedded themselves in masculine identity formation. For the men that Edwards described, it was not just the quality of the gear that makes it worthwhile, but the fact that they could actively engage in and interact with the plugs and cables that connect the gear.

For Edwards and other home audio writers and advertisers, cables signaled the energetic potential of a hi-fi system. It was a system in flux and on the move, calling for experimentation, exploration, and the excitement of puzzling through technical problems. Troubleshooting required opening up components, twisting wires, soldering circuits, testing connections, and reassembling complex electrical systems. Cultural producers in the midcentury hi-fi community used cables, whether in rhetoric or images, to represent the dynamic nature of modular sound technologies and differentiate them from other feminized consumer electronics such as

[171] Ibid., 44, 132.

[172] For more on conceptions of gendered bio-determinism, please see Alexandra Rutherford, "Maintaining Masculinity in Mid-Twentieth Century American Psychology: Edwin Boring, Scientific Eminence, and the 'Woman Problem,'" *Osiris* 30, no. 1 (2015): 250.

televisions and microwaves. In hobbyist magazines such as *Audio, High Fidelity,* and *Hi-Fi Review,* visible cables signaled a prioritization of access to connections and components and rejection of prim domestic aesthetics.

In this chapter, I untangle the history of cables and demonstrate how 1950s hi-fi discourses linked the masculinized realm of professional sound engineering to the domesticized realm of the amateur audiophile. I argue that cable discourses were powered by the post-war rise of "scientific masculinity" with the action-oriented branding that masculinized "doing" home audio. Historians of science Erika Lorraine Milan and Robert A. Nye employed scientific masculinity as a framework for "rethink[ing] science as a fundamentally gendered activity, whether or not women are present."[173] Milan and Nye acknowledge the need to reveal the invisibilized stories of women's contributions to scientific work, yet also propose that there is productive work to be done in recognizing the historic ubiquity of men in medical, engineering, and scientific work. My approach to midcentury hi-fi cable discourses addresses Milan and Nye's driving question: "what does it add to our understanding of the sciences [and hi-fi] if we factor in masculine social and cultural perspective of time and place?"[174] In a cultural atmosphere that celebrated the "citizen-scientist," *enacting* hi-fi by soldering, twisting, and testing cables created a sense of closer proximity to the masculinized realms of professional science and engineering. Publications that catered to audiophiles blurred the lines between the apparent dichotomies of the amateur and the professional, as well as the musical and the scientific. Reviews, articles, and advertisements drew on the cultural energy generated by the

[173] Erika Lorraine Milam and Robert A. Nye, "An Introduction to *Scientific Masculinities*," *Osiris* 30, no. 1 (2015): 2.

[174] Milan and Nye, "Introduction to *Scientific Masculinities*," 1.

federal investment in "Big Science" to position the hi-fi hobby as dynamic and patriotic.[175] Such discourse introduced amateurs to electrical engineering and valorized technical competence: a masculinizing strategy aligned with the broader post-war U.S. nation-building project that glamorized technological progress and professionalized scientific research.

Despite their ubiquity and importance within the history of sound, cables figure little in the academic work on hi-fi.[176] Evoking Bruno Latour, Kyle Devine observed that the loudspeaker had been similarly taken for granted and "made invisible by its own success."[177] Likewise, cables are vital to the function of a sound system, yet are only perceived when they malfunction. Cables have been even further pushed aside because of the longstanding practice of disguising and hiding them, noticed only when they become a tripping hazard or creep into sight and disrupt the aesthetics of the living space. In contemporary audiophile culture, however, cables are rarely out of sight or mind. They enjoy an elevated consumer status, with whole sections in audio advice websites like Stereophile.com and HiFiNews.com devoted to them. In contrast, 1950s hobbyist magazines hardly ever depicted cables, let alone ran advertisements for them. Indeed, images and discussion of cables in midcentury hi-fi texts are scarce, and they were usually edited out of drawings and photographs of the devices being advertised. One exception includes *Audio Engineering* (later shortened to *Audio*), which was geared towards engineers and

[175] "Big Science" is a term coined in 1961 by Alvin Weinberg in his response to critiques of the emergent military-industrial complex. I will explore these terms and their nuances later in this chapter.

[176] I have yet to locate sound studies or musicological work that engages at length with cables or plugs. There are, however, examples from archaeology and media studies. See Paul Graves-Brown, "Plugging In: A Brief History of Some Audio Connectors," *World Archaeology* 46, no. 3 (2014): 448–61; and Damon Taylor, "Plugging in: Power Sockets, Standards and the Valencies of National Habitus," *Journal of Material Culture* 20, no. 1 (2014): 59–75.

[177] Kyle Devine, "A Mysterious Music in the Air: Cultural Origins of the Loudspeaker," *Popular Music History* 8, no. 1 (2013): 7; Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies*, (Cambridge, Harvard University Press, 1999), 304.

the most technically-minded hobbyists and ran advertisements for brand-name cables like Belden and Anaconda.

They may not have had the flashy presence of loudspeakers and turntables, but midcentury cables are not totally invisible. Cable manufacturers ran campaigns in magazines targeted at radio engineers and studio professionals, but they did not advertise in home audio magazines for amateur hobbyists. The advertisements that Belden Manufacturing ran in *Audio Engineering* did not depict home audio cables until 1960. When hi-fi cables (highlighted in red) did make an appearance, they only sported light shielding and thin twisted pair copper—a modest arrangement compared to the professional microphone cable (highlighted in green) with its braided aluminum treatments, or the Celluline lead-in cable (highlighted in blue) with its gas-filled core (Figure 23).[178] While cables were not often featured in advertisements, they did show up in the copy created to market other components, as well as in cartoons, reviews, articles, and letters to the editor. For this reason, this chapter will engage less with advertisements for cables, and more with the moments in which they incidentally appear in prose and art generated by magazine editors, contributors, and staff artists.

[178] Belden Manufacturing Co., Magazine Advertisement, *Audio Engineering*, October 1960, 5; Belden Manufacturing Co., Magazine Advertisement, *Audio Engineering*, February 1960, 5. Celluline lead-in cables were designed for connecting radio antennas to receivers. The core of the cable as made up of tiny sealed cells (like a sponge) that contained an inert gas. This design helped prevent signal loss and is still implemented in high-frequency applications.

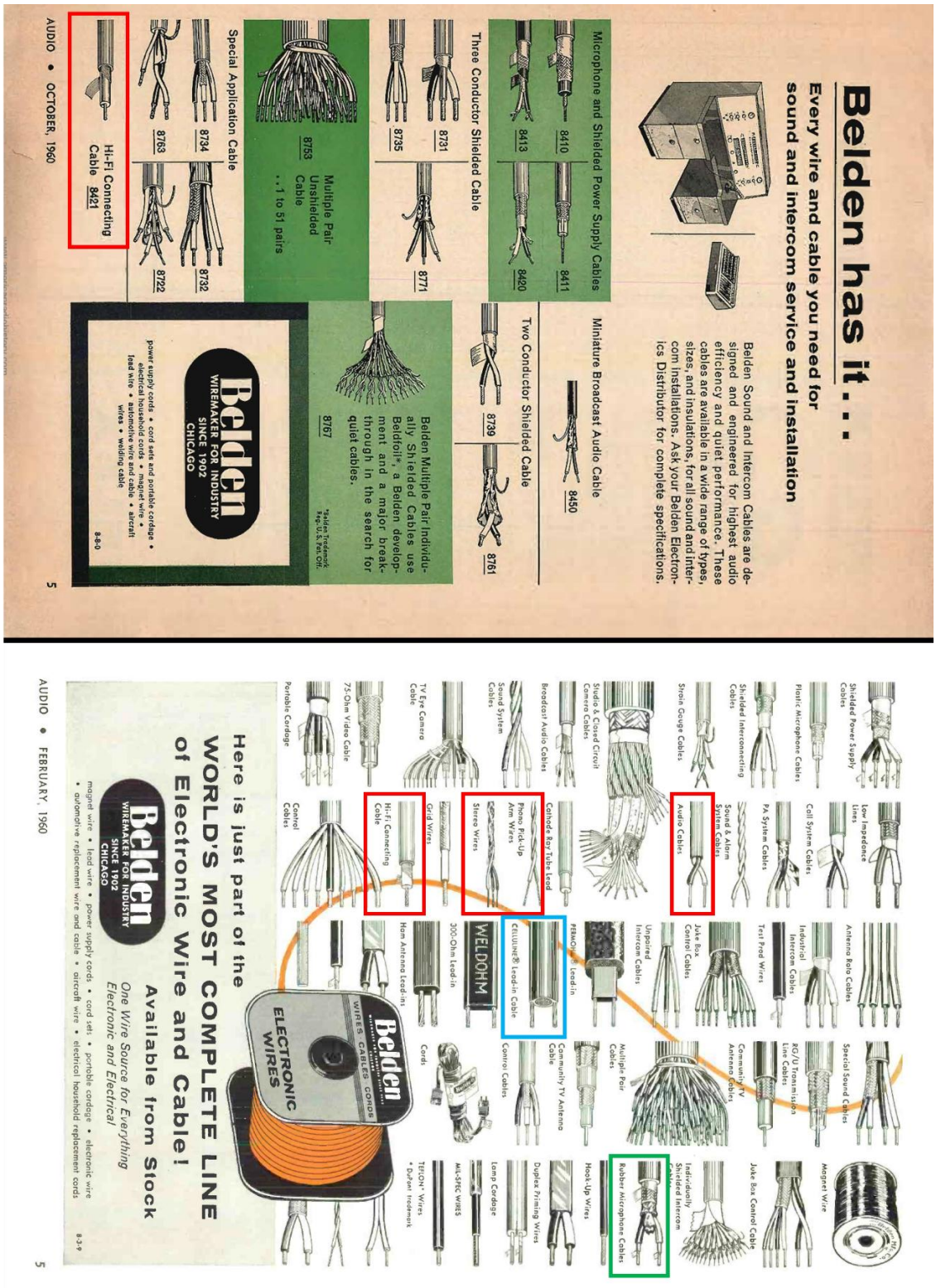


Figure 23. Cables designed for home audio applications (highlighted in red) first began to appear in Belden advertisements in the 1960s, but their construction would remain relatively modest until the 1970s. Cables for professional microphones (in green) and radio receivers (in blue) boasted advanced shielding and transmission technologies. Belden Manufacturing Co., Magazine Advertisement, *Audio Engineering*, October 1960, 5; Belden Manufacturing Co., Magazine Advertisement, *Audio Engineering*, February 1960, 5.

In the first section of this chapter, I provide a brief history of audio cables and connectors, pointing out the similarities and differences to the ways in which cables are advertised and discussed in contemporary hi-fi culture. Dovetailing from this material history, I show that cable discourses exemplified the emergent attributes of scientific masculinity by contextualizing the hi-fi hobby within the post-war rise of Big Science. I position the hi-fi hobby as an embodiment of scientific masculinity, and thus as an expression of patriotism, self-improvement, and ambition. Next, I delve into issues of flow and connection in magazine articles and illustrations that situated cables as both mechanical and musical implements. I analyze instances in which artists and authors depicted cables and musicians together, and show that images and descriptions of cables generated a sense of proximity to homosocial musical and professional "Networks of Power."[179] Finally, I use examples from both hi-fi magazines and women's lifestyle magazines (such as *Better Homes and Gardens* and *Women's Day*) to illustrate how the desire to hide cables was gendered across a variety of publications.

I provide a sprawling variety of case studies—ranging from hi-fi magazine advertisements to parenting advice columns to governmental dossiers. These examples portray a complex network of symbols and meaning that cable discourse communicated to different audiences. For hi-fi hobbyists they denote an opportunity to build electrical engineering skills, for mothers they are a dangerous nuisance, for industry leaders they represent the desire to build a knowledgeable workforce, and—at a higher level—they are a symbol of U.S. technological ambitions. This last claim is interpretive: I do not have concrete evidence of any one author, advertiser, or industry leader saying that cables are a symbol of progress. I do have evidence of

[179] Hughes, *Networks of Power*, 1–17.

connections across a wide range of publications that shows a powerful ideological current that flowed between federal initiatives and the Hi-Fi Man. In this way, cables serve as both an interpretive lens and a source of discourse that sheds light on the U.S. American masculinity identity-building project. Throughout this chapter, I propose that the relationship between audio cables and U.S. scientific progressivism reveals that the hi-fi hobby was systematically *made* to be masculine, despite women's general interest in and acceptance of home audio.

Audio Cables: Now and Then

In twenty-first-century audiophile culture, quality specialty audio cables are considered invaluable to a well-designed system. Websites dedicated to equipment reviews, such as *The Absolute Sound*, *Hi-Fi News and Review*, and *Stereophile* have entire sections dedicated to cables, listed alongside their assessments of amplifiers and speakers. Once relegated to the "accessory" category, cables have reached the status of fetish object, with some manufacturers running limited releases and special editions. The "van Gogh Interconnect Cable," for example, is a part of CrystalConnect's "Art Series" and was available in September 2021 for about £14,200 ($19,000 USD) for one meter with either RCA or XLR connectors (Figure 24).[180] Most audio and power cables are fashioned out of copper, which is an excellent conductor and relatively affordable. The "van Gogh" is fashioned out of braided silver, which is a slightly better

[180] Price conversion made in October 2021. The manufacturer, *Crystal Cable*, does not list prices on their website. This price is from a product review posted on *Hi-Fi News and Record Review* in September 2021. Paul Miller, "Crystal Connect van Gogh Interconnect Cable," *Hi-Fi News and Record Review*, September 7, 2021, http://hifinews.com/content/crystalconnect-van-gogh-interconnect-cable, accessed 2 October 2021.

conductor and far more expensive than copper.[181] One reviewer notes the hefty weight of the "noble metal within the Teflon dielectric," and praises the beauty of the cable, aligning it with the van Gogh's "iconic" artwork: "CrystalConnect has named this range after the virtuosi who set new standards of expression, their iconic artwork echoed by the precious silver conductors that are core to the performance 'painted' by these cables!" Characteristic of contemporary high-end cable discourse, the author's language is laden with technical jargon (e.g. "Teflon dialectic") and romantic valuations that say little about the performance of the cable.[182] Like the audiophiles that Marc Perlman describes in his 2004 study, high-end cable consumers resist scientific knowledge (i.e. that a silver cable is audibly indistinguishable from a copper one) and reinterpret it to serve the subjective experience of the listener, thus rendering their gear selection as much an art as it is a science.[183] With a matte silver finish and gold accents, the CrystalConnect cable is, admittedly, gorgeous.

[181] Electrical conductivity of silver and copper at 20˚ Celsius are 6.30×10^7 and 5.96×10^7, respectively. As of 23 February 2022, the market prices of silver and copper per pound are $24.56 and $0.28, respectively.

[182] "Teflon dielectric," for example, refers to the cable's plastic outer jacket, which insulates the silver wires from moisture and other electrical signals. Teflon can withstand high temperatures, making it an excellent material for coating cables used in high-heat applications like cooking appliances and combustion engines. However, this is not a concern in audio because sound signals do not produce a significant amount of heat. Similarly, a "noble metal" is any metal that is resistant to corrosion or oxidation (by some measures, copper is also considered a noble metal). In sum, the features that the reviewer celebrates are luxuries with little-to-no bearing on sound quality. For more on the debate on copper's status as noble metal, see Norman M. Edelstein, Jean Fuger, Joseph J. Katz, and Lester R. Morss, "Summary of Properties of the Actinide and Transactinide Elements," in *The Chemistry of the Actinide and Transactinide Elements*, 3rd ed., ed. Lester R. Morss, Norman M. Edelstein, and Jean Fuger, (Dordrecht: Springer, 2008), 1812.

[183] Perlman, "Golden Ears and Meter Readers," 783–84.

Figure 24. CrystalConnect's "Van Gogh" one meter cable with TRS terminators. This product is at the extreme high-end of audio cables, but there is much debate as to whether luxury cables impact sound quality. Photo from CrystalConnect's product listings, https://www.crystalcable.com/products/van-gogh/van-gogh/, accessed 2 January 2022.

Whether Teflon-plated cables with noble metal strands actually improve audio quality is hotly contested and the core of many self-effacing "snake-oil" jokes in blogs and forums.[184] The term "snake oil" is commonly used in the online audiophile community to describe the pseudo-scientific tactics used to market high-end audio components and, as already contentious components, it is sometimes difficult to find a conversation about cables that does *not* bring up snake-oil. For example, in just five days in February 2022, users in the audiophile community on Reddit.com (r/audiophile) had shared three cable-and-snake-oil-themed posts, all of which enjoyed significant engagement and scores of comments. Two of the Reddit posts describe

[184] Gene DellSala, "Is Synergy in Audio Cables Real or Snake Oil?" Audioholics Blog Post, 25 April 2020, accessed 20 February 2022, https://www.audioholics.com/audio-video-cables/synergy-audio-cables.

arguments about expensive cables, while the third is a meme joking that community members can civilly discuss speakers and electronics, but any mention of cables will result in virtual fisticuffs.[185] Cable discussions on stereophile.com, a trusted audio forum that has operated since 2003, often degrade into heated exchanges in which users call one another, "audiophool[s]," "pathetic paranoid fraud[s]," and "pseudo-scientist[s]" who "don't even know how AC works."[186] This fiery discourse betrays defensiveness among the community members who will abandon dispassionate debate to protect the objective integrity of their hobby. High-end cables are a reminder to audiophiles that they are susceptible to predatory marketing tactics that feed on a lack of engineering knowledge. This is a particularly sensitive nerve because a powerful mechanism of audiophile identity-building is self-education, product knowledge, and the feeling of proximity to the professional acoustic researchers and audio engineers, a point to which I will return later in this chapter.

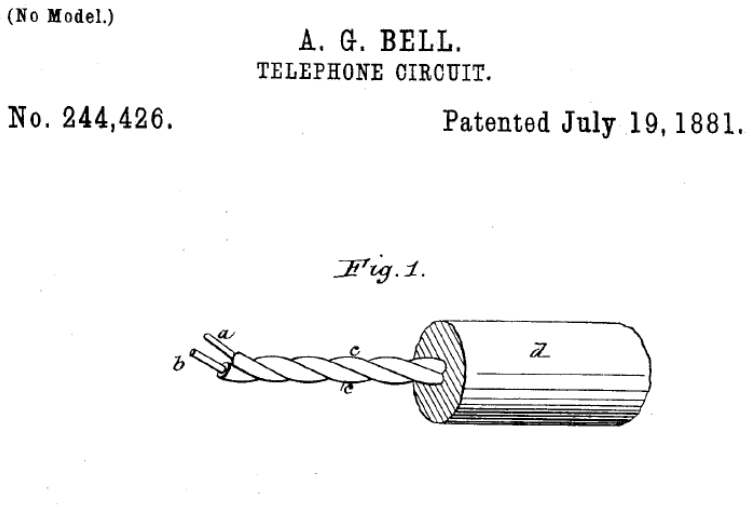
While cables did not enjoy the same attention in the 1950s as they do today, their basic construction and function has remained fundamentally the same since Alexander Graham Bell patented the twisted strand electrical cable in 1881.[187] Like telegraph and telephone signals, the

[185] u/FreidMile, "Had a fun debate on "snake oil" cables," Reddit post, 18 February 2022, https://www.reddit.com/r/audiophile/comments/svgs3y/had_a_fun_debate_on_snake_oil_cables/; u/Immediate_Macaron496, "For the Love of Cables!" Reddit post, 18 February 2022, https://www.reddit.com/r/audiophile/comments/svmp7g/for_the_love_of_cables/; u/andigo, "I think this photo suits this subreddit," Reddit post, 15 February 2022, https://www.reddit.com/r/audiophile/comments/st6zfy/i_think_this_photo_suits_this_subreddit/.

[186] Manunkind, "12 gauge or 14 gauge?" Stereophile forum post, 23 October 2021, https://www.stereophile.com/content/12-gauge-or-14-gauge; BillB, "Dang, it does sound better," Stereophile forum post, 22 July 2011, https://www.stereophile.com/content/dang-it-does-sound-better.

[187] Alexander Graham Bell, US Patent 244462, filed June 4, 1881, and patented July 19, 1881, https://patents.google.com/patent/US244426A/en. This is the generally accepted patent for the twisted strand, but Bell mentions in the patent text that he filed a patent in June 1878 that included the idea to twist strands together among other things. I have not, however, been able to find locate this patent nor mention of an earlier instantiation of twisting strands to reduce interference.

audio signal generated in a hi-fi system is a low-power electrical current that travels through a metal wire. Early researchers quickly learned that electrical wires require shielding, or a braid of insulating fibers that encases the wire and are usually covered by a rubber jacket. Shielding not only helps to protect users from electrical shock, but also insulates the wire from interference from other devices. This is necessary because all electronic devices and cables emit electromagnetic energy, which can disrupt—or interfere—with the quality of the energy as it moves through the wire. As Bell pointed out in his 1881 patent, single wires are especially susceptible to interference from other nearby equipment, even when shielded. All electronic devices require at least two wires—a direct and a return—to be a part of a complete electrical circuit. Bell found that twisting these wires together to form a multi-stranded cable radically reduced interference (Figure 25). Besides improvements to the materials and alloys that make up shields and wires, twisted-strand cables have changed very little since they became the industry standard for telegraphy and telephony in the early 1900s.



(No Model.)

A. G. BELL.

TELEPHONE CIRCUIT.

No. 244,426. Patented July 19, 1881.

Fig. 1.

Figure 25. Alexander Graham Bell's patent for the twisted strand cable, which helped to mitigate interference from surrounding wires and electronics. While some telegraph or telephone engineers may have already been twisting strands, either for increased strength or telephone engineers may have already been twisting strands, either for increased strength or interference mitigation, Bell is credited with the first twisted strand patent. Alexander Graham Bell, US Patent 244462, Telephone Circuit, filed June 4, 1881, and patented July 19, 1881, https://patents.google.com/patent/US244426A/en.

Until the mid-1970s, "zip cord"—a general-use copper cable that is easy and affordable to manufacture—was commonly used in hi-fi systems and cost so little that audio dealers often included it for free with the purchase of gear.[188] In Japan in 1974, research engineer Akihiko Kaneda worked with audio critic Sabro Egawa to prove that "sound quality of an amplifier could be changed even by wire or cable." Skeptical of Kaneda and Egawa's findings, an engineer at Mogami Cable, Koichi Hirabyashi, began performing experiments that included both electro-acoustic measurements and double-blind listening tests. By 1976, Hirabyashi's stance had shifted and he began "to recognize the fact that sound is changed by cable, as a result of the very

[188] Dick Olshner, "A Short History of High-End Cables," blog entry, *The Absolute Sound*, posted 2 August 2019, accessed 1 March 2022, https://www.theabsolutesound.com/articles/a-short-history-of-high-end-cables.

experiments of the discoverers in front of me."[189] Drawing from this work, Hirabyashi and his teams developed the first high-end audio cables: the Mogami 2803 interconnect and the Mogami 2804 speaker cable. Commonly called "Cobra Cables" due to their green and copper striped appearance, these products were imported to the U.S. by Polk Audio starting in 1977.[190] Around the same time, Ray Kimber—now the owner and head engineer of Kimber Kable—was working in Los Angeles as a technician installing speaker and light systems in new disco clubs. He found that the sound quality of the audio installations suffered because the thin, rubber insulation on his cables was not enough to prevent interference from elaborate lighting rigs. Kimber set out to design a cable that would protect the audio signal from outside disruption and, after several years of twisting and testing copper strands in his garage, launched a line of dedicated audio cables in 1979.[191] A flurry of interest followed developments of those made by Mogami and Kimber Kables, and the audio cable industry experienced a renaissance throughout the 1980s. By the 1990s, high-end cables with rare-metal alloys and hand-welded connectors were available on the home consumer market and have only continued to gain popularity up to the present day.[192] Cables in the price range of the CrystalConnects are exceptional, but it is common for

[189] Koichi Hirabayashi, "Hi-Fi Cable NEGLEX 2803 & 2804–Historical Review," *Mogami Product Catalogue*, 2014, 70.

[190] *HiFi and Stereo Review* mentions that Polk Audio "has been concerning itself with potential problems in speaker cables," and that "the product that has resulted is the Cobra Cable." U.S. publications largely ignored the research and contributions of Japanese researchers, a trend that continues in contemporary hi-fi publishing. In a 2013 round table of "pioneering founders of the cable industry" published by audio critic Robert Harley, there is no acknowledgement of Kenada, Egawa, or Hirabayashi and only William Low of Audioquest mentions that he started his cable manufacturing career as an importer of Mogami products. William Low, interviewed by Robert Harley, "Cable Designer Roundtable," blog entry, *The Absolute Sound*, posted 7 August 2013, accessed 1 March 2022, https://www.theabsolutesound.com/articles/cable-designer-roundtable/.

[191] Ray Kimber, interviewed by Robert Harley, "Cable Designer Roundtable," blog entry, *The Absolute Sound*, posted 7 August 2013, accessed 1 March 2022, https://www.theabsolutesound.com/articles/cable-designer-roundtable/.

[192] Olshner, "A Short History of Audio Cables."

contemporary audiophiles to put just as much care and thought into purchasing widely-available quality cables as they might put into choosing their speakers and receiver.

A hi-fi system typically calls for three types of cables or wires. The first type is the power cable, which runs from a power outlet in the home to components that require power like the amplifier, turntable, and receiver. These cables were thick and durable, made up of twisted strand copper and terminated with the familiar two-prong plug.[193] The second type of cable is the speaker cable, which is typically a thin and well-insulated twisted strand that goes from the amplifier to the speakers. Hi-fi speakers of the midcentury were "passive," meaning that they drew power from an external power amplifier. Passive speakers are powered only by an audio signal coming over a cable from the amplifier and do not need to be plugged into an electric wall outlet to operate.[194] The final type are interconnects—cables that connect one device to another—such as the cables that run between components like turntables and receivers. The terms "cable," "wire," and "lead," are used interchangeably in midcentury hi-fi writing, but in contemporary vernacular "cable" implies a bundle of single strand "wires," and "lead" is treated as a more technical term, usually referring to electrical wires on a circuit board.

Like cables, the plugs on the ends of connector cables—or that "terminate" them—remain fundamentally the same as they were in the 1950s. The most common terminations used in home audio were—and still are in contemporary analog systems—TRS (Tip, Ring, Sleeve)

[193] The third prong, which acts as the ground, did not become standard until after the 1960s when earth grounds became a required part of the United States building code. Even today, some sound equipment does not include a grounded plug, as there is a risk that they could cause a ground loop and produce a characteristic "ground hum."

[194] "Active" or "powered" speakers, on the other hand, have a built-in amplifier and need to be plugged into a power outlet (or use batteries). Both active and passive-type speakers are common in contemporary consumer electronics, although active speakers are less common in high-end home audio applications. Many systems (like mine) use passive speakers in combinations with active subwoofers, for example.

and RCA (Radio Corporation of America) jacks.[195] We often call TRS jacks—and their cousins the TS jack—"quarter inch" plugs, but for much of their early existence they were referred to as "telephone" or "switch" jacks because their primary function was to connect the circuits on telephone switchboards. The predecessor to the TRS jack only included the "tip" portion and was a part of a more substantial patent for a telephone switchboard apparatus filed by C.E. Scribner on behalf of Western Electric Company. The term "jack" originates from the socket portion of the apparatus, but can now refer to both the plug and the socket. As Scribner describes in his 1884 patent, when there is nothing plugged into the switch port, two spring-loaded metallic levers inside the port are in contact with one another, forming a closed circuit. When the plug is inserted into the port, it pushes these levers apart and ends up sandwiched between them. Because the plug remains in contact with both levers, it becomes a part of the electrical circuit and allows signal to flow from the telephone user's home to the circuit board. When the plug is removed, the levers spring back together and close the circuit again (Figure 26). Due to the lever's resemblance to a jack knife—a type of pocket knife that springs open and shut—Scribner described this plug apparatus as a "spring jack switch."[196]

[195] External Line Return—or XLR—plugs are also common audio connectors that dominate studio settings. XLRs, originally referred to as "Cannon" plugs, were invented by James H. Cannon in the mid-1940s and were in commercial use by the early 1950s. While there were early versions of XLR inputs on some midcentury hi-fi equipment, RCA, TRS, and direct line were the most common. Graves-Brown, "Plugging-In," 454.

[196] C.E. Scribner, Spring Jack Switch, US Patent 489,570, filed December 27, 1880, renewed February 1890, https://patents.google.com/patent/US489570A/en.

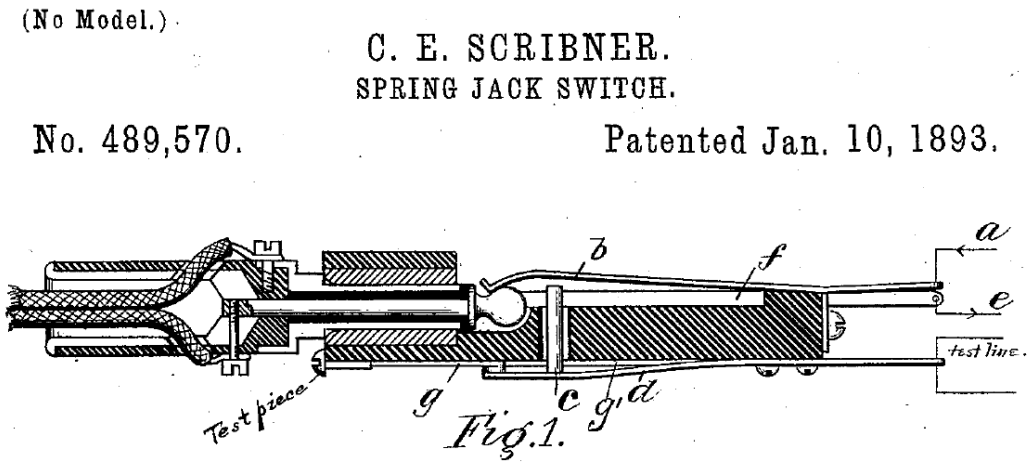


Figure 26. C.E. Scribner's "spring jack switch." The diagram depicts a plug—on the right—inserted into a jack. The spring, labelled "b," squeezes down on the plug tip, creating an electrical circuit. C.E. Scribner, Spring Jack Switch, US Patent 489,570, filed 27, 1880 and renewed February, 1890, https://patents.google.com/patent/US489570A/en.

The "Ring" and "Sleeve" portions of the plug emerged in the early 1900s. H.P. Clausen's 1902 patent describes a plug of "pleasing appearance" with a metallic sleeve subdivided into smaller rings with insulating gaskets. The additional contacts expanded the functionality of the jack to allow more than one electrical current to flow through the plug (Figure 27). [197] For telephone usage, the tip carried live signal, the ring carried the neutral, and the sleeve served as the ground. When stereo became available for home audio, the ring portion of the connector was implemented so that the tip carried the left channel signal, the ring carried the right channel signal, and the sleeve served as the ground. TS cables, which only have the tip and sleeve elements, are now generally used for monophonic applications.[198] Aside from improvements to

[197] William W. Dean, Plug and Spring Jack Switch, US Patent 787900A, filed by Western Electric Company Incorporated, filed January 14, 1902, issued April 25, 1905, and renewed September 28, 1905, https://patents.google.com/patent/US787900A/en.

[198] Contemporary TRS and TS also differ in that TRS cables are usually "balanced" and TS are "unbalanced." In the simplest terms, balanced cables have three cables: a ground, a cable that carries a sound signal, and a cable that carries the same sound signal but flipped upside down. As the two signals travel through their wires, they pick up

the materials that make up the plugs, TRS and TS connectors have changed very little in the past 100 years and continue to be used with electronic instruments, electric guitars, headphones, and audiophile gear. Their miniaturized form, what we now call "aux" (short for "auxiliary," pronounced "ox") cables, also emerged between 1954 and 1955 in response to "demand for smaller hearing aids, small tape recorders, and compact musical devices."[199]

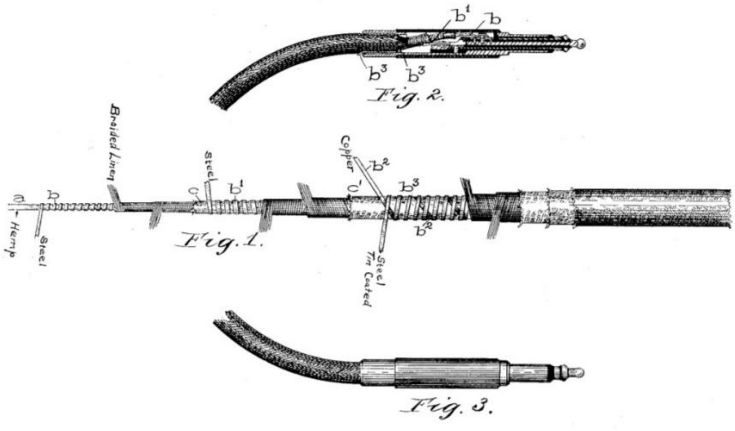


Figure 27. This figure from a patent filed by H.B. Holmes depicts an early example of tip, ring, sleeve plugs. Best known for engineering flexible, strong, and durable telephone cords, Holmes only mentions the "tip-ring-sleeve" connector in passing, suggesting that an insulated ring was widely in use by 1904. H.B. Holmes, US Patent 726840, Flexible Conducting Cord, filed January 27, 1902, and patented February 23, 1904.

Another common audio plug, the RCA plug—sometimes referred to as a "phono" plug—was introduced by the Radio Corporation of America in 1937.[200] Originally designed to connect phonographs to radio loudspeakers, RCA plugs were attractive to hi-fi buyers because they were

the same noise. The receiving gear flips the inverted signal right-side-up and, in doing so, inverts the noise that gathered along the way. Now one signal has -1 noise and the other has +1 noise (these numbers are just for clarity and not representative of how noise is measured). When the device combines the signals, their noise cancels out and the result is a clear signal. While balanced cables are excellent for reducing noise, they are more expensive to make and are not always necessary in home or electronic music applications. For this reason, both TRS and TS are widely used in both home and electronic music applications.

[199] "New Products," *Audio*, May 1955, 48.

[200] *Service Notes*, "Service Diagram for the U-109 Record Changer," RCA Manufacturing Company, 1937, 256.

smaller and lighter than TRS plugs, and became popular for home audio use during the 1950s. Unlike the TRS, there is no evidence that RCA plugs were used in commercial applications before being added to consumer electronics, which suggests that they were purposefully designed with domestic use in mind. RCA cables were originally coaxial, which is a distinct cable type from the twisted strand discussed thus far. Instead of having two wires twisted together, coaxial cables are layered. The inner layer is a copper wire conductor that is usually "live" and sending signal to the pin of the plug. The second layer is an insulator—usually braided aluminum—which is subsequently wrapped by a third layer with a second conductor, and finished with a grounded insulation layer. This second conductor joins to the outer ring of the connector that gives RCA plugs their distinctive look. The grounded outer later was very effecting in reducing noise and interference, making it an excellent option for running signal over longer lengths of cable. For this reason, the term "coaxial" is now more tightly associated with the heavy cables used to bring television and internet to homes. Contemporary RCA cables are not always coaxial, but RCA plugs and coaxial cables both have pin and sheath connectors, betraying their shared ancestry.

RCA connectors plug into a jack that protrude out from a device, which means that the plug and the jack each have one portion that inserts and one that receives. RCA's design—among the most ubiquitous in the history of audio—complicates the popular "mating" slang applied to plugs and jacks. Despite the more than 100-year history of cables, the gendered language around plugs remains contested. The gendered terms for "male" and "female" jacks are popular today, but are a relatively recent addition to the audio culture vocabulary and were not used in historical patents or audiophile magazines. In contemporary vernacular, the term male typically describes any connecter that has one or more protruding pins. A "female" part, then, is

a component with corresponding ports or indentations designed to receive the male pins. These terms were first seen in the 1880s to describe screw and nut fittings and were sparingly used to describe radio components in catalogue listings beginning in the 1930s.[201] The gendered labels exploded into widespread use in electrical and audio engineering in the 1970s and were so popular that the Institute of Electrical Engineers (IEEE) established in 1975 that "male" and "female" were slang terms and not appropriate for technical reports, diagrams, or patents.[202] The American Society of Mechanical Engineers (ASME) detailed further in 2008 that pins are not sufficient or relevant to the identification of plugs and moveable connectors should be designated as "plugs" and fixed ones as "jacks."[203]

Despite clear guidance from IEEE and ASME, "male" and "female" continue to be used in both amateur and studio audio discourses. In June 2021, the Professional Audio Manufacturer's Alliance (PAMA) members from major companies such as Sennheiser and Harman Karon began work to "address outdated language and terminology issues increasingly identified as discouraging a spirit of inclusivity within the professional audio community."[204] PAMA released recommended guidelines for neutral nomenclature for use in professional audio that included alternate language for plugs (plug/socket in lieu of male/female), as well as substitutes for other common turns of phrase used in studios such as "leader/follower" for

[201] For example, in a 1939 RCA equipment catalogue, most connectors are referred to as "inputs," and "plugs." An odd exception is a listing for Canon connectors (the progenitor to the XLR), which includes a "male" and "female" receptacle. *RCA Broadcast Station Equipment*, manufacturer catalogue, July 1939, 145.

[202] John S. Huggins, "Jack/Plug—Jack, Plug, Male, Female Connectors," blog post on An Engineer's View, posted 15 July 2009, accessed 3 March 2022, https://www.cosjwt.com/tag/ieee-200-1975/.

[203] IEEE-200-1975; ASME Y14.44-2008.

[204] Jennifer Shockley, "PAMA Leads Industry Initiative on Neutral Nomenclature," press release, 30 June 2021, accessed 3 March 2022, https://clynemedia.com/PAMA/InclusiveLanguageInitiative/PAMA_InclusiveLanguageInitiative.html.

"master/slave," "safelist/blocklist" for "whitelist/blacklist," and "placeholder" for "dummy."[205] As media artist and author, Peter Kirn pointed out in his response to PAMA's recommendations, shifting away from gendered terms will be difficult because, "these terms are familiar, and it's often hard to let go of familiar terms."[206] But, he continues,

> Making a working environment safe and reversing a history of past abuse means that we need to not be sexualizing our damned cables…It confuses the terminology, makes the tech harder to understand, and turns off people who—correctly—wonder what the hell is wrong with an industry that is still using these weird and non-descriptive terms that have nothing to do with cable interconnects.[207]

In line with PAMA's suggestions, I use "plug" and "socket" throughout this chapter. Because sockets are built into components, most cable advertising focuses on the design of and materials used to make plugs.

Twenty-first century consumers buying audio products typically expect the cables to have plugs pre-attached. This way buyers only have to make sure that they are buying the connection types appropriate for their device. In hi-fi, and especially in midcentury DIY culture, this was not always the case. Speaker cables, for example, were not sold with connectors and buyers chose to use a banana plug, spade connector, or to just wrap bare wire around a terminal.[208] Generally

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[205] Professional Audio Manufacturer's Alliance, "PAMA Recommendations for Neutral Nomenclature in Pro Audio," Version 1.0, June 2021. The terms master/slave are typically used when one component—the follower—receives and operates from timing information (such as a metronome) generated by another component—the leader. Placeholder units are usually used when testing or sound checking.

[206] Peter Kirn, "So Yeah, Let's Just Use Plug and Socket—Industry Group Recommends Obvious Change in Terminology," Create Digital Media, posted 7 July 2021, accessed 3 March 2022, https://cdm.link/2021/07/so-yeah-lets-just-use-plug-and-socket-industry-group-recommends-obvious-change-in-terminology/.

[207] Ibid.

[208] This is still the case for many high-end home and automobile speakers and speaker cables, although no longer common practice for mid-grade speakers, computer sound systems, or professional grade studio monitors.

speaking, plugs are made almost entirely of copper and—because copper is prone to oxidation—plated with a corrosion-resistant metal. Most plugs are plated with nickel, although it has become trendy for contemporary high-end cable manufacturers to market gold-plated connectors, arguing that gold is a superior conductor to nickel. Gold is an excellent conductor, but both nickel and gold are less conductive than copper and there is some signal loss no matter the plating material. Cable manufacturers of the 1950s did not advertise brand-name plugs, nor did magazine contributors show a preference for specific plug plating materials. This suggests that consumers did not take the conductivity of plug materials into consideration when buying components for their hi-fi sets.

Given the dearth of advertisements, reviews, and discussions of audio cables in 1950s and 1960s hi-fi magazines, it is difficult to glean prevailing attitudes about cables among midcentury audiophiles. It is safe to say that hi-fi enthusiasts did not research and select cables with the same care as other modular components simply because magazine readers did not often write in for cable buying advice nor did reviewers or manufacturers offer it. More commonly, cables were simply included and packaged with the gear that required them.

Brands that offered kits or DIY features, like Heathkit, Stephens, and Fisher, listed in their specifications whether or not the equipment would come "wired"—that is, with all of the electrical components and connectors pre-welded—and that the internal workings of their product did not require assembly. One 1953 *High Fidelity* reviewer even praised McIntosh—a high-end brand still in operation today—for finally offering "a series of cables with octal sockets all connected," given that "they are a nuisance for the amateur to wire and solder."[209] As the

[209] Charles Fowler, "The McIntosh 50-W-2," *High Fidelity*, January-February 1953, 92.

name implies, octal sockets require eight miniscule connections each to be soldered to a plug—a tedious job even for experienced electricians. Hi-fi enthusiasts wanted to interact with their cables and demonstrate a certain amount of engineering prowess, but within boundaries appropriate for amateurs. For this reason, advertisers did not wade too far into the murky waters of ohms, voltage, or capacitance, nor did they specify what type or quality of wire that would be included with their device. If they did mention cable, it was to specify its length.

This is not to imply that midcentury buyers did not care or know about issues of conductivity. Letters to the editor, product reviews, and articles featuring homes with multi-room audio suggest that cable length and impedance were of particular concern, as these are the factors that determine how much a sound signal might deteriorate as it travels through a system. Any impacts on sound quality are not perceivable with cables only a few feet long, but signal loss and disturbance increase with distance travelled. This was particularly worrisome for those wishing to connect their hi-fi set to speakers in other parts of the house, such as kitchens, dens, or outdoor patios. For all low-power signals, like audio signal, long cable lengths slightly attenuate the highest frequencies. This might mean that the highest pitches in the music sound muffled compared to the rest of the sounds. Because this loss was audibly perceivable even on loudspeakers developed in the 1930s and 1940s, this was the primary point of concern for those building new systems.

As explained in a 1951 *High Fidelity* article on installing hi-fi tape recorders, “The shorter the connecting cables, which should be shielded of course, the better. A wire not more than 9 or 10 ft. long is maximum for the low gain input. Cables longer than 15 ft. should be

avoided on the output side, if possible."[210] Here, "low gain input" referred to a consumer-grade microphone, while "output side" referred to the cable going from the tape recorder to the rest of the hi-fi system. In a review for a pre-amplifier in the same issue, the writer reported that he actually had to contact the manufacturer of the device to figure out how long his interconnecting cables could be without "causing a loss of more that 1dB at 10,000 cycles."[211] As suggested by these two examples, *High Fidelity* authors tended to assume readers had at least a surface-level familiarity with electrical engineering terminology such as "dB" (short for "decibels," a measure for signal strength) and "cycle" (short for "cycles per second," an expression of signal frequency), but did not go into the calculations needed to determine the line loss.[212] Even in technically oriented magazines like *Audio Engineering*, articles written for "beginners in the sound engineering field" skipped over advice regarding home audio in favor of discussions on professional radio and studio cabling practices.[213] As such, the quality, make, or brand of the cable came as afterthought in hi-fi magazine discourses. If cables are mentioned at all, they are treated as they are in a 1955 advertisement for a Fisher Amplifier, which relegated the cable to a parenthetical mention in the product specifications: "Three Controls: PowerScope, Z-Matic, and Input Level. Handsome, brushed brass control panel (with sufficient cable for built-in

[210] "Installation and Operation of a Magnetic Tape Recorder," *High Fidelity*, Fall 1951, 54.

[211] "Equipment Report," *High Fidelity*, Winter 1951, 81.

[212] "Cycles per second" is a term that predates the now-standard hertz, abbreviated Hz. Taking the name of German physicist, Heinrich Rudolph Hertz, Hz was adopted as a metric unit of measure by the International Committee of Weights and Measures in 1933. It was not until 1964 that the U.S. National Bureau of Standards opted to follow suit. A 1966 issue of *HiFi/Stereo Review* acknowledges that Hz is, "rapidly coming into general use." By 1967 "cycles per second" had mostly fallen out of use across all home audio publications. E. Lewis Frasier, "Improving an Imperfect Metric System," *Science and Public Affairs: Bulletin of the Atomic Scientists* 30, no. 2 (1974): 10; Daniel von Recklinghausen, "The Institute for High Fidelity Announces: New Standard for Amplifiers," *HiFi/Stereo Review*, January 1966, 58.

[213] O.L. Angevine, JR., "Impedance Matching," *Audio Engineering,* December 1947, 22.

installations)."[214] Otherwise, other components, usually amplifiers, were expected to contain technologies that could compensate for any shortcomings caused by cables, as is noted in National brand pre-amp specification: "OUTPUT IMPEDENCE: Approximately 3000 ohms accommodates up to 50ft. of cable between preamplifier and amplifier."[215] This indicates that buyers assumed that they were to receive a product that was comparable in quality and function to any other audio cable.

It was a challenge for hi-fi publications to keep technical writing approachable for hobbyists because, despite the mechanical simplicity of cables, it required time and study to understand the physics that make cables work. *Audio Engineer* reader, Jerome S. Miller, went so far as to write a letter to the editor in 1952 complaining that the recent issues of the engineer-oriented magazine had been far too dense with technical information: "Originally I found AE [*Audio Engineering*] palatable because of the wealth of sound detail on speaker systems, etc. that enabled me to fabricate my own home music combination. However, during the past four months or so, AE's menu has become so steadily indigestible due to the inclusion of mathematical data more suitable to the journal of a scientific society."[216] Miller and readers like him wanted to participate in the semi-scientific act of engineering a home sound system but, because this was a leisure activity, could dedicate only a limited amount of time and resources to the venture. Cable discourses prove to be a useful indicator of the way hi-fi enthusiasts gleaned a sense of technological mastery without the need to delve deeply into the physics involved. Thus, as I explore in the next section, it was through the technically undemanding acts of consumption and

[214] Fisher Radio Corporation, Magazine Advertisement, *High Fidelity*, December 1955, 25.

[215] National Company Incorporated, Magazine Advertisement, *Audio*, February 1955, 59.

[216] Jerome S. Miller, "Letters to the Editor," *Audio Engineering*, January 1952, 8.

DIY kit building that these audiophiles aligned themselves with the emergent masculinized values of scientific expertise and competence.

The Rise of "Big Science"

Milton Sleeper—the founding publisher of *High Fidelity* and *Hi-Fi Music at Home*—took seriously the educational and vocational potential of hi-fi, arguing that it was the "responsibility" of parents and educators to "inspire" their boys to enter engineering fields. To sidestep this responsibility was a "failure" to present the most prosperous and valuable "long-range possibilities" for the "youngster's future." Sleeper synthesized the influence of Big Science, hi-fi, and DIY practices and is worth quoting at length,

> The succession of Sputniks has served, as nothing else has ever done, to dramatize the needs for education, specifically in preparation for careers in engineering and the sciences… Hi-fi is beginning to make a contribution to that end, and one which, we hope, adult hi-fi enthusiasts will undertake to encourage…
>
> There is no greater sense of personal accomplishment a boy can experience than the satisfaction of having created, with his own hands, the means for making music. He becomes more important to himself and to his friends, and acquires a new interest to share with others.
>
> At the same time, it is his introduction to the field of electronics. He learns words used by engineers. Unconsciously, perhaps, he associates himself with others who have acquired special skills. Mathematics, physics, chemistry, and mechanical drawing–subjects that had been nothing but time wasted—take on significant values as a boy sees them in relation to the instructions and diagrams he follows as he assembles and wires a kit of parts.[217]

Sleeper made two important rhetorical moves that oriented hi-fi culture and masculinity within the Cold War space race. First, he opened by positioning the Sputnik program as the catalyst for

[217] Milton Sleeper, "Music in your Home: Hi-Fi Education for Boys," *Hi-Fi Music at Home*, November-December 1957, 39.

his editorial. The Sputniks were satellites launched by the Soviet Union starting in October of 1957 which, for many U.S. Americans, represented an embarrassing defeat. The so-called "Sputnik Crisis" spurred a series of federal science and policy advancements that spawned the Defense Advanced Research Agency (DARPA) and the National Aeronautics and Space Agency (NASA) and accelerated the development of the National Laboratory System. Significantly, Sleeper's editorial was published in late 1957—only a short time after the American public received news of the Sputnik launch—and can be considered an artifact of the Sputnik Crisis. The success of the Sputnik program was a blow to U.S. "heritage of technological supremacy" and thus a threat to U.S. masculinity. It is no accident that Sleeper suggested a systematic preparation of the nation's boys as a means to protect the future of the country.

Secondly, Sleeper proposed that mere exposure to hi-fi kits produced an "unconscious" connection between DIY builders and those in scientific professions. He used "wires" as a verb to animate the transformation a boy undergoes as he familiarizes himself with technical vocabulary and gains social prestige. For a boy, wiring "with his own hands," was a form of play and an activity that allowed him to try on new personalities, careers, and masculinities. Hi-fi kit building encouraged boys to imagine themselves as engineers or scientists and showed them that scientific masculinities offered financial success, cultural status, and, as framed by Sleeper, access to power on a global scale. For men and boys of the 1950s, wiring DIY audio gear forged a link between the masculinist ideologies of Big Science and hi-fi.

It is no accident that a hobby that intersects with electrical and audio engineering was (and continues to be) gendered as masculine.[218] Throughout the 1950s, audio manufacturers and

[218] Susan Douglas has explored the masculinization of sound technology hobbies in her work on crystal radio kits—a popular DIY activity that was marketed to boys as early as the 1920s. As Tara Rodgers shows, manufacturers

federally-funded research interests intertwined to produce cultural associations among masculinity, American identity, and engineering-adjacent tinkering.[219] The lesson that the U.S. government gleaned from the end of WWII was that those nations with the most scientifically-advanced weaponry and intelligence technologies would dominate the wars of the future. Lead by military officials like Dwight D. Eisenhower and industry giants like David Sarnoff of RCA, the state poured money into science and engineering initiatives, including the recruitment of workers to fill the growing number of specialized technical jobs. As I will show, research institutions and corporate manufacturers alike deployed hi-fi as a way to fulfill the masculinized ideals of making a living, supporting a family, and contributing to the betterment of the nation. At the same time, the discourses around hi-fi components reveal a midcentury conception of masculinity that drew on the investment in the military-industrial complex and professionalization and cultural prestige of scientists and engineers.

U.S. government money had been allocated to large-scale research well before the 1950s, including high-profile collaborations such as those with DuPont Chemical on gunpower and explosives during World War I; Sperry Corporation on microwave and radar technologies during the 1930s; and depression-era civil engineering feats such as the building of the Golden Gate Bridge and Hoover Dam.[220] Federal-corporate projects in 1920s and 1930s set the stage for the

specifically targeted their sales and marketing to boys despite the fact that girls showed substantial interest in early electronic instruments. Douglas, *Listening In*, 16–17; Rodgers, "Tinkering with Cultural Memory," 5–30.

[219] For a contemporary critique of audio marketing, masculinity, labor, and American identity-building, see Vágnerová, "'Nimble Fingers' in Electronic Music," 250–58.

[220] Peter Galison, "The Many Faces of Big Science," in *Big Science: The Growth of Large-Scale Research*, ed. Peter Galison and Bruce Hevly, (Stanford, CA: Stanford University Press, 1992), 3. In 1963, physicist and science historian, Derek De Solla Price, importantly pointed that that "Little Science" also maintained "elements of the grandiose." Thomas P. Hughes explicitly spells out such an example in his landmark study, *Networks of Power*, in which he describes the way Thomas Edison—whose private laboratory was a "Little Science" operation—employed dozens scientist and enrolled the help of a sprawling network of patent lawyers, international bureaucrats, and

post-war era, which witnessed a systemic federal commitment to enormous research initiatives.[221] These investments spawned the U.S. national laboratories, managed by the Atomic Energy Commission—what is now known as the Department of Energy. Fourteen laboratories opened between 1943 and 1967, including Argonne and Fermi in Illinois, Ames in Iowa, Brookhaven in New York, and—famous for its role in the development and testing of nuclear weapons—Los Alamos in New Mexico. As president, Dwight D. Eisenhower championed the government's stimulation of scientific research early in his term (1953–1961). However, by the time he delivered his farewell speech in 1960, he had become concerned with the power imbalances and profitability that accompanied massive funding allocations to military research. He warned against the continued propagation of what he called "military-industrial complex," citing the system's "total influence—economic, political, even spiritual" on the day-to-day lives of U.S. citizens.[222]

Many industry and academic leaders welcomed the national progress and pride that could be realized with virtually unlimited resources poured into what Alvin Weinberg—director of Oak Ridge National Laboratory from 1960 to 1973—called "Big Science."[223] Like "military-industrial complex," the term "Big Science" describes the government-funded and often military-oriented research done in universities and national laboratories. Weinberg shared Eisenhower's misgivings, but argued that Big Science was capable of work that would improve human life

businessmen to bring electrical power networks to major cities in the U.S. and Europe. See Derek J. De Solla Price, *Little Science, Big Science* (New York: Columbia University Press, 1963), 23–32; and Hughes, *Networks of Power*, 18–46.

[221] Galison, "The Many Faces of Big Science," 5–6.

[222] Dwight D. Eisenhower, "Farewell Address," Public Papers of the Presidents, Washington, DC (1960): 1035–1040.

[223] Eisenhower, "Farewell Address," 1036.

and, for better or worse, was here to stay. Weinberg did express regret that so much funding was being funneled to "space flight and high-energy physics" and "these scientific Olympic Games" against the U.S.S.R. He preferred that the resources spent on Cold War posturing would be better used on, "scientific issues which have…more bearing on man's welfare," such as work that could improve medical technologies or prevent water and air pollution.[224]

"Big Science" and "military-industrial complex" have come to have similar meanings, although the former is more euphemistic than the latter. This is partly because Weinberg's notion of Big Science largely ignores the contributions, and potentially corrupting forces, of industrial research, development, and manufacturing. Like national laboratories, private companies could apply for government funding, but they had the resources to profit from sales to private consumers *and* the U.S. government. Aforementioned examples of companies that held such government contracts were DuPont and Sperry, but companies more familiar to audiophiles—such as RCA and PhilCo—also developed technologies like radios, loudspeakers, microphones, and amplifiers specifically to sell to the U.S. military. Thus, the companies that built the hi-fi gear that graced living rooms and DIY kits that haunted garage work benches also boasted large contributions to the U.S. national pursuit of global technological supremacy.

Audio manufacturers were conspicuous about their material and intellectual contributions to World War II, the Korean War, and the scientific race against the Soviet Union. On the day that the U.S. officially declared war in 1941, RCA required workers to publicly pledge allegiance to the United States and stopped all consumer product research to focus on production that contributed to the war effort (Figure 28). Well-known for its contributions to phonograph,

[224] Alvin M. Weinberg, "Impact of Large-Scale Science on the United States," *Science* 134, no. 3473 (1961): 161.

loudspeaker, microphone, radio, and vinyl record production technologies, RCA redirected all consumer product development resources to battle-ready communications equipment. Even Harry Olson—a pioneer in hi-fi for his contributions to loudspeaker acoustics and amplifier technologies—dutifully abandoned his hi-fi projects to work on underwater surveillance microphones and aircraft speed indicators.[225]

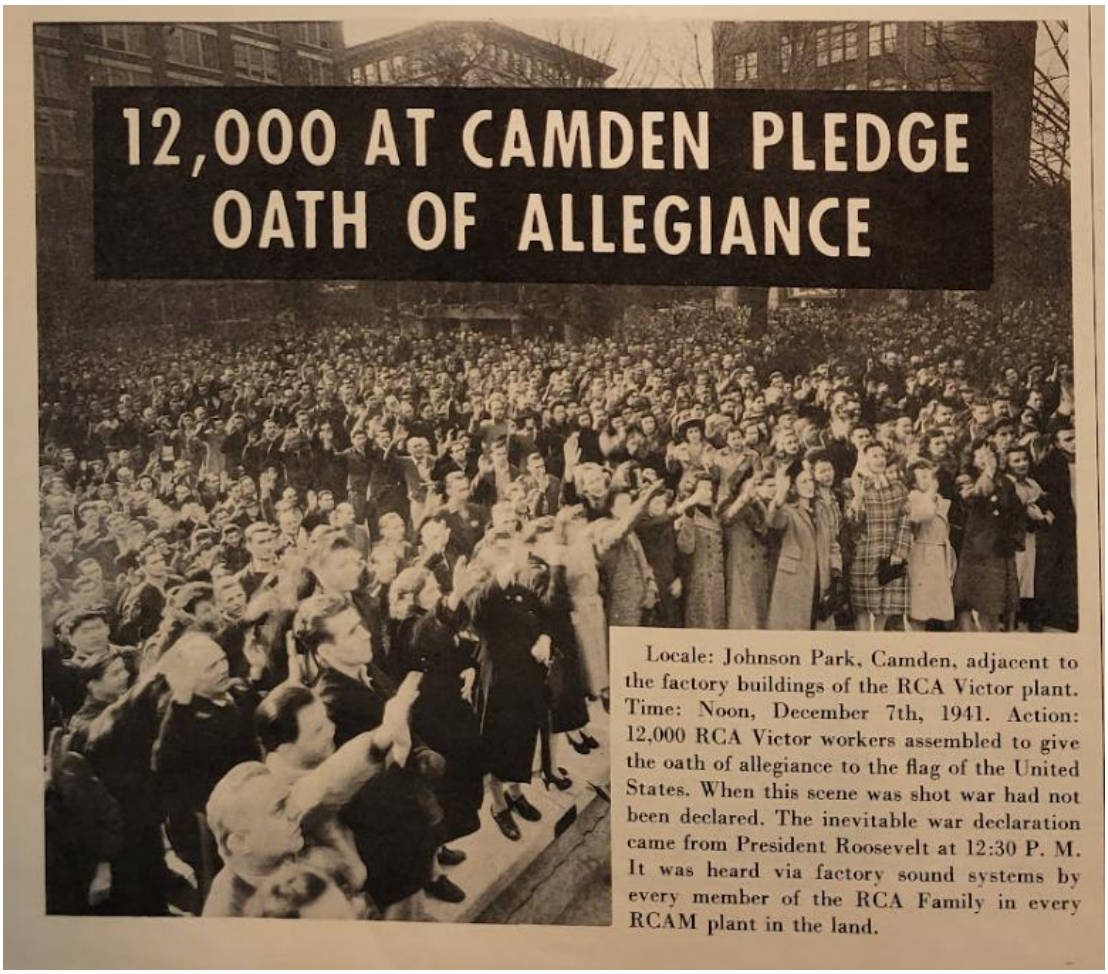

Figure 28. RCA Employees gather to pledge allegiance to the flag. The image caption takes care to mention that the declaration of war was heard over RCA loudspeakers in every company facility "12,000 at Camden Place Pledge Oath of Allegiance," *Beat the Promise*, company newspaper, December 1941, 2. David Sarnoff Collection, RCA Publications, box 1162, folder 4.

[225] Cyril M. Harris, *Harry F. Olson, 1901–1982: A Biographical Memoir*, (Washington, D.C.: National Academy of Sciences, 1989), 401. Harry Olson engineer's notebooks, David Sarnoff Research Center records, Acoustical and Electromechanical Research Laboratory records, boxes 1110–11.

Olson's lab returned to working on home electronics after the war, but many others were permanently assigned to defense work. A brochure published by RCA in 1958 called the company laboratories, "'ARSENALS' FOR SUPREMACY IN MILITARY ELETRONICS." Alongside red, white, and blue-tinted photographs of expansive facilities, the brochure text explains that, "RCA's manpower, productive plants, scientific skills, and field services become 'arsenals' in the defense effort of our nation. These arsenals are overflowing with information and ideas…latest developments in the engineering world, newest approaches in equipment design, better techniques in manufacturing, more comprehensive methods in field service and training."[226] Throughout the 1950s and 1960s, RCA's military work remained an important source of revenue and prestige that would only wane with the company's mismanagement and eventual buyout in the 1980s.

With the federal investment in technological research, the high demand for consumer electronics, and a healthy post-war economy, the need for professional scientists, engineers, and skilled technicians grew exponentially.[227] National laboratories, electronics companies, and adjacent manufacturing industries required an extraordinary number of workers, from entry-level technicians to leaders in atomic energy. The growth in the technology sector in the 1950s was so frenetic that the number of available jobs outpaced the number of available workers and, by the mid-50s, media outlets and scientific journals of all types fretted over a shortage of "scientific manpower." The *New York Times* ran dozens of stories between 1951 and 1959 with headlines like, "Skilled Scientific Manpower One of Nation's Great Needs," "Experts Warn U.S. of Soviet

[226] RCA, "RCA Service in National Defense," published brochure, circa 1958. David Sarnoff Library Collection, Hagley Museum and Library, RCA Publication, box 1212, folder 8. Ellipses in original.

[227] Price, *Little Science, Big Science*, 23–32.

Science: Engineering Manpower Battle Being Lost," and "Lack of Scientists in Defense Feared."[228] The media attention was in part spurred in 1953 when the National Manpower Council—a private group of sociologists, business people, and scientists assembled under a Ford Foundation grant in 1951 at Columbia University—released data that revealed an urgent shortage of skilled workers and a shrinking interest in scientific careers among teenagers. The council cited several contributing factors, including low birth rates in the 1930s, loss of life during the wars, and deferred ambitious young men who were drafted in both World War II and Korean War.[229] The president of RCA, David Sarnoff, joined the discourse, proposing that "industry make part of its supply of technically trained personnel available" to assist high school math and science teachers in meeting these growing demands.[230]

The National Manpower Council offered this advice: "A democratic society must rely on voluntary and primarily indirect methods for attaining its manpower goals" and that the federal government must develop a "more sympathetic climate for intellectual endeavors."[231] Consumer electronics manufacturers also needed to hire qualified technicians and scientists and, like the federal government, benefitted from fostering a "sympathetic climate" for interest in technology and engineering. In a series of editorials run in *TechRep Bulletin*—a circular distributed to radio field technicians and audio equipment dealers by PhilCo—editor John E. Remich specifically

[228] Howard A. Rusk, "Skilled Scientific Manpower One of Nation's Great Needs: Preparing of Youth for Specialized Work Held as Essential as Military Training," *New York Times*, 11 February 1951, 44; "Experts Warn U.S. of Soviet Science: Engineering Manpower Battle Being Lost," *New York Times*, 30 January 1950, 13; "Lack of Scientists in Defense Feared," *New York Times,* 14 February 1951, 7.

[229] "National Manpower Council," *Science* 117 no. 2049 (1953): 618–19.

[230] David Sarnoff, "Technology and Society," *New York Times,* 30 January 1956, 26.

[231] "National Manpower Council," 622.

cited “hobbies” and “tinkering” as gateway activities to the patriotic and civic contributions of electric engineers:

> As short a time ago as the beginning of the Second World War, the nearest approach to the electronics field engineer of today was the hobbiest [sic], radio hand, and radio servicemen all of who were regarded perhaps as “tinkerers…”
>
> The serviceman, ham, tinkerer, or whatever he was called, became a key figure in electronics and the nucleus of the field engineering profession…
>
> Today the field engineer, who started out with little more than a practical knowledge of electronics maintenance on receiving and transmitting equipment, is the engineer whose knowledge enables him to design and engineer complete communications and radar systems networks…
>
> It is to the credit of these pioneers of the field engineering profession that they were able to help in the development and utilization of electronics systems which contribute so much to the industry and to the power of our Armed Forces on land, sea, and in the air.[232]

In a later issue, Remich joined the chorus of media concerned about the worker shortage, claiming that, “It is a well-established face that Americans have been blessed with aptitudes for technological skills that have been responsible for many new scientific developments,” but that they must not “rest on their laurels.” He advised that the industry carefully “stimulate and maintain the interest” in technical work by promoting “electronics hobbies, such as amateur radio, high fidelity, and radio control models.”[233] Remich’s editorials capture the type of potential energy the federal government and industry infused into certain hobbies: tinkering with

[232] John E. Remich, “Editorial: The Growth of Field Engineering,” *Philco TechRep Division Bulletin* 4, no. 2 (1954): 1.

[233] John E. Remich, “Editorial: Technical Skill—America’s Heritage,” *Philco TechRep Division Bulletin* 5, no. 5 (1955): 1

radio and hi-fi gear during leisure time was a patriotic and productive act that helped citizens gain the skills necessary to perpetuate "America's Heritage" of technological supremacy.[234]

The sprawling efforts of the federal and corporate research laboratories created a tension between the large-scale cooperative work required to keep up with the "technological race" with the U.S.S.R., and the post-war anxieties around high "organizational towers" coercing men out of their rights to individuality, independence, and creative thought.[235] Historian K. A. Cuordileone's analysis of the writings of midcentury cultural critic, Arthur M. Schlesinger, reveals that liberal and conservative anti-communist factions developed communist/democratic, Russian/American, enslaved/free, and feminine/masculine dichotomies that pervaded U.S. political and cultural rhetoric. Cuordileone explains that Schlesinger and others were concerned that working for massive companies made men prone to surrender authority to "the group, party, organization, collective, womb, rather than cope with the difficult business of being free (or its equivalent, being masculine)."[236] For Schlesinger, democracy and masculinity were what distinguished the U.S. from the U.S.S.R and what would be lost if the U.S. were defeated in the war against communism.

With this in mind, the National Manpower Council closed their 1953 recommendations with a section titled, "Manpower Policies in a Democratic Society," in which the council maintained that, "A democratic society must rely on voluntary and primarily indirect methods for

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[234] Ibid.

[235] "The Technological Race," *New York Times*, 13 November 1954, 14; Arthur M. Schlesinger, "The Crisis of American Masculinity" *The Politics of Hope*, (Cambridge: Cambridge University Press, 1962), 237–46.

[236] K.A. Cuordileone, "'Politics in an Age of Anxiety': Cold War Political Culture and Crisis in American Masculinity, 1949–1960," *Journal of American History* 87, no. 2 (2000): 524.

attaining its manpower goals."[237] Considered together, media like the Remich's PhilCo editorials, Schlesinger's cultural critiques, and the National Manpower Council's analyses generated a consistent message for U.S. citizens: emasculated Soviet engineers, in the protective and crushing "womb" of communist rule, were not capable of the same virile, dynamic, and ingenious approach to scientific discovery as those in the U.S.[238] Indeed, it was the *duty* of American men to gain a working familiarity with science, cultivate their innate technological skills, model scientific masculinity for their sons, and—through these "indirect methods"—"attain manpower goals" required to assure the survival of democracy.[239]

In this heady progressivist political and cultural environment, manufacturers who advertised in audio, radio, and electronics hobbyist magazines positioned men's leisure time as productive space for self-improvement, learning, and practicing technical skills. An added benefit to these hobbies is that they could lead to improved job opportunities in fields that, as I explored above, the U.S. government and corporations were working hard to make more attractive to skilled workers. With the G.I. Bill funding the college education of returning veterans and increased availability of well-paying engineering jobs, once lofty white-collar titles like "scientist," "engineer," and "technician" became accessible to a large swath of the

[237] "National Manpower Council," 622. Underpinning the language from the council and cultural critics is the suggestion that the U.S.S.R was not experiencing a shortage because Soviet officials forced individuals into technical jobs. While the Soviet Union supposedly "select[ed] and train[ed]" any "student with scientific aptitude," the U.S. needed to encourage its populace with prestige, pay, and patriotism. For more on the U.S. and the "select and train" rhetoric during the Cold War, please see Audra J. Wolfe, *Freedom's Laboratory: The Cold War Struggle for the Soul of Science*, (Baltimore: The Johns Hopkins University Press, 2018): 136.

[238] For more on the "duty" and "spiritual calling" of work in science and the sentiments around cooperative science in the context of the American Cold War, see Steven Shapin, *The Scientific Life: A Moral History of Late Modern Vocation* (Chicago: University of Chicago Press, 2008), 16–17, 165–208.

[239] "National Manpower Council," 622; Wolfe, *Freedom's Laboratory*, 137; Jürgen Martschukat, "Men in Gray Flannel Suits: Troubling Masculinities in 1950s America," *Gender Forum* 32 (2011): 1.

population. Hi-fi magazines frequently included job listings for entry-level technical positions at companies like General Electric, Hughes Research and Development Laboratories, and Bell Telephone Laboratories. *Audio*, oriented to the technically-minded audiophile, included an "Employment Register" column in every issue.

Employment and technical training listings were not exclusive to the 1950s, and the message that technical skills could lead to higher incomes and stable work had been percolating in radio circulars since the 1930s. Figure 29 shows a 1938 cartoon that ran as a part of an advertisement for a radio trade training institute, which was one of many for-profit, at-home education programs that promised men that they could turn their radio-building hobby into a lucrative full-time job. Come the 1950s, the U.S. military joined the din. An Air Force spot in a 1955 issue of *Popular Electronics* exhorted readers to "Put [their skills] to work where they'll do the most good…put your skills to work in the U.S. Air Force."[240] The listing includes "wire maintenance" alongside other "interesting specialties" in which the recruits may train, including "missile guidance systems" and "weapons."[241] Technological pursuits of any scale—from soldering stereo terminals in the den to wiring fighter jets—were an expression of masculinity tinged with idealizations of progress, usefulness, purpose, and nationhood.

[240] United States Air Force, magazine advertisement, *Popular Electronics*, September 1955, 14. *Popular Electronics*, while not explicitly a hi-fi magazine, enjoyed a substantial market of readers interested in home audio. The journal regularly dedicated major sections of each issue to hi-fi technologies and often featured hi-fi gear on the cover.

[241] Ibid.

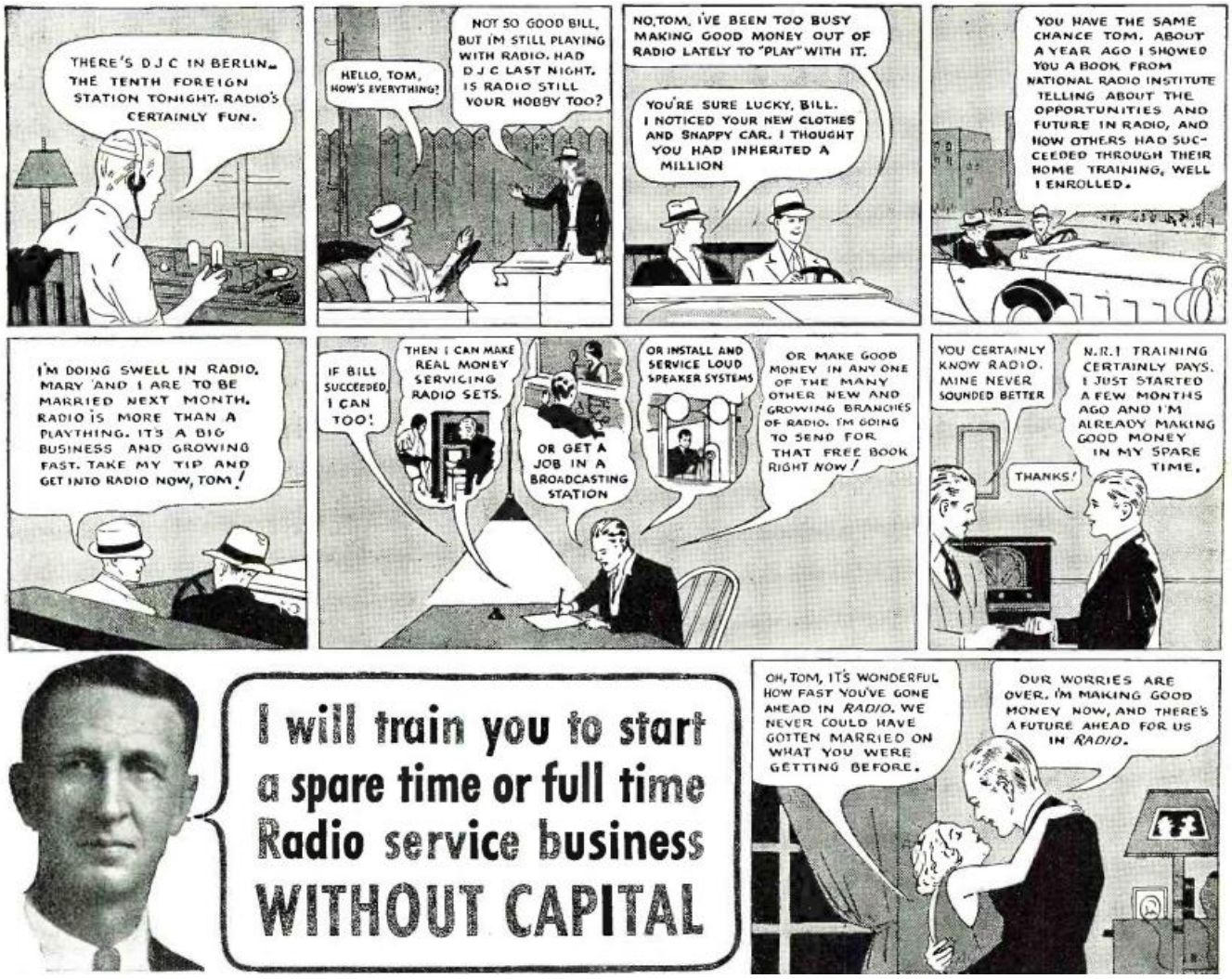

Figure 29. A comic strip depicting a radio enthusiast who uses his technical skills to earn money, gain financial stability, get married, and gain the admiration of his wife. National Radio Institute, Magazine Advertisement, *Radio News*, December 1938, 3.

Hi-Fi Cables and Networks of Power

Crucial to the masculine identity of the home hobbyist was that, unlike pastimes that were coded feminine (gardening) or masculine but based in traditional practices (woodworking), the expertise required to work with cables were transferable to a profession in the sciences. Tinkering with a hi-fi set, then, was not an idle distraction, but *work* that cultivated a valuable set

of skills. Unlike other components designed for domestic use, like the speaker enclosure or the turntable, cables were a potent symbol of the masculinist worlds of engineering and science because they evoked infrastructures and systems far beyond that of the living room audio set up: research laboratories, recording studios, broadcasting stations, and the electrical grid that powered the country. In this way, plugging a TRS connector into a hi-fi receiver (for example) was also plugging into the network of powerful cultural associations that revealed a man's sense of duty, virility, individuality, and creativity. As devices used in telephony, radio and T.V. broadcasting, and electrical engineering, cables were a powerful indicator of a "man at work" and, when used in images and rhetoric, brought into the home the momentum of the burgeoning military industrial complex.[242] Like carpentry and radio building, work on hi-fi systems was among the activities men and boys could do in their leisure time that were considered "useful" due to their proximity to professional trades.

Hi-fi magazine publishers who brought cables into dialogue with musical content capitalized on these associations by using them to indicate professionalism, dynamism, and labor. In their design and function, cables evoked metaphors like flow and connection, but they also had the symbolic power to create crossover networks that tighten the relationships among artists, engineers, studio producers, and listeners. Take, for example, a 1956 cartoon from an RCA Victor educational publication that depicted famed conductor Leopold Stokowski

[242] With this evocation of telephony, it is important that I note the different ways cables are operationalized in the historical narratives around men in hi-fi and women who were telephone operators. While I masculinize cables as a symbol of scientific ingenuity and potential for access to high-paying engineering jobs, they are just as easily associated with the low-paying telephone switchboard work traditionally associated with young, white women employees. As Venus Green describes, companies like Bell Systems sought to keep down employment costs by framing switchboard operation as low-skill, highly-repetitive labor that was akin to clerical work. The stark differences between the "plugging-in" done by hi-fi men and switchboard operators demonstrate that the symbols I work with here can be constructed in various ways depending on the gendered and professional context. For more on the history of gender, race, and telephone operation, see Venus Green, *Race on the Line: Gender, Labor, and Technology in the Bell System, 1880–1980,* (Durham, NC: Duke University Press, 2001), 1–11, 53–60.

surrounded by microphone booms and dozens of cables in a "stereophonic sound recording session" (Figure 30).[243] By 1956, Stokowski was well-established as a pioneer of orchestral recording practices and experimented with bleeding edge sound technologies.[244] Stokowski's figure is depicted as a form of Hi-Fi Man in that he generates music that is destined to be played on the reader's hi-fi system. Stokowski, the microphones, and the cables are drawn with bold, dark lines while the members of the orchestra and their instruments are lightly sketched into the background. The cables in the cartoon never terminate and fade out in the foreground, sending the sounds of Stokowski's orchestra off the page. This transmission connects Stokowski's legacy of technological experimentation with the hi-fi enthusiast who, through tweaking plugs and cables, can enact a certain level of musical direction, participation, and control.

[243] In 1956, stereo sound recording and reproduction was a new technology in home audio. "Understanding Hi-Fi," *RCA Victor*, 1956, 25.

[244] Charles L. Granata, "Disney, Stokowski, and the Genius of Fantasia," in *The Cartoon Music Book* (Chicago: A Capella Books, 2002), 82–86.

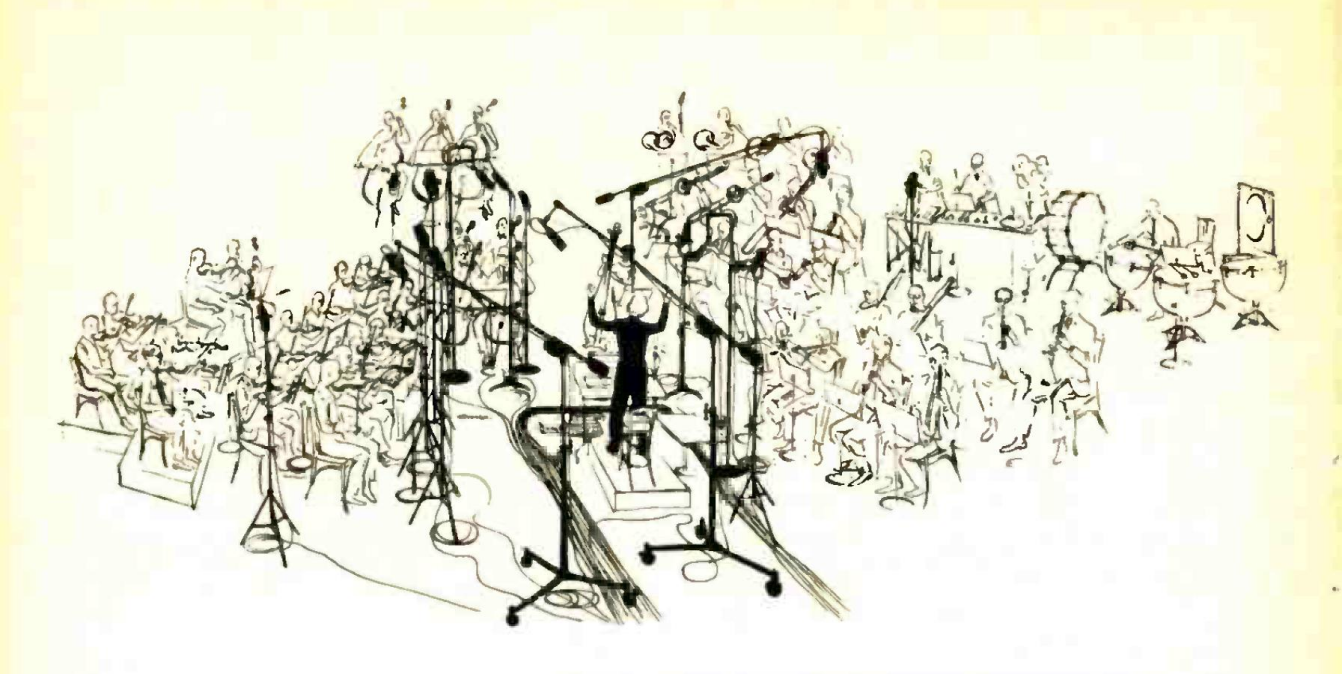

Figure 30. Illustration of Leopold Stokowski during an RCA recording session. “Understanding Hi-Fi,” RCA Victor, 1956, 56.

Similarly, *HiFi Review* ran a 1959 article on classical pianist Arthur Rubinstein. Rather than the typical artist feature—which usually included descriptions of their daily routines or favorite composers—the primary voice throughout the piece is that of the engineer who directed Rubinstein’s most recent solo recording session: RCA Victor Music Director, Jack Pfeiffer. In this piece, Pfeiffer reminisces about the day of the recording, sharing praise of Rubinstein’s warmth, professionalism, and artistry. The article leads off, however, with a description of the ballroom-turned-recording-studio, “It is 9:45 a.m.—only fifteen more minutes to go. I take a final look around Manhattan Center’s Seventh Floor Ballroom. Steinway Grand No. 304, surrounded by wood-screen ‘flats’ and mikes, stands in the center of the hall, tuned and ready…Cables are strung from three mikes positioned around No. 304 to the amplifiers in the

control room."[245] Like the Stokowski drawing, Pfeiffer used cables, a familiar symbol of the technological complexity of the recording studio, to form the connective tissue between the artist and the engineer. The cables sprawl from their position above the piano to the bank of amplifiers, filters, and tape recorders in the recording booth, bringing the sounds of Rubinstein's work to the busy ears and hands of the studio technicians. He wrote of Rubinstein,

> His stance while playing is characteristic. He seems to envelop the keyboard; his body strikes a heroic pose. His whole approach is virile, heroic, as if he and music are conquerors. His back is very straight, head thrown back…And it is paradoxical that during these delicate passages his physical reaction is strongest. It is as if he must exert enormous energy to prevent the soft passages from becoming effeminate rather than "piano."[246]

In this rhetorical framework, the cables form a type of net above the piano to harness and transport Rubinstein's masculinized musical "energy" to the recording studio and eventually to the hi-fi listener. While Pfeiffer does not mention cables again, he frames his personal relationship with Rubinstein within the context of the energetic paths between the stage and the engineering control room. Indeed, Pfeiffer intimates that his connection to from the control room to Rubinstein on stage is so strong that, "frequently, at the end of a session, I feel as if *I've* played every note."[247] Pfeiffer also describes the way Rubinstein "hurries into the control room" after a run-through to listen to the take and ask opinions of the engineers. According to Pfeiffer, Rubinstein finds these raw sessions recordings to be the only "teacher" he needs and that "no human teacher can help him achieve the independence necessary to acquire a true musical

[245] Jack Pfeiffer, "Quiet! Rubenstein Recording," *HiFi Review*, September 1959, 46.

[246] Ibid., 49.

[247] Ibid., 48. Emphasis in original.

personality."[248] Indeed, Pfeiffer characterizes Rubinstein as "one of the easiest artists to record" because he "understands the possibilities and limits of the equipment" and, unlike some other artists, does not consider it "beneath [his] dignity to mingle with the 'mechanics.'"[249]

Pfeiffer's descriptions of his recording sessions and relationship with Rubinstein highlight not only the physical ways cables connect musicians and listeners, but also how they symbolize the energetic pathways that form between performers and their recordings, engineers and the music they record, and the embodied and technical relationship between engineers and performers. As mentioned above, cables are evoked in the very first passage of the article as the ligaments that bind together the participants of a recording session and, while not explicitly mentioned again, establish the signal flow that facilitates the metaphysical connections described by Pfeiffer throughout the article. It is also worth noting that the editors of *High Fidelity* magazine also link Pfeiffer to larger narratives around military service, engineering expertise, and musicianship when, in the five sentence contributor's biography, they take care to mention that "By World War II he had mastered the violin, piano, pipe organ, and…after four years in the Navy in the field of electronics, he returned to the University of Arizona to receive and E.E. [electrical engineering] degree."[250]

Cables facilitated a (meta)physical connection between listeners and recording artists but, as demonstrated by a playful quip from *High Fidelity* executive editor, Charles Fowler, they

[248] Ibid., 48.

[249] Ibid., 49.

[250] Ibid., 50.

symbolized the conduit between the ear and brain. In his 1954 article, "Hi-Fi Revisited," Fowler explained the science of hearing and portrays the brain as a militarized control center:

> Airwaves…impinge on your eardrum, making them vibrate and relay the message to your brain, "Hey, there's a noise outside…"
>
> Brain to right ear: Roger. What's your station number?
>
> Ear to brain: Station 2,874.
>
> Brain to body: That's about a thousand cycles, couple of octaves above middle C.
>
> Brain to left ear: You're coming in weak and out of sync, just a bit behind the right ear.
>
> Brain to neck muscles: We're picking up the noise out of sync. Twist head to right a bit…hold it! Good! Perfect synchronization. Sound must be coming from a source twenty feet to starboard.[251]

In his explanation of the "station numbers," Fowler elaborated,

> The "station" number is our assumption of what the brain control center might call one of the cables of nerve fibers—some 4,000 of them—which run from the inner ear to the brain…These nerve fibers are frequency sensitive and spread out along a membrane of the inner ear…Each of the 4,000 is enclosed in a sheath, like an insulated wire, and all 4,000 are bundled together in a cable just over one millimeter in diameter![252]

In this metaphor, Fowler characterized the reader's brain as a command center to describe the basic function of binaural listening. At the same time, he echoed the language used by the Air Force and Navy when using radar and radio-position detecting technologies, which experienced a massive surge in research and development during and after WWII. Fowler evoked radar—one of the most quickly advancing military technologies of the time—and then compared auditory nerve fibers to the cables that power the crucially sensitive radar receiver. The influence of Big Science is obvious here, as the masculinized command center (brain) depends on and responds to the incoming signals of the thousands of cables (nerves) responsible for collecting, interpreting,

[251] Charles Fowler, "Hi-Fi Revisited," *High Fidelity*, January–February 1954, 37.

[252] Ibid., ellipses added by the author.

and forwarding data. Fowler rendered the hi-fi man's body as a precision scientific instrument, that is, a technological apparatus dependent on input from bundles of cables.

Conclusion

Hi-fi publications proudly drew on the linkages between audio, cables, and scientific exploration, but shelter and women's magazines—such as *Women's Day*, *Better Homes and Gardens*, and *Town and Country*—spent a great deal of ink portraying hi-fi as an approachable part of every modern home. Mentions of hi-fi peppered women's magazines with articles titled, "Music All Through the House: What Every Woman Should Know About Hi-Fi" (*Women's Day*), "High Fidelity for Christmas" (*Town and Country*), and "Music in Your Home: Here's What You Need to Know About 'Hi-Fi" (*Redbook*). The fad even spawned short stories in *Cosmopolitan Magazine* ("The Sound and The Fidelity") and *Seventeen Magazine* ("Hi-Fi and Father.")[253] Exemplary of these pieces was a 1956 *Better Homes and Gardens* article, "How to put Hi-Fi in Your Home," in which Thomas Marshall proclaimed: "Good living nowadays includes good listening. Pure exciting sound's no longer a lab experiment, hobbyist's fad, or toy for the rich. It's something any family can enjoy—easily and cheaply."[254] Marshall recognized and then refuted the masculinist and classist baggage that tends to follow hi-fi in an effort to make it seem more attractive to the magazine's target readers. Specifically, he mentioned that hi-

[253] Richard Gehman, "Music All Through the House," *Women's Day*, December 1957, 102–103; Edward Tatnall Canby, "High Fidelity for Christmas," *Town & Country*, November 1954, 112–13; Carlton Brown, "Music in Your Home," *Redbook*, April 1956, 67–68; Frank Bequaert, "The Sound and the Fidelity," *Cosmopolitan*, May 1960, 84–87; Nicholas Woode, "Hi-Fi and Father," *Seventeen*, September 1954, 28.

[254] Thomas Marshall, "How to put Hi-Fi in Your Home," *Better Homes and Gardens*, April 1956, 193.

fi does not have to be a "lab experiment."[255] Removing cables from sight is central to divorcing hi-fi from the laboratory because, when visible, cables carry the connotation of workspaces, unfinished projects, and clunky equipment deemed unsuitable for elegant living spaces.

In these pro-hi-fi pieces, the (all male) authors consistently cited unsightly cables as a reason that homemakers were, at one time, hesitant to allow their husbands from bring early hi-fi into the home. Crediting manufacturers for designing more aesthetically pleasing equipment and dropping electronics prices, these authors pointed to the fact that hi-fi sets had become more attractive and easier to use. As hi-fi grew from an obscure hobby to a leading home fashion, women's magazines attempted to assuage the assumed feminine (and implicit masculine) unease with cables by promoting color-coded plugs, pre-wired components, and built-in shelving that put cables out of sight entirely. For those homemakers who were not interested in decorating around the modernist looks of hi-fi technologies, shelter magazines offered a plethora of clever ways to hide cables and components. Just as with the phonograph makers of the 1910s who enclosed the horn inside carved cabinets, midcentury women's magazines touted hi-fi systems that could be hidden in coffee tables, custom-built-in shelves, and in the walls of the home (Figure 31 and Figure 32). But pre-manufactured console units did not offer hi-fi hobbyists the flexibility of modular hi-fi. While some were willing to temporarily shove components into drawers and shelves, access to cables and plugs remained of utmost important because, at its core, the masculinized spirit of midcentury hi-fi is in its changeability and experimentation.

[255] Marshall also mentions the expense of hi-fi, which I discuss in Chapter 2 of this dissertation.

Figure 31. Mrs. John Taylor's hi-fi coffee table. Note the cable running from the top left part of the table, near the foot, and running under the carpet. “Hi-fi That Hides in a Table,” *Better Homes and Gardens*, May 1957, 242.

Figure 32. A 1960 *Town and Country* article features two rooms, contrasting in style, that integrate hi-fi as a part of the decor. Cables are not visible in either, presumably run under the floors or behind the walls. Robert L. Sammons, "New Dimension in Home Decorating—Music," *Town & Country*, June 1960, 92.

In an essay written for *High Fidelity*, actor Dana Andrews made clear that it was precisely this dynamic, inventive, and risk-taking spirit that drew him to hi-fi. He joked about his wife barring their children from his hi-fi room for fear of electric shock,

> I experimented with equipment for well over a year and my den became a workshop strewn with the entrails of components of every imaginable shape, size, make, and model. It was impossible to clean the whole thing up every night. As the confusion mounted, and the room came to resemble the graveyard of America's audio equipment, my wife's anxiety grew. She began to avoid the room as if it were haunted. She forbade it to the children, muttering darkly of electrocution and irresponsible fathers.[256]

The mess in Andrews's den evokes images of a scientist's laboratory: an active workspace full of hot soldering irons, charged capacitors, and live wires. Andrews's wife might admire the work done in scientific workspaces, but finds the dangerous clutter to be at odds with her values as a homemaker and mother, especially with the components within reach of curious little hands.

While humorous, this was not an exaggerated scare tactic to keep women and children away from audio gear. Before the mid-1960s, it was not common to use grounding plugs with home electronics and the risk of a stray electrical current conducting through metal components was higher than it is with contemporary equipment.[257] Indeed, shock and electrocution were such present topics that the term "live wire" entered the midcentury popular vernacular to describe a particularly spirited or high-strung child. Figure 33, for example, from *Parents' Magazine and Better Homemaking* (better known as simply *Parents*), leads with the header text "Some parents enjoy the stimulation of living with a live wire…others find each day a strain." The essay continues, "There are some children who are generally keyed-up, who seem charged with

[256] Dana Andrews, "Living with Music," *High Fidelity*, May 1955, p. 41–42, 109–110.

[257] National Electric Code 201-7, 1962. Three-prong electrical grounds were required for laundry machines as early as 1947. Starting in 1956, the NEC added outdoor and garage outlets to the list, and receptacles near kitchen sinks were added in 1959. NEC 2124 (b.), 1947; NEC 2124 (b.), 1956; 210–22 (b.), 1959.

excitable energy—exploding into tantrums, tears, fights, electrical displays of temperament." The article reassures the reader that, "an excitable child with great drive has a tremendous potential, once he has learned to channel his energies."[258]

[258] Lucy Kavaler, "If You Have a High-Strung Child," *Parents Magazine and Better Housekeeping*, March 1961, 52–53, 120–23.

Figure 33. Article and art from a midcentury parenting magazine that depicts a "live wire" child under examination by medical professionals. Lucy Kavaler, "If You Have a High-Strung Child," *Parents Magazine and Better Housekeeping*, March 1961, 52.

The characterization of electricity as mercurial and hazardous underscored the necessity for well-engineered cables and plugs to discipline and "channel" volatile energy. In this women's magazine article, control of electric personalities manifested through attentive parenting and teaching good manners, but in Andrews's *High Fidelity* essay, electrical mastery came through trial-and-error and intuitive play. The danger of electricity was an alluring element of experimentation that evokes the daring inventor or scientist genius risking life-and-limb in hopes of new creation. For Andrews and the primarily male readers of *High Fidelity*, live wires in hi-fi were not safety concerns in need of mitigation but rather invitations to embody scientific masculinity by demonstrating command of dangerous equipment. Hi-fi enthusiasts muscled electricity into submission, taking a force powerful enough to cause bodily injury and rendering it sensitive enough to reproduce the whisper of a violin string at pianissimo. As demonstrated by the popularity of DIY kits, these amateur audio engineers were helped along substantially by pre-manufactured components and detailed instruction booklets that permitted buyers the access to scientific masculinity through the curated process of "developing" and mastering their audio system. To feel and interact with the flows that drive the sound system was to exercise control, master, and power over electricity: a force that lurked behind every major technological innovation of the era. By bringing cables out of the woodwork, walls, and consoles, hi-fi men plugged themselves into an infrastructure of masculinist identity making that spanned from amateur electrical engineering to the emergence of the "Big Science" research initiatives in the United States.

While the other components I analyze in this dissertation tell us more about the kaleidoscope of ways the hi-fi man might build out a modular simulacrum of self with an audio system, the cable is the tissue that connects audiophiles to a greater history of progressivism and

masculinity in the United States. It is not enough to simply say that culture makers, advertisers, and manufacturers have traditionally essentialized rationality, reason, scientific exploration, and technological experimentation as masculine and that this tendency has kept women out of hi-fi. This is true, but more precisely, the history of audio cables and its relationship with American ingenuity, the military industrial complex, and the intentional post-war United States funneling of returning GIs into engineering and research positions shows us that, despite widespread interest in hi-fi among women, the hi-fi hobby was systematically *made* to be masculine.

Chapter 4: "The Silent Partner?": The Tonearm as Queer Object in U.S. Midcentury Hi-Fi Culture

The tonearm is silent—or at least it is supposed to be. This slender rod, tipped with a tiny needle, or stylus, is the device that transduces the vinyl grooves into a sound signal. However, in tracking the contours of the vinyl grooves, the tonearm also detects and amplifies imperfections in the motion of the platter, the cut of the record, and the tip of the stylus. Just as the tonearm audibly reveals unseen details, midcentury tonearm discourses tell a story of gender and hi-fi that goes beyond a traditionally masculine gendering of music technology. Despite efforts to hush its pops and hums, the tonearm has its own story to tell.

In the 1950s United States, tonearms posed a problem for those who marketed hi-fi systems.[259] In a 1959 issue of *HiFi Review*, audio critic Herbert Reid outlined why they were so difficult to promote:

> The most self-effacing of all high fidelity components is the tone arm. Its task is utter passivity. Traveling slowly across the disc, it is propelled not by forces of its own, but limply follows the guiding forces of the record spiral. It generates no sound of its own. It is, in effect, a "silent partner" in the musical enterprise. But like a great many "silent partners," the tone arm exerts a subtle but decisive influence on the entire operation of the hi-fi system.[260]

[259]While sound reproduction technologies did experience immense improvements in quality and commercial availability throughout the 1950s, "hi fi" is more of a marketing term than an objective benchmark of sound reproduction. For discussions on the relationship between marketing and musical fidelity, see Thompson, "Machines, Music, and the Quest for Fidelity," 134–38; Sterne, *The Audible Past*, 223–25; and Perlman, "Golden Ears and Meter Readers, 790.

[260] Herbert Reid, "Silent Partners (Revisited): Five Different Tone Arm Designs Successfully Tackle the Challenge of Stereo Discs," *HiFi Review*, October 1959, 61.

Reid depicted the dualities of the tonearm in terms of complex gendered associations: passive but influential, limp but decisive, silent but musical. In an industry committed to the masculinization of sound technology, these dualities made the tonearm a troublesome device.

The tonearm consists of three elements: the arm, the cartridge, and the stylus. The stylus is the terminus of the entire hi-fi structure. Often tipped with an industrial gemstone, such as a sapphire or a diamond, the stylus (colloquially called a "needle") hangs down from the cartridge and tracks the grooves of the record. The cartridge (colloquially called a "pickup") is the brains of the operation, where the motions of the stylus are converted into an electrical signal that can be projected as sound. The arm is a cantilever that connects to the body of the turntable while the other end reaches out over the record and acts as the vehicle for the cartridge. Small wires carry the sound signal from the cartridge, through the arm, into the record player, and onto the rest of the playback system.

"Tonearm" is thus a blanket term for the arm, cartridge, and stylus. Many turntables came with a stock tonearm that was optimized for that device. Turntable advertisements touted the features of their tonearms and, for some buyers, the device was not considered as much of a separate and customizable component as a loudspeaker or amplifier. Hi-fi enthusiasts who were more invested in customizing and tweaking were the most likely to try out and purchase new tonearms. Styli, on the other hand, must be replaced after around 1000 hours of playing time (the recommended playing time varied by manufacturer), and, while cartridges did not wear out, they were affordable enough that some users preferred to replace the entire cartridge instead of just the worn-out stylus.[261] The ways a Hi-Fi Man might tweak the tonearm varied: he might buy and

[261] There are some cartridges that do wear out, specifically crystal cartridges designed for 72 and 45 rpm records. Crystal cartridges are advertised occasionally, but had mostly become obsolete for 1950s hi-fi buyers.

install an entirely new tonearm, upgrade to a new kind of cartridge that made it easier to change styli, regularly replace his cartridges, or only replace the styli. Making things even more confusing, some tonearms were only compatible with certain brands of cartridges, while others were designed to be universal (the same applied to cartridges and styli). This is all to say that there was a myriad of ways for the Hi-Fi Man to engage with his tonearm setup, but the imagery and rhetoric around tonearms, cartridges, and styli have so much in common that I can comfortably group them together under the term "tonearm." Indeed, there are advertisements in this chapter for cartridges and styli that feature images of tonearms and vice versa and, as I will show in my first case study, it is difficult to separate the way the two devices are gendered.

Described variously as "precarious," "sensitive," "gentle," "obedient," and "elegant," tonearms were (and still are) regarded as fragile, finnicky, and, when incorrectly calibrated, capable of destroying a record.[262] These challenges were difficult to navigate when writing advertising copy because hi-fi components were marketed largely to white, middle-class men, and audio manufacturers appealed to traditionally desirable masculine stereotypes, such as ruggedness, dependability, technological complexity, and rational artistry.[263] This strategy worked for booming speakers, feature-rich controllers, and high-powered amplifiers, but faltered with tonearms. Speakers and amplifiers, then and now, are large, loud, and sturdily built. Receivers—responsible for routing sound signals to the appropriate devices—often featured clean, modern lines and were stocked with cutting-edge electrical technologies. Tonearms, on the

[262] Fluxvalve, Magazine Advertisement, *HiFi Review*, April 1959, 40; Collaro Limited, Magazine Advertisement, *HiFi & Music Review*, November 1958, 17; Gerrard, Magazine Advertisement, *HiFi Review*, February 1959, 7; Pickering and Company, Inc., Magazine Advertisement, *HiFi Review*, June 1959, 75; Electro-Sonic Laboratories, Magazine Advertisement, *HiFi Review*, July 1959, 77.

[263] E. Schroeder and Detlev Zwick, "Mirrors of Masculinity: Representation and Identity in Advertising Images," *Consumption, Markets and Culture* 7, no. 1 (2004): 22–28.

other hand, broke easily, were designed to be inaudible, and carried a needle—a device more closely associated with sewing than picking up sound from the grooves of a record.

In this chapter, I show the tonearm to be a site of fluidity and ambiguity within a modular masculine system. After a brief introduction to the historic co-construction of masculinity and home audio in the United States, my argument unfolds through case studies organized around three central themes. First, I analyze images that evoke the tonearm as a tool for sexual play and critique the roles of male and female bodies—particularly hands—in marketing desire and technology. Second, I unpack the commonly applied term "silent partner" and its layers of rhetorical, cultural, and gendered implications. Finally, I discuss advertisements that depict the tonearm's conflicted relationship with the record itself, and the way the needle's simultaneously destructive and generative nature serves as a site of gendered tension. Throughout, I ask, "If a hi-fi system symbolizes masculinity, what does it mean when advertisements and magazine articles gender components in ways that do not fit within constructions of hegemonic masculinity?" In addressing this question, I build on previous work on midcentury hi-fi culture and propose an analytical approach to magazine images and rhetoric that decentralizes hegemonic masculinity and is nuanced by feminist and queer readings.

Hi-fi advertisements made it clear that assembling and maintaining a hi-fi home audio setup is a deeply personal experience. Some claimed that their products were "for those who can hear the difference," that "no two ears are alike," or that hi-fi enthusiasts should think of themselves as amateur sound engineers and make "their own logical choices" for their home music systems.[264] Advertisers, editors, and writers in 1950s issues of magazines like *High*

[264] Pickering and Company, Inc., Magazine Advertisement, *High Fidelity*, January 1955, 48; Fisher Radio Corporation, Magazine Advertisement, *HiFi & Music Review*, March 1958, 7; H. H. Scott, Magazine Advertisement, *HiFi & Music Review*, March 1958, 9. Ellipses added by the author.

Fidelity and *HiFi Review* reinforced the relationships between audio technologies and self-image using photographs, cartoons, and essays. Thus, audio magazine readers were bombarded with the idea that their hi-fi equipment represents not only abstract characteristics such as taste and intelligence, but also embodied characteristics, such as strength and virility.[265] In a 1957 academic article published in *Diseases for the Nervous System*, clinical psychiatrist H. Angus Bowes satirized the potential for sexualized relationships between audiophiles and their hi-fi equipment:

> The less organized will treat their Hi-Fi set rather like the emotionally immature treat a car—as an expression of aggression, as a power-symbol and as a means of keeping ahead of the Joneses. To many it has a sexual connotation…
>
> Certain hobbies and obsessive activities represent derivatives of infantile auto-eroticism and occupy an intermediate position between compulsive acts and perversions…Certainly I have found many [audiophiles]…evolved the highly hilarious hypothesis that they are seeking a sterile reproduction without the biological bother.[266]

Bowes described himself as an "audio fan" and claims that his sexualized conclusions—such as his comparison of "twiddling of knobs" to masturbation—are "light hearted."[267] The "hilarity" of his jokes, however, indicates a strong cultural tie between men, masculinity, sexuality, and hi-fi.[268] Satire, after all, is only funny if it pokes at something familiar.

[265] Schroeder and Zwick, "Mirrors of Masculinity," 22–28.

[266] Bowes, "Psychopathology of the Hi-Fi Addict," 232–35. Bowes's article was popularized and quoted in "Music: Audiophilia," *TIME*, January 15, 1957.

[267] Bowes, "Psychopathology of the Hi-Fi Addict," 233.

[268] Ibid., 235.

The Trouble with Tonearms

Midcentury home audio discourse reveals a fluid gendering of tonearms, one that could plausibly fit within a traditional masculinist worldview but could also appeal to nonheteronormative masculinities. Using analytical tools from queer theory and masculinities studies, I carve out a generative frame in which tonearms can be either or both, but still shed light on the historical systems that strategically situated home audio as a part of hegemonic masculinity. Hegemonic masculinity is an idealized pattern of practices that "legitimate unequal gender relations" and open access to assertions of gendered power and dominance.[269] Constructions of hegemonic masculinity vary widely depending on historical and geographical context, but the formations reproduced in midcentury hi-fi magazines consisted of whiteness, heterosexuality, upper-middle-class status, strength, dependability, confidence, intelligence, and reason. In the last decade, masculinities scholars have refined the concept of hegemonic masculinity to account for the ways in which power and hierarchy vary historically, socially, and geographically.[270] Joining this important work, I offer tonearms as an entry point to analyze the varying masculinities at play in hi-fi advertisements and to approach questions of embodiment, desire, and sexuality as they emerge in the gendering of and interactions between technological objects.

In my reading of midcentury hi-fi discourse, I confront the heteronormative systems of understanding in musicology, sound studies, and media studies by challenging the previous masculine readings of hi-fi magazines and the objects represented therein. Such a reading of

[269] Messerschmidt, "The Salience of Hegemonic Masculinity," 88.

[270] Demetriou, "Connell's Concept of Hegemonic Masculinity: 343–47; Connell and Messerschmidt, "Hegemonic Masculinity," 849–57.

1950s media might seem unlikely because, to borrow Sara Ahmed's terms, they constantly spilled forth images of heterosexual couples adhering to the normative "straight line" and consuming "heterosexual objects" that reinforce, discipline, and stabilize that line.[271] At first glance, hi-fi magazines participate in these straightening tendencies, but I have found that the tonearm frequently "slips" out of line and appears as a "queer object"—an object that is "out of line, on a slant" and that disorients—and opens the door to queer readings of tonearm advertisements.[272] I position tonearms as a queer object, as defined by Ahmed, because, although soundless, these ads display tonearms as queer objects. Manufacturers and advertisers gendered tonearms as they did other components, but their language was uneven and contradictory, with variant representations that draw from both traditional femininities and masculinities. In the modular masculine system, the tonearm pivots, skipping out of the groove, from one gender construction to another. Due to its vital role within the hi-fi setup as the interpreter and generator of the sound signal, the tonearm was a site of transition and questioning with which audiophiles, manufacturers, and advertisers had to contend.

Ahmed's queer phenomenology combines usefully for my study with Jack Halberstam's concept of female masculinity. Halberstam removes biological maleness from consideration to examine the dynamics of masculine characteristics and sexuality as embodied and embraced by women.[273] Halberstam cautions against the impulse to simply "create another binary in which

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[271] Sara Ahmed, "Toward a Queer Phenomenology," *GLQ: A Journal of Lesbian and Gay Studies* 12, no. 4 (2006): 554–57; Sara Ahmed, *Queer Phenomenology: Orientations, Objects, Others* (Durham, NC: Duke University Press, 2006), 172. The straight line is the "set of norms and conventions" that forms in response to social pressures to orient oneself as heterosexual. Ahmed describes lines as paths "that direct us, as lines of thought as well as lines of motion... [Lines] depend on the repetition of norms and conventions...but they are also created as an effect of this repetition."

[272] Ahmed, "Toward a Queer Phenomenology," 566.

[273] Jack Halberstam, *Female Masculinity* (Durham: Duke University Press, 1998), 2–3.

masculinity always signifies power" and writes that "female masculinity is not simply the opposite of female femininity, nor is it a female version of male masculinity."[274] In her work on Wendy Carlos and the Moog synthesizer, Roshanak Kheshti draws on Donna Haraway and Karen Barad to point out the limit of gender and identity binaries, especially in the analysis of historical entanglements between gendered bodies and music making machines. Riffing on Carlos's self-identification as the "Original Synth," Roshanak proposes "synthgender" as an ontology that collapses masculine/feminine, man/woman, or human/technology constructions, but does not do away with the boundaries between them. Rather, "synthgender" merges—synthesizes—technology and gender and permits readings of their entanglements. Unlike Haraway's "cyborg"—which exists in a "utopia without gender"—Kheshti's synthgender acknowledges the historical binary gendering of music technology and chronicles "the hostile takeover of the sonic realm by fascists and warmongers after capitalists had deliberately feminized sound in the late nineteenth century through the domestication of the piano...the phonograph, and even audio recording."[275] Following the logic of Ahmed, Halberstam, and Kheshti, I discuss maleness and femaleness separately from masculinity and femininity, but do not disregard the alignments between male bodies, masculinity, and power. Like Kheshti, I entangle gender, body, technology to reveal a formation of masculinity that both operates within and resists the normative gender constructions. In this way, I use modular masculinity to create room for the multiple, masculinities made legible by midcentury hi-fi advertisements.

By contextualizing the process by which certain home music technologies became essentialized as masculine, I join others such as Tara Rodgers and Lucie Vágnerová in the

[274] Halberstam, *Female Masculinity*, 28–9.

[275] Kheshti, *Switched on Bach*, 31.

ongoing work to expose the machinations that excluded nonmale consumers and hobbyists from the everyday practices of using electronics to make music.[276] My second goal is to add to the increasingly complex cultural imagination of the white, middle-class, suburban 1950s United States. I use tonearm ads to critique the violently heteronormative, misogynist, and racist conservative idealizations that glorify men-who-were-men and women-who-kept-the-home tropes that code the fifties as a "simpler" and "greater" time.[277] I demonstrate the need to add depth to understandings of the ideologies particular to masculine identity formations in the 1950s in order to understand the complex queer gendering of tonearms and cartridges. At the same time, I push against the opposite generalization perpetuated by television shows such as *Mad Men*, that characterize the suburb as a site of dislocation, anxiety, hyper-conformity, and fear. These tropes exist for a reason, but I offer these case studies as an opportunity to relish the messy moments of the fifties that happened in the carpeted single-family homes, outside the bursting art world of the Lower Manhattan lofts or the youth rebellion that brewed in the backseats of cars. These banal, suburban moments tell the story of a sexy, giddy, and strange midcentury that resists simplification.

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[276] Rodgers, "Tinkering with Cultural Memory," 6; Vágnerová, "'Nimble Fingers' in Electronic Music," 250–58.

[277] Sociologists and political psychologists have done extensive work on the nostalgia for the 1950s United States and political conservatism. The idealization of 1950s prosperity and simplicity of the 1950s is a popular trope, but critical work on midcentury nostalgia became particularly urgent during and after the 2016 presidential election, when Donald Trump deployed his "Make America Great Again" slogan. Studies by new media scholars, sociologists, and political psychologists show that contemporary conservative nostalgia idealizes at once the political structures (namely, industry deregulation) of the 1890s with the cultural norms of the 1950s, thus manufacturing a collective memory of the United States that serves capitalist and conservative political values. For a thorough background on how the right-wing has deployed a nostalgia for a white Christian nation rooted in midcentury social norms, please see Ruth Braunstein, "The 'Right' History: Religion, Race, and Nostalgic Stories of Christian America," *Religions* 12, no. 20 (2021): 95. For an analysis of how nostalgia is commodified in online spaces targeted at those born during the 1950s and 60s baby boom, see Katharina Niemeyer and Emily Keightley, "The Commodification of Time and Memory: Online Communities and the Dynamics of Commercially Produced Nostalgia," *New Media and Society* 22, no. 9, (2020): 1639–62. For a discussion on the ways shows like *Mad Men* reinforced nostalgic imaginaries of the midcentury, despite its packaging as a critique of the era, please see Deborah Tudor, "Selling Nostalgia: Mad Men, Postmodernism, and Neoliberalism," *Society* 49 (2012): 333–38.

Previous scholarship has situated home audio technology as a productive lens for understanding the complexities, anxieties, and nuances of midcentury masculinity. [278] In his reading of midcentury discourses around early stereo technologies, Tony Grajeda revisits these class and gender dynamics to argue that the exaggerated technical jargon favored by stereo advertisers threatened the high culture aesthetics of high fidelity.[279] He shows that the "specialized (and fetishized)" language of audio fidelity was both reproduced as a masculine demonstration of expertise and mocked as "cultist trappings" that recalled the advertising tactics of feminized mass media.[280] In his examination of these paradoxical tensions, Grajeda points to "a degree of differentiation into an otherwise monolithic fiction of masculinity in aural culture" and begins to peer into the same discursive cracks that I highlight in this chapter.[281]

"For a Greater Measure of Listening Pleasure"

In March, April, and May of 1958, Pickering and Company, Inc. ran an advertisement in *HiFi & Music Review* for their line of "FluxValve" tonearms and cartridges (Figure 34). The ad featured a closeup photograph of a richly dressed woman gazing down the line of the tonearm, apparently scrutinizing its craftsmanship. The tonearm itself suggests a phallic shape, with the weights on the far end, the long, narrow shaft, and the cartridge at the end forming the tip. The tip almost touches the model's lips, as she looks down "measuring" the straightness and quality

[278] Anderson, *Making Easy Listening*, xix; Sterne, *The Audible Past*, 266–67; Perlman, "Consuming Audio," 348.

[279] Grajeda, "The 'Sweet Spot,'" 50–54.

[280] Ibid., 52, 54.

[281] Ibid., 54.

of the tonearm. Her forehead and neck are cut off, which centers her defined and full lips in the photo, drawing the eye to the closeness of the tonearm and her reaching mouth. The catchphrase, “For a greater measure of listening pleasure,” implies that the woman is assessing the manufacturing quality of the equipment. Her gloved hand, trim hat, and precisely curled hair indicate that she is an affluent, upper-class, and discriminating buyer—the type that the magazine reader might aspire to be.

For a greater measure

PHOTOGRAPH BY ROBERT W. MITCHELL

# of listening pleasure...

*Important Quality Features, as necessary for high fidelity reproduction from records

play your records with the

incomparable *fluxvalve*®

PICKERING'S *truly* miniature FLUXVALVE magnetic phonograph cartridge represents the *newest* concept in high fidelity cartridge design since PICKERING introduced the *first* really lightweight high fidelity pickup more than a decade ago.

You get a *full measure of listening pleasure* . . . because the FLUXVALVE has a full range response, flat within 2 db, from 10 to 30,000 cycles. Hermetically sealed, the FLUXVALVE is impervious to any and all of the elements . . . heat, cold, humidity, etc. Moreover, the FLUXVALVE has the exclusive PICKERING *hum rejection* circuit built-in, assuring hum-free performance.

PICKERING'S "T-GUARD," the newest and safest idea in a stylus assembly, is incorporated in all FLUXVALVE models. Change of stylus is done quickly and easily with the comfortable grip of the "T" shaped assembly . . . *no precarious fingernail fumbling* . . . you are always sure the stylus is correctly seated. *The most flexible cartridge in the world,* the FLUXVALVE is the *only* cartridge with the *amazing* ½ mil stylus, and it can be used with *five* interchangeable styli to play any record, at any speed.

Only the FLUXVALVE has 100% IQF*, and it may interest you to know that because of its ability to make *precise* and *reproducible* record measurements, the FLUXVALVE is used for calibrating recording channels and record masters.

BUILD UP THE QUALITY OF YOUR HI-FI SYSTEM WITH A PICKERING FLUXVALVE

FLUXVALVE TWIN SERIES 350—A turnover cartridge providing a rapid change of stylus point radius. Available in 12 models featuring many combinations of styli, prices start at a modest $24.

FLUXVALVE SINGLE SERIES 370—A miniature high quality cartridge for use in any type of auto-changer or manual player arm. Available in 5 models, prices start at a low $17.85.

Model 194D UNIPOISE Pickup Arm—This new ... lightweight ... integrated arm and cartridge assembly containing the FLUXVALVE with exclusive "T-Guard" stylus—is only a fraction of the weight of conventional tone arms. High compliance and single friction-free pivot bearing assure distortionless tracking of microgroove and standard groove recordings. Available with the ½, 1 or 2.7 mil diamond stylus. Prices from $59.85.

"For those who can hear the difference" **FINE QUALITY HIGH FIDELITY PRODUCTS BY**

PICKERING & COMPANY, INC., Plainview, N. Y.

Enjoy the quality of a FLUXVALVE at your favorite Hi-Fi shop today . . . you can hear the difference.
For the dealer nearest you or for complete literature write to Dept. Z-48

Figure 34. A well-dressed model holds a tonearm close to her mouth for inspection, apparently assessing its quality. Illustrations in the side panel depict a woman's hands changing the cartridge and a feather lightly brushing a stylus. Pickering and Company, Inc., Magazine Advertisement, *HiFi & Music Review*, April 1958, 40.

It is not unusual to see women depicted in hi-fi advertisements, either in illustrations or photographs, but it is unusual to see a female model so critically examining a piece of hi-fi equipment. More commonly, heterosexual, presumably married couples were shown lounging together in the home, with the wife gazing at the husband with admiration while he fiddled with the stereo knobs. Another common trope assumed that wives, as the bookkeepers of the home, were deeply concerned with the high price of audio components. Women's delighted faces accompanied ads for "frugal" and "smart" buys.[282] Finally, advertisers used images of women to indicate that a component was easy to use, implying that men might relish the joys of tinkering, but women could not use (or might fear) complex controls. The woman in the Pickering ad, however, does not fall into any one of these patterns. She is, instead, closely studying the tonearm as an expert might, with no husband or mention of the price in sight.

The woman in the Pickering ad disrupts the gendered essentialization of technical competence by challenging the loci of knowledge and desire. The tonearm is the object of desire for both the woman depicted in the ad and the presumably male reader. In a sense this ad works like pornography in encouraging the idealized male reader to imagine himself as her sexual partner. Not only does he want the tonearm; he wants to *be* the tonearm. The Pickering tonearm meets the scrutiny of the depicted woman and is a well-crafted precision instrument. The reader this seeks to craft himself (by buying the tonearm, of course) in that image and approach her waiting lips.

This ad is a rare sexualization of the tonearm. More typically, the finely portioned device is feminized as dancing and delicate. In the same ad, there is a side image of manicured,

[282] Key Electronic Company, Magazine Advertisement, *HiFi & Music Review*, November 1958, 110; Electro-Voice, Magazine Advertisement, *High Fidelity*, January 1957, 50.

feminine hands changing the stylus cartridge. Hands are vital to hi-fi advertising, as all but the loudspeakers have knobs and buttons for control. Drawings or photos of hands handling, adjusting, or simply holding components are just as or more prominent than images of faces or bodies. Long, polished fingernails, gloves, and slender fingers typically indicate that the hands are feminine, while short nails and muscular palms suggest that the hands are masculine.

I linger on these details because the suggested gender of the model whose hands appear in the image signals how a component can be used and who is expected to use it. For example, General Electric ran full color advertisements for two models of their VR-22 cartridges between August 1959 and December 1959 that featured a masculine hand and a feminine hand each holding a cartridge (Figure 35). The masculine hand holds the VR-225 and is captioned: ".5 mil diamond stylus. For professional-type tone arms, $27.95." The feminine hand cradles the VR-227 and is captioned: ".7 mil diamond stylus. For record changer or turntable, $24.95."[283] Interestingly, in November of 1959, General Electric omitted the masculine hand, while reusing the feminine hand without a caption. This re-worked advertisement is emblazoned, "try it in your own home money-back guarantee!" and was reprised in December 1959 and January 1960.[284]

[283] General Electric, Magazine Advertisement, *HiFi Review*, August 1959, 15.

[284] General Electric, Magazine Advertisement, *HiFi Review*, November 1959, 33.

Figure 35. A woman's hand holds a cartridge that is designed for record changers and everyday use, while a man's hand holds a professional grade cartridge. General Electric, Magazine Advertisement, *HiFi Review*, August 1959, 15.

It is no accident that this advertisement associated the "professional-type" cartridge with masculinity and the "record changer" cartridge with femininity. While record changers—

turntables that can automatically flip over and cycle through a stack of several records—are complex feats of engineering, they were associated with ease of use, inattention, and distance from the tactile experience of switching records. Additionally, because most record changers stacked several records a top one another, the balance of the tonearm shifted with each record, disrupting the carefully calibrated stylus pressure. It is doubtful that changers substantially impacted the fidelity of the sound or the wear to the record grooves but, in a value system that aligns control with masculinity, automation is feminized and devalued. Additionally, turntables represent sacrifices in sound fidelity for the sake of making listening easier, and women's hands typically send the message that a technology is "so simple to use that anyone can do it." A 1956 General Electric advertisement for "Clip-In-Tip" cartridges shows a young woman smiling at the camera as she replaces a stylus. A man in a workshop apron stands behind her, his help unneeded because, as the text reads, "any one can change a G-E stylus at home…no tools…no waste of time!"[285]

Tonearm advertisements, however, also used women's hands to draw on the association between wealth, jewels, and the industrial gems that tip high-end styli. A 1959 Weathers StereoRamic Systems advertisement featured a drawing of a woman's hand in an evening glove holding a cartridge, her wrist adorned with a bracelet of large sparkling gems. The banner reads, "for those who want only the very best…" and the text indicates the prices of the specific gems: "The K-601 system gives you the Famous Weathers Tonearm, Turntable and StereoRamic Cartridge complete—ready to plug into your amplifier…with diamond stylus $115.50…with sapphire stylus $111.75."[286] The fixation on the price differences with different gems that

[285] General Electric, Magazine Advertisement, *High Fidelity*, April 1956, 30. Ellipses in original.

[286] Weathers Industries, Magazine Advertisement, *HiFi Review*, March 1959, 12.

appeared here and in the aforementioned General Electric advertisement indicates that Weathers and General Electric wished to garner attention by aligning aspiration, wealth, and hi-fi sound quality. Another similarity between the Weathers and General Electric advertisements (and many others like them) is that the cartridge is displayed in feminine fingers—at the end of a woman's arm—and that the record's tonearm is embodied as feminine. It is a common strategy, to be sure, to objectify women's bodies as pieces of technology for the purpose of advertising, but this strategy is confused in hi-fi culture by advertisers' tendency to align masculine identity with the gendering of components.

To return to the woman's hands in the side panel of the Pickering advertisement, the caption reads, "Exclusive 'T-Guard' stylus assembly…no precarious fingernail fumbling!" This panel touts ease-of-use, as is expected, but the copy takes a technical turn that is not on display in the Weathers or General Electric advertisements: "A full-range response, flat with 2db, from 10 to 30,000 cycles. Hermetically sealed…the only cartridge with the amazing ½ mil stylus, and it can be used with *five* interchangeable styli to play any record at any speed. Only the FLUXVALVE has 100% IQF…"[287] This text points to the advanced engineering of the tonearm, the ability to switch out and tweak parts, and the flexibility of the cartridge attachment to be used at many speeds with many types of styli. This technical language is at odds with the repeated feminine presence: is the tonearm feminized as easy-to-use or is it, like other hi-fi components, a way to perform masculinized technical prowess? The image suggests that the tonearm is, at once, masculine and feminine, and allowed the user to have it both ways.

[287] Pickering and Company, Inc., Magazine Advertisement, *HiFi & Music Review*, April 1958, 40. Ellipses added by the author, emphasis in original. Note that IQF stands for "Important Quality Features," which is a measure entirely made up by Pickering and seen only in this advertisement. Fabricated jargon appears occasionally in advertisements, but rarely in articles, reviews, and essays. Anecdotally, manufactured and specious jargon is much more common in contemporary online advertising and equipment reviews, making it substantially more difficult for those unfamiliar with technical terms to navigate purchasing home audio.

The feather complicates things further, as it does not caress the hard, straight lines of the phallic tonearm. Instead, the feather brushes against the miniscule tip of the needle, evoking female pleasure and sexual play. Like the clitoris, the needle is the most sensitive part of the turntable's anatomy: hidden and guarded within the cartridge, awakened at the lightest touch. This point of contact signals a site of transition from the fetishized vinyl record to the masculinized technologies of the sound system, and the tonearm is the facilitator of transfer.[288] The coupling of needle and groove is sexually ambiguous and evades a clear reading of gender roles. An obvious reading might suggest that the groove, vessel-shaped and embedded in the sacralized musical object, plays the feminine role, while the stylus penetrates and generates in the role of the masculine phallus. Advertisers, however, have already undermined this reading by characterizing the tonearm apparatus as bejeweled, miniscule, and—with the feather—clitoral.

It seems that the advertisers intended to communicate a couple of things with the feather: One reading suggests that it symbolizes the sensitivity of the stylus, indicating that it can detect the lightest touch, and thus can follow the slightest details in the groove of the record. Another interpretation is that the stylus touches the record so delicately that it is like being touched by a feather rather than a metallic needle, thus preserving the mutable record grooves. The uncertain role of the feather could be attributed to hastily conceptualized marketing, but advertisers understood (and still understand) the power of rapid-fire associations with symbols and images.[289] Pickering used sexualized masculine and feminine imagery to indicate that the

[288] I touch more on the fetishization of records in the third case study in this chapter, but for more on the fetishization, iconicity, and ritual of vinyl records, see Bartmanski and Woodward, "The Vinyl," 17–20; Andrea Bohlman and Peter McMurray, "Tape: Or, Rewinding the Phonographic Regime," *Twentieth-Century Music* 14, no. 1 (2017): 9–14; and Mark Katz, "The Persistence of Analogue," in *Musical Listening in the Age of Technological Production*, ed. Gianmario Borio (New York: Routledge, 2015), 278–81.

[289] Schroeder and Zwick, "Mirrors of Masculinity," 22–33.

tonearm is sensitive, easy-to-use, expertly engineered, and robust. Instead of leaning into a single essentialization, the Pickering ad took a simultaneously masculine and feminine approach to selling the tonearm.

The ambiguous gendering and sexualization of audio equipment is not without precedent; the process of masculinizing home music technologies was, and continues to be, long, wandering, and messy. A vivid example of this process is from a Graduola advertisement, printed in *Vanity Fair* in 1916. The Graduola was a short-lived phonograph feature that allowed listeners to control their playback volume by using a long handle to open and close shutters positioned around phonograph's horn. In this early ad, a fictional male character expresses exaltation at his first encounter with Graduola, which also reads a bit like a homoerotic musico-sexual awakening as he manipulates the swells and contours of the playback volume with the rather phallic-shaped device:

> To my friends and associates and indeed to myself, I've appeared until recently, simply a plain, middle-aged, unemotional businessman. And now I find that I'm a musician. How did I find this out? I'll tell you! Last Tuesday night, my wife and I were at the Jones's. Jones had a new purchase—a phonograph. Personally, I'm prejudiced against musical machines. But this phonograph was different. With the first notes I sat upright in my chair. It was beautiful. "Come over here and sing this yourself!" said Jones. I went to see what the slender tube terminating in a handle [the Graduola] could be. It looked interesting. "Hold this in your hands!" said Jones. "Move the handle in to make the music louder; draw it out to make it softer." Then he started the record again. At first I hardly dared to move the little device in my hands. Presently, however, I gained confidence. As the notes swelled forth and softly died away in answer to my will, I became bolder. I began to feel the music. It was wonderful! I…fairly trembled with the depth of emotion. The fact that I was—must be—a natural musician dawned upon me. And with it came a glimpse of the glorious possibilities opened to me by this great new phonograph.[290]

As with the tonearm, the Graduola's shape and function create opportunities for gendered rhetorical slippage. Taking care to point out that he "is prejudiced against" phonographs, which,

[290] Graduola, Magazine Advertisement, May 1916, 115. Quoted in Katz, *Capturing Sound*, 67–68. Ellipses in original.

at the turn of the century were more closely associated with femininity and the private sphere, the character is seduced by the sense of control provided by the Graduola. However, in making this masculinizing move, the marketers found themselves describing a sexually charged and emphatic affair.

Similarities to human anatomy are not the only ways in which a technology can be depicted as ambiguous, and the next case study deals with less bodily constructions of gender. However, it is important to reinforce that the midcentury (and contemporary) home audio system is a symbol of an always heterosexual masculinity. For advertisements to so visibly blur the gendering of the equipment creates cracks in this otherwise well-established signifier. Discourses about tonearms indicate that the masculinist rhetoric in hi-fi magazines goes beyond loudness, gadgetry, and demonstrations of wealth to include sexuality, desire, and nuanced representations of what it means to be a consumer of hi-fi audio.

"The Silent Partner"

Refrigerator advertisements in women's lifestyle magazines brought into relief popular conceptions of technology, silence, gender, and domesticity. Most 1950s advertisements for refrigerators were targeted at women, but when men were included in the images or text, it was usually to show the silence and mechanical reliability of the product. An advertisement for Servel brand appliances that ran in *Better Homes and Gardens* includes inset portraits of a man and a woman above a colorful illustration of the refrigerator. The text by the woman's picture read, "Anne wanted every new convenience" and the text accompanying the man reads, "Ted

said… it must have no moving parts or get noisy."[291] Another *Better Homes and Gardens* advertisement remarked, "We looked at all the neighbors' refrigerators before we bought and listened… No moving parts certainly means silence and longer life…We're mighty proud to show it off to friends."[292] The collective pronouns used in these texts are not common in women's marketing and certainly do not appear in copy written for drapes, canned goods, or rose bushes. Rather, indications of joint decision-making are more easily attributed to the fact that appliances are expensive and mechanically complex, thus requiring the input of both members of the couple.[293] It is also telling that when the husband is included in the advertisement, he is most concerned with the silence of the kitchen appliance.

As in the refrigerator advertisements, efforts to silence feminine noise resound throughout hi-fi discourses. Using misogynistic terms, H. Angus Bowes suggested that "in Hi-Fi [a wife] senses a rival—possibly as shrill and discordant as herself," and to "train" women to listen, hi-fi enthusiasts must, "put on some records that your wife likes, at sufficient volumes to drown comment."[294] In an essay she wrote for 1954, occasional *High Fidelity* contributor Eleanor Edwards wrote of the hi-fi setup as a means of silencing:

> He [an audiophile husband] will invite his friends to spend an evening listening to music, and will bombard their ears with the loudest sounds he can muster (regardless of the winces their poker faces may fail to disguise). He will rudely shush the slightest flow of

[291] Servel, Magazine Advertisement, *Better Homes and Gardens,* August 1948, 34. Ellipses in original.

[292] Servel, Magazine Advertisement, *Better Homes and Gardens,* February 1948, 92.

[293] The presence of women in high fidelity advertisement typically signaled money-smart purchases. Keir Keightley delves further into money management, gender roles, and high fidelity in Keightley, "Turn it Down!' She Shrieked," 162.

[294] Bowes, "Psychopathology of the Hi-Fi Addict," 234.

> feminine conversation, although a few moments later he will join the other men in drowning out the music with a bellowed dissertation on distortion, hum or feedback.[295]

Like Edwards's husband demanded of her and her female friends, high fidelity enthusiasts demanded absolute silence of their tonearms. Such advertisements betray an imagined closeness between silence, noise, and gender.

Demand for silence is not exclusive to the tonearm discourse, but the rhetoric operates differently for other hi-fi components. The idealized high fidelity is sonically transparent, that is, the loudspeakers produce only the sound of the record without feedback, hum, or hiss from the rest of the components. All but the loudspeakers are thus designed to be sonically imperceptible. The more components there are to a sound system, however, the more potential there is for a device to interfere with a clear—or transparent—sound signal and render itself perceivable. As Jonathan Sterne points out, transparency is an unattainable ideal, but is also an integral aspect of the way audio manufacturers, advertisers, and consumers historically constructed the concept of audio fidelity. Sterne explains that advertisers touted transparency *and* the audible mediation simultaneously, claiming that their products helped play the music "as it was meant to be heard" while also sounding *unique*:

> The aesthetic notion that the best medium was one that was the "least there" thus served as an inverted image of sound reproduction's social existence: the more "there" it was, the more effective it could be….
>
> Listeners knew very well that it was impossible to create a truly transparent sound-reproduction technology. It was obvious that different machines had sounds all their own.[296]

Sterne is concerned with the pre-war cultural construction of fidelity and specific technologies such as radios and telephones, but this paradox of transparency alongside desired mediation

[295] Eleanor Edwards, "I am a Hi-Fi Wife," *High Fidelity*, November/December 1954, 43.

[296] Sterne, *The Audible Past*, 225, 267.

continues in post-war hi-fi advertising. Speakers can be "warm" or "brassy" sounding, while receivers can be adjusted to "please your own listening tastes, you can second-guess the recording engineer."[297] Advertisements for hi-fi gear demonstrate a deep investment in differentiating the sound qualities of components, while also tying those qualities and the ability to perceive them to a listener's taste, skills, and identity.

Contrastingly, tonearm discourses *did not* repackage their audible mediations as sound qualities. Hi-fi enthusiasts demanded that tonearms be inaudible and undetectable, and deemed the inevitable artifacts of analog sound to be noise. Hum or static from components such as amplifiers or receivers could be mitigated with high-quality metals in cables, tightly fitted parts that reduce rattling, and careful calibration to avoid interference. None of these precautions, however, could eliminate the pops and hisses produced when an imperfect needle contacted an imperfect groove. Throughout the 1950s, the quality of materials and engineering for record, needle, and cartridge technologies quickly improved and, as they grew less and less noisy, manufactures flaunted their proximity to silence. To return to the quip that opens this article, Herbert Reid used the evocative term "silent partner" in the title of his multi-part series of essays and reviews on tonearms, writing that, "[The tonearm] is, in effect, a 'silent partner' in the musical enterprise. But like a great many 'silent partners,' the tone arm exerts a subtle but decisive influence on the entire operation of the hi-fi system."[298] Similarly, a 1958 series of five full-page Collaro advertisements dubbed their turntables and tonearms as, "your *silent* partner for

[297] Munston Maestro, Magazine Advertisement, *High Fidelity*, November 1955, 47.

[298] Reid, "Silent Partners (Revisited), 61.

stereo."[299] Like the feathers and hands in the first case study, the use of silence in tonearm marketing welcomes both feminine and masculine readings.

Keightley elaborates on the association between women and noise and mass-entertainment on television. Drawing from the work of Andreas Huyssen, Keightley argues that magazine discourses positioned hi-fi technologies as opposite and superior to feminized conduits for mass-entertainment, mass-production, and popular media.[300] Hi-fi, then, was depicted as an escape from the frenetic din of feminized noise. If the "flow of feminine conversation" or the din of the nuclear family could not be easily shushed, hi-fi systems might silence in other ways. A Vox records advertisement depicted a man listening and lounging while his party guests' mouths are gagged, saying to himself "I dreamed everyone kept quiet while I played my hi-fi set!" The advertisement copy responds, "That's no dream sir. You're wide awake…and so's your home audience…with the full rich sounds of these Vox Ultra High Fidelity recordings. The reproduction is perfect—and the content has that rare excitement that turns talkers into listeners."[301] The prose of the ad suggests that the perfect reproduction and excitement of the Vox recordings will silence guests, but the illustration indicates a more forceable implementation of silence and power, as the guests sit nervously upright and unable to speak (Figure 36). While the ad is no doubt meant to be humorous, the casual violence against men and women for the

[299] Herbert Reid, "Silent Partners: Turntables and Tonearms, Part 1," *HiFi & Music Review*, July 1958, 33; Herbert Reid, "Silent Partners: Turntables and Tonearms, Part 2," *HiFi & Music Review*, August 1958, 41; Reid, "Silent Partners (Revisited)," 61; Collaro Limited, Magazine Advertisement, *HiFi & Music Review*, October 1958, 45 Emphasis in original.

[300] Andreas Huyssen, *After the Great Divide: Modernism, Mass Culture, Postmodernism* (Bloomington, IN: Indiana University Press, 1986), 44–64; Keightley, "Low Television, High Fidelity," 237–38.

[301] Vox Records, Magazine Advertisement, *High Fidelity*, November 1955, 69.

sake of silence is unsettling. The lounging man, in clear ecstasy, basks in the physical and sonic control made available to him through his hi-fi set.

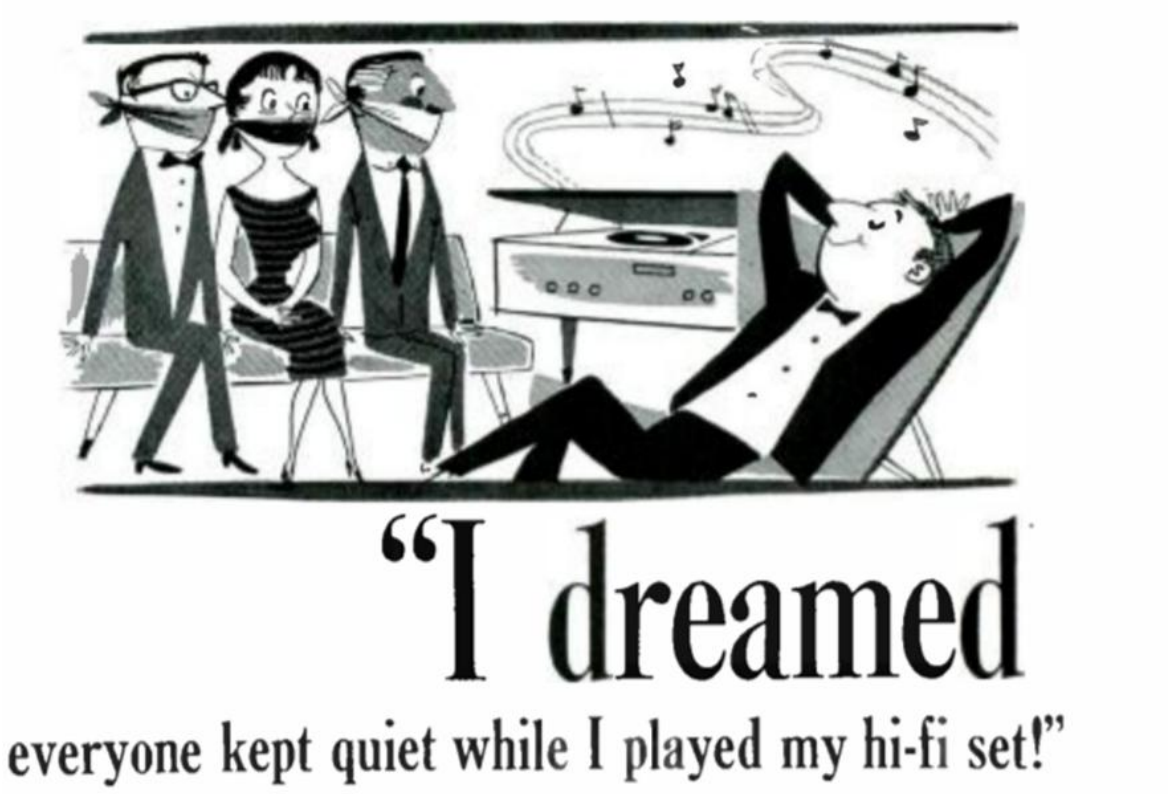

Figure 36. A sharply dressed cartoon man lounges and listens to his record player in delight. His guests, whose mouths are gagged, sit nervously upright and huddled together on a couch. Vox Records, Magazine Advertisement, *High Fidelity*, November 1955, 69.

Through the visual and rhetorical associations in tonearm discourses, typically feminized characteristics such as silence, passivity, and compliance are positioned as desirable and masculine. The term "silent partner" traditionally describes someone who contributes money to a company or firm and expects financial returns, but does not take part in daily operations. With its first uses dating back to the nineteenth century, the phrase would have been familiar to those readers acquainted with white-collar business practices. The use of investing terminology recalls the fast-paced and male-dominated world of capitalist white-collar business, which was growing

at a break-neck speed through the midcentury in the United States. While this could point to male homosocial bonding, that interpretation does not account for the partner's silence, nor the desire for intimate pleasure time alone. As Suzanne Cusick described in her foundational essay "On a Lesbian Relationship with Music," "If music might be for some of us… in the position sometimes called 'significant other,' then one might look for… moments when *it* is the lover—that is, the active, pleasure-giving partner—and moments when *it* is the beloved—the partner who somehow receives pleasure or empowerment."[302] Filling this double index of the business investor and pleasure-seeking partner, the silent tonearm lead a dual existence and is at once representative of a masculinized partner and a romantic escape.

"Ways to Make Love to Your Records"

Thus far I have attributed the gendering of the tonearm to its shape and fragility, but I have not yet thoroughly taken up the tonearm as the site of transduction; that is, the transformation of vibrations into sound signal. The transduction that occurs with a record and needle has changed very little since the earliest prototype and, while easily explained by physics, remains to many a largely invisible and magical process. The needle is also the only thing that can "read" the grooves, and to do this, it must float precisely over the record. If this delicate dance is disrupted by poor calibration, imprecise engineering, or reckless handling, the needle will "grind away the delicate sound impressions."[303]

[302] Suzanne Cusick, "On a Lesbian Relationship with Music: A Serious Effort Not to Think Straight," in *Queering the Pitch: The New Gay and Lesbian Musicology*, eds. Philip Brett, Elizabeth Wood, Gary C. Thomas, 2nd ed. (New York: Routledge, 2006), 73–74. Emphasis in original.

[303] Fidelitone, Magazine Advertisement, *High Fidelity*, June 1958, 10.

This final case study addresses the interaction between the record and the tonearm, a relationship in which both objects receive gendered treatments, but the record is typically the helpless victim and "virgin" damsel to be rescued.[304] Pickering brand was particularly fond of pointing out the importance of treating records delicately, with a 1959 advertisement claiming that their tonearm is "so safe and easy to handle…so obedient and responsive," and "reproduces music with magnificent sound quality…with negligible wear on record and stylus."[305] In an earlier spot, Pickering went even further:

> Pickering Diamond cartridges have no equal. The wear and fracture resistance of the diamond styli in these cartridges is many times greater than that of styli made of sapphire, the next hardest material. Because resistance to wear preserves the precise shape of the stylus point, the life and quality of your valuable record collection is insured. *Don't impair the musical quality of your priceless records.* Use Pickering diamond stylus cartridges… they not only wear longer *but, more important,* they preserve the musical quality and prolong the life of your record library.[306]

This rhetoric was not exclusive to Pickering, however. Ferranti Electric boasted of their "ribbon pickup": "Precision manufacture by specialists in delicate aircraft instruments insures [sic] continued *full* fidelity from your favorite records. Completely integrated design, from stylus to arm mounting, giving flat response from 20–20,000 cps, with extremely low distortion and negligible record wear."[307] Furthermore, Audax claims in bold, extra-large font that, "Never before such EAR-QUALITY, such FAITHFUL REPRODUCTION… This remarkable achievement is now crowned by the further development of the New CHROMATIC stylus system, which, for the first time in 75 years, totally eliminates the ugly factors that have caused

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[304] Rhapsody Record Shop, Magazine Advertisement, *High Fidelity*, January–February 1954, 80.

[305] Pickering and Company, Inc., Magazine Advertisement, *HiFi Review*, June 1959, 75. Ellipses in original.

[306] Pickering and Company, Inc., Magazine Advertisement, *High Fidelity*, November–December 1952, 24. Ellipses and emphasis in original.

[307] Ferranti Electric, Inc., Magazine Advertisement, *High Fidelity*, April 1954, 17. Emphasis in original.

untold record destruction and distortion."[308] A smaller Jensen spot suggested a feminized gendering that values gentleness over strength when it graphically depicted a rugged man's hand mutilating a record with a wood-carving implement and exclaims, "Don't gouge that groove! Worn needles are chisels! After just 60 play-hours, needle point flattens to chisel sharpness—cuts away record grooves; destroys sound pick-up! Stop ruining your records!" (Figure 37).[309] The chisel and brawny hand—which would typically be interpreted as a nod to carpentry and masculine craftsmanship—instead indicate a brutish handling of vinyl. Gender and class insinuations elide, as the rough-hewn hand is aligned with a dull stylus and the result of inattention by the unrefined working-class man. To neglect the stylus was to be inept and unprepared for the "cultured" and "contemplative" work of maintaining pristine vinyl records.[310] The class implications in the Jensen ad loomed large for those who were rising to the middle-class and who benefitted from post-war machinations of upward mobility such as G.I. bill funding, abundant affordable housing, demand for professional labor, and rising wages.[311]

[308] Audak Company, Magazine Advertisement, *High Fidelity*, Winter 1951, 2. Emphasis in original.

[309] Jensen Industries, Inc., Magazine Advertisement, *High Fidelity*, January 1954, 145.

[310] Jonathan Sterne, "The Stereophonic Spaces of Soundscape," in *Living Stereo: Histories and Cultures of Multichannel Sound*, eds. Paul Théberge, Kyle Devine, and Tom Everett (New York: Bloomsbury Academic, 2015), 77.

[311] Cohen, *A Consumers' Republic*, 122–23.

Figure 37. A Jensen Industries advertisement compares the destruction caused by worn needles to a wood chisel, as a man's hand carves out the grooves of a record. Jensen Industries, Inc., Magazine Advertisement, *High Fidelity*, January 1954, 145.

Record-preservation anxiety also pervaded essays and articles, as Herbert Reid demonstrates in his final "silent partner" essay in 1959:

> Footsteps on a shaky floor, or passing traffic, makes [spring-balanced] arms fly out of the groove, only to come crashing down again a moment later. Owners of common or garden-variety phonographs with dime-store-quality tone arms usually have shattered records, shattered pickups, and shattered nerves. Nothing of the sort threatens the possessor of a spring-balanced arm that is properly engineered to high fidelity standards. Such tone arms successfully subdue the temperamental sprightliness of their springs by

> burdening them with just the right amount of mass to make them sedate and dependable.[312]

A consistent theme throughout these examples was that the destructive power of the needle could be made "sedate and dependable," "obedient and responsive," through disciplining by engineers, technicians, and "specialists in delicate aircraft instruments." This language mirrors the Foucauldian disciplining of the natural and unruly feminine in the name of preserving the purity of the virginal vinyl record.[313] Technological mastery and control are aspects of hegemonic masculinity that hi-fi discourses employ regularly and the destructive nature of the tonearm becomes a question of mastery of the unruly male feminine. Although mastery and control are characteristics of hegemonic masculinity, the way mastery is characterized in tonearm and cartridge discourse paradoxically takes on feminized characteristics of "sedate" "obedience."

An unexpected assistant in the taming of the tonearm, the housewife makes several appearances in this effort to protect and preserve vinyl records, as she is frequently depicted in photographs and drawings as helping keep records clean and organized. In the first issue of *HiFi & Music Review*, Herbert Reid contributed an article titled "Don't Murder Those Records!" with its first photo showing a woman holding a stack of records, touching the grooves with her fingers, and leering over the turntable with a cigarette in her mouth (Figure 38). Her eyes are censored to hide her identity, like an accused criminal in an exposé. As she "mauls" the records with her careless grip, she also generates dust and grime with her cigarette. Smoking was as

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[312] Reid, "Silent Partners (Revisited)," 64.

[313] Michel Foucault, *Madness and Civilization: A History of Insanity in the Age of Reason*, trans. Richard Howard (New York: Vintage Books, 1988), 64. Susan McClary's classic examination of feminine excess, bestiality, and madness was my entry point to this application of Foucault. Susan McClary, *Feminine Endings* (Minneapolis, MN: University of Minnesota Press, 1991), 80–90. Jack Halberstam's recent work on Igor Stravinsky and the *Rite of Spring* branches out with readings that productively reframe wildness as a "unchecked growth" that "break[s] loose from history, and reach[es] for new arrangements of bodies, desire, and temporality." Jack Halberstam, *Wildness* (Durham, NC: Duke University Press, 2020), 51–57.

common among women in the 1950s as it was men but, starting in the 1920s, print advertisers had primarily associated smoking with the glamour of sexual freedom and rebellion.[314] The details of the "murderess" photo suggest that a woman who mistreats records also transgresses traditional femininity.[315] The caption reads: "The dirty deed is done: records are ground together in a stack, surfaces mauled by fingers, and ashes sprinkled over all."[316] In the prose of Reid's essay, he warns, "Dust clings to your records with the passion of a determined lover. You can't give it the brush off; the lint won't take a hint. In fact, brushing merely electrifies the close relationship between the disk and dust with a static charge by which they cleave ever more firmly to each other. The record literally has to be tricked out of this misalliance."[317]

[314] For more on gender and cigarette advertising in the United States, see Cheryl Krasnick Warsh, "Smoke and Mirrors: Gender Representation in North American Tobacco and Alcohol Advertisements before 1950," *Social History-Ottawa* (1998): 183–222.

[315] While the model in Figure 388 does have a crop hairstyle, I hesitate to group her hair in with masculine or butch signifiers. Short cuts were popular at the time, especially in depictions of married women, and not considered especially transgressive. It is possible, however, to interpret the longer hairstyle in Figure 399 as an indicator of youth and purity.

[316] Herbert Reid, "Don't Murder Those Records!" *HiFi & Music Review*, February 1958, 67.

[317] Ibid., 68.

The dirty deed is done: records are ground together in stack, surfaces mauled by fingers, and ashes sprinkled over all.

Figure 38. In a dramatic depiction of how not to handle records, a record "murderess" recklessly stacks records together and drops cigarette ashes into the grooves. Herbert Reid, "Don't Murder Those Records!" *HiFi & Music Review*, February 1958, 67.

In addition to treating records like "untouched" virgins or "misallied" lovers, others treated records like spoiled romantic partners. Take for example a Columbia Records promotion that depicted a cartoon man kneeling, as if proposing, by a banner reading, "7 Ways To Make Love To Your Records." Each of the seven romantic tips is a word play on a product that can help preserve the life of his records:

> GIVE THEM DIAMONDS! Genuine Columbia diamond tip needle gives records longer life…TAKE THEM OUT MORE OFTEN! Columbia brings you the most beautiful record carrying cases in America…GIVE THEM A HOME OF THEIR OWN! These

> beautifully designed Columbia record racks are built to hold both 7" and 12" records…KEEP THEM GOING AROUND IN CIRCLES! Columbia's sable-soft brush cleans records as they play…BE PROTECTIVE AT ALL TIMES! Columbia electrostatic spray cleans your records, lubricates grooves, protects against record and needle wear, banishes annoying static crackle…HELP THEM STAY YOUNG-LOOKING ALWAYS! Columbia electrostatic cloth keeps records almost like new.[318]

Despite the advice clearly being directed at men, even if humorously, it is not the man of the household shown coming to the rescue of these helpless records or pampering them with frequent cleanings with "sable-soft" brushes.[319]

Reid's article contrasted the vinyl murderess (who is wearing black) with an attentive female model, clad in white, demonstrating how to brush, spray, and wash records (Figure 39). Borrowing poses from dish soap and sponge advertisements in women's magazines, the model stands at a sink in her apron washing a record like a dish, with previously cleaned records drying in the dishrack beside her. Similarly, a Static Master advertisement showed a woman in an evening gown smiling at the reader while brushing a disc as it spins on the turntable.[320] Dexter Chemical Co. featured a woman's hand wiping a "groove cleaning applicator" over a glistening record to promote their Lektrostat Record Cleaning Kit.[321]

[318] Columbia Records, Magazine Advertisement, *High Fidelity*, December 1957, 160.

[319] As Tony Grajeda describes, romantic relationships between audio and audiophile as well as the "cheerful conflation of woman and technology is not uncommon in the discourse of audio fidelity." He provides analysis and further examples in Grajeda, "The Sweet Spot," 50.

[320] Nuclear Products Company, Magazine Advertisement, *HiFi Review*, February 1959, 93.

[321] Dexter Chemical Corporation, Magazine Advertisement, *High Fidelity*, December 1957, 105.

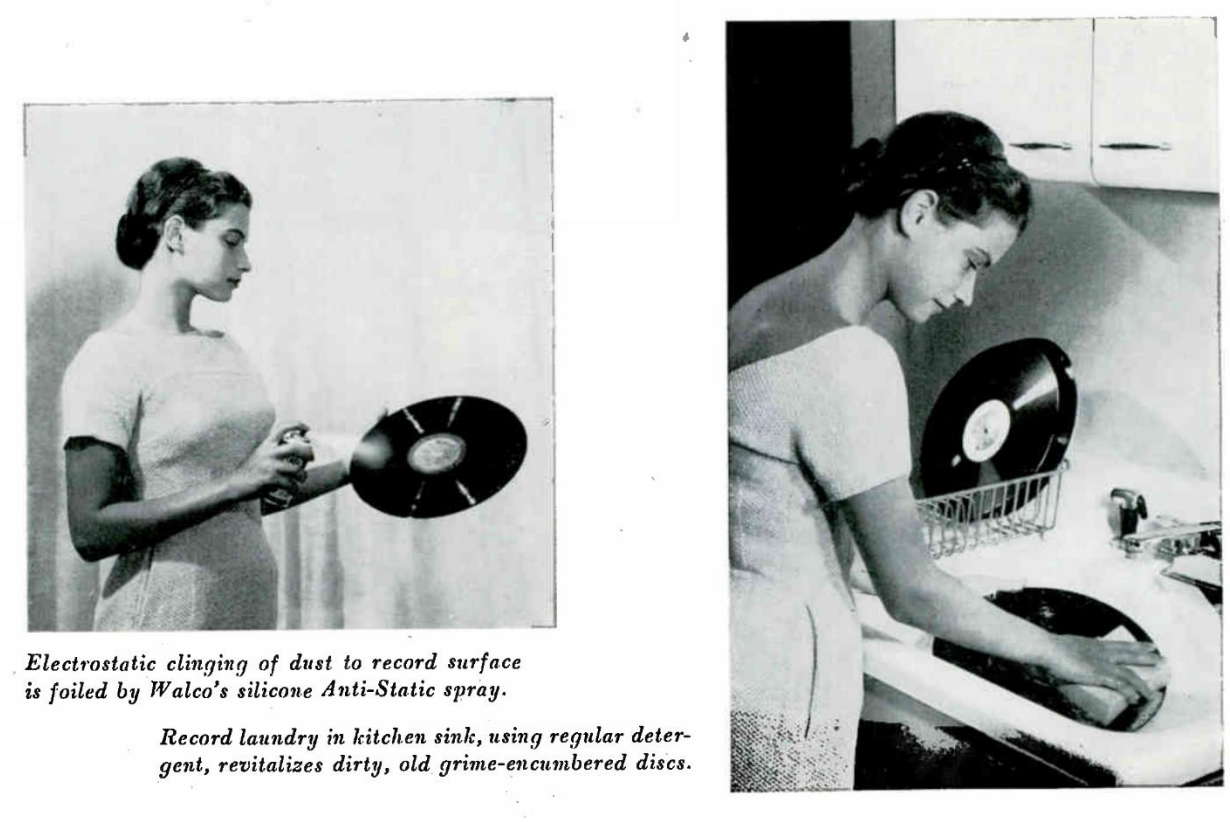

Figure 39. In contrast to the dangerous handling depicted in Figure 38, a woman carefully cleans records and rescues them from damage. Herbert Reid, "Don't Murder Those Records!" *HiFi & Music Review*, February 1958, 68.

Connections between women and record maintenance were also reinforced outside of magazine advertisements. On a mid-1950s Capitol Records protective sleeve, which the music listener would have to handle to retrieve the record for playback, the manufacturer explains, "A word about HIGH FIDELITY: The record in this envelope has been recorded with today's most advanced electronic techniques… The moment this fine product is completed, it is placed in this envelope so that it will reach you in 'mint' condition. From here on, quality reproduction is up to you! You need good playback equipment to reproduce the wealth of musical detail which this

record contains."[322] On the reverse, an illustration of a woman's torso and hands demonstrates how to open the envelope and easily insert it into the album jacket. It is likely that the tight association between cleanliness, homemaking, and femininity was behind these depictions of women rescuing disks that are endangered by their fatal attraction to dust, but here, women's hands and bodies denote the orderly and the ignorant; the generative and the destructive.

The woman who cared for a record was a mirror to the tonearm, in that she played the dual role of destroying and protecting the musical object. Because gendering the tonearm was so tricky in this way, those writing either copy or articles about styli and cartridges got caught in the middle of this generative and destructive paradox. In his second article on tonearms, Reid suggested a Metzner tonearm that has a "limp wrist," which allowed for increased flexibility to best fit into the grooves of the record. As the article describes on the next page, the term "limp wrist" refers to the adjustable head, which is usually fixed on a tonearm.[323] "Limp wrist" was not a term commonly applied to adjustable heads and this is the only instance in which I have ever seen it in a historical magazine. It stands out because a "limp wrist" is a gesture typically associated with effeminate men. Beginning in the eighteenth century, the limp wrist was employed in popular media and theater as a derogatory remark on lack of arm strength, perversity, excess, and performative foppishness.[324] In this article, however, no obvious connection is made between male homosexuality and the tonearm, and instead the characteristic

[322] Capitol Records protective sleeve. While the sleeve has been separated from its original record, the font, style of the logo, and verbiage indicate that the sleeve was likely distributed sometime between 1955 and 1957. Capitol purchased full-page advertisements spots in both *HiFi Review* and *High Fidelity* until 1963. Thanks to my colleague, Sophia Maria Andricopoulos, for drawing my attention to this record sleeve from her personal collection.

[323] Reid, "The Silent Partners: Turntables and Tonearms, Part 2," 41.

[324] Thomas A. King, *The Gendering of Men, 1600–1750, Volume 2: Queer Articulations* (Madison: University of Wisconsin Press, 2004), 41–50, 244–45.

is described as a benefit that permits more precise treatment of the record. In an advertisement by Metzner, the manufacturer referred to the feature as a "double wrist." Taking a heteronormative romantic angle, the illustration shows a couple cuddled together on a park bench and tonearm is branded as the "Starlight Tone Arm" with the catch phrase, "as silent as the stars."[325]

HiFi Music & Review editor Christopher Montgomery gendered the tonearm in a similarly satirical, but baffling manner in the introduction to an article about tonearm weight. The author likened the weight of the tonearm to that of a slender fashion model and mimicked some of the weight management language from women's magazines:

> This ambitious admonition is not concerned with your midriff, but with your tone arm. Weight watching is just as essential for a lean sound as for a trim figure. Overweight, at best, is a blemish; at worst, a killer. The time of life runs out fast on your stylus and your records if excess weight bears down on them…But don't fall prey to what might be called the fashion-model's fallacy. It's not necessarily a case of "the lighter the better." And though your tone arm can't get skinny, it can certainly get underweight.[326]

In a rather unusual tactic for tonearms, Gray Manufacturing Co. broke this mold and dodged any slippery connotations by depicting their tonearms as hefty pieces of machinery, which resulted in them appearing comically oversized. A 1957 advertisement in *High Fidelity* shows the Gray tonearm from the side, being gently adjusted by a disembodied male hand.[327] If the image were true to size, the tonearm would be the length of the man's forearm, with a cartridge almost the size of his palm. Doubling down on this tactic in *HiFi Review* in 1959, Gray again showed an over-sized tonearm, delicately gripped by a man's hand (Figure 40).[328] This time the tonearm is

[325] Metzner Engineering Corporation, Magazine Advertisement, *High Fidelity*, September 1956, 94.

[326] Christopher Montgomery, "Watch Your Weight!" *HiFi & Music Review*, March 1958, 55.

[327] Gray Manufacturing Company, Magazine Advertisement, *High Fidelity*, December 1957, 145.

[328] Gray Manufacturing Company, Magazine Advertisement, *HiFi Review*, June 1959, 67.

shown from the top, emphasizing the sturdy width and straight lines of the metallic arm, which is almost as wide as the man's arm. With these two images, Gray simply abandoned the realities of proportion, disregarded the rhetoric of delicacy, and masculinized the tonearm in a fashion that more neatly aligns with the strategies used with every other component in the hi-fi system. Considering how infrequently manufacturers resorted to these masculinizing strategies, it is safe to speculate that they were not particularly effective.

Figure 40. In an effort to demonstrate durability and sturdiness, a photorealistic tonearm is drawn larger than scale and appears to be almost as large as the depicted man's forearm. Gray Industries, Magazine Advertisement, *HiFi Review*, June 1959, 67.

Conclusion

The contentious relationship between the record and the tonearm demonstrates that the difficultly of using traditional masculine tropes of athleticism and brute strength to sell tonearms—because those characteristics might very well destroy the record. On the other side of the same coin, negatively deployed feminized characteristics, like waifish models, were used to remove the tonearm from excessive feminization. A traditionally male homosexual trope, the limp wrist, however, struck a balance in marketing a device that walks the line between the masculine and the feminine. I do not wish to overdetermine the intentions of advertisers and their use of fluid language and symbolism. Rather, I aim to reveal and address the ambiguous gendering of audio equipment in print media of the 1950s.

The blurry gendering of tonearm ads is the residue of the post-war home audio industry becoming masculine, as marketing strategies explicitly shifted from depicting music in the home as a nontechnological, feminized pursuit to a masculine hobby. For more than fifty years, the phonograph and record industry had focused marketing heavily on women, understood to be the stewards of domestic musical knowledge and practice. As Philip Brett argues, musicality was so feminized in the late nineteenth and early twentieth centuries that masculine musical participation was shadowed with associations with male feminization and homosexuality.[329] In the 1950s—the early years of the masculinization of the audio industry—the echoes of and reckonings with queer musicality and the musical feminine are perceivable through ambiguously gendered tonearm imagery and rhetoric. Whether gender fluidity appealed to queer readers or was purposefully designed to register as queer is difficult to know, but I wish to emphasize that

[329] Philip Brett, "Musicality, Essentialism, and the Closet," *Queering the Pitch*, eds. Philip Brett, Elizabeth Wood, and Gary C. Thomas (London: Taylor and Francis Group, 2006), 11.

on a conscious and semi-conscious level, these images and words resist straightforward, singular readings. They complicate the heteronormative cultural construction of middle-aged, middle class, mid-twentieth-century hi-fi culture and demonstrate that, amid the powerful homogenizing forces of hegemonic masculine tropes found throughout hi-fi discourse, there are moments of slippage that expose an unfixed and evolving midcentury conception of masculinity. These cracks are key to opening up the opportunity to nuance the traditionally masculinist home audio narrative.

I would like to return to the overarching role of modularity and the ways in which this chapter fits into a larger assembly. A hi-fi setup is a material expression of masculinity that can be built and rebuilt, because modular audio systems permitted audiophiles to customize their home listening experience. Audio magazines factored into this phenomenon because they shaped the constructions that determined how masculinity was modeled, embodied, and fashioned in the U.S. midcentury. Sound production and listening are important aspects of high fidelity culture, but the intimate moments—connecting a power amplifier for the first time or twiddling the knobs of a receiver while playing test records—are made possible by modular technologies. I am positioning the tonearm as a fluid component of a masculinized modular system in which advertisers and manufacturers gender each component differently. Thus, the hi-fi system serves as an embodied simulacrum of the masculine self and the tonearm is a symbolic site of gendered questioning in masculine identity formation.

Conclusion

Don't fall victim to the myth that some of your stereo components can be weak links without loss in performance. A boy sent to do a man's job is still a boy no matter how many men surround him. Pilot stereo components are all "men." Each is a strong link in any system…each is as responsive an instrument as you could demand.

–Advertisement for Pilot Radio Corporation, *High Fidelity*, February 1960

The components of a modular audio system are interconnected and depend on one another to produce high fidelity sound. Each component is individually manufactured, plays a discrete role, and can be independently tweaked, but does not fully operate outside of the architecture of the hi-fi rig. The case studies in this dissertation, and the masculinities that I explore therein, are much the same. To reiterate a point from the opening pages of this dissertation, modular masculinity is an architecture through which histories of masculinity can be understood as a part of a larger identity-making project. It is, no doubt, important to point to the ways networks of marketers, publishers, authors, hobbyists, government agencies, and manufacturers produced and reproduced the relationship between masculinity and sound technology in the U.S. midcentury; but it is also vital to consider how the specific masculinities I explore relate to one another. These case studies contain elements that, at once, complement and complicate one another. This is a vital characteristic of modular masculinity: it allows for the coexistence of contradictory masculine identity projects, allowing for a complex picture of the gendering of hi-fi technology in the midcentury.

There are also some shared themes across the chapters regarding leisure time, DIY culture, productivity, domesticity, and sexuality and some themes are interchangeable between

components. There are surely tonearm advertisements that speak to the formation of scientific masculinity, depictions of cables that could inform an understanding of domestic masculinity, and loudspeaker discourse that would best be analyzed using methods from queer theory. I do not argue that components are gendered exclusively in the way that I explicate in these chapters, but rather identify meaningful patterns and what we can learn from them.

Just as components in a modular system operate together and inflect one another, so do the social constructions explored in the preceding chapters. For instance, loudspeaker advertisements were a particularly rich resource for exploring domestic masculinities in Chapter 2, but a more expansive view also shows that efforts to construct a uniquely U.S. American scientific masculinity included a domestication of technical prowess. Behind the frantic masculinization of scientific research was that, following the deployment of the atomic bomb and subsequent blacklisting of Dr. Oppenheimer during the red scare, scientists were often the subject of suspicion and criticism. Consider the number of diabolical "mad scientists" in 1950s science fiction who, against the suave heroics of muscular main characters, cowered behind their violent contraptions. Recuperating the mad scientist as an American hero required a reworking of what it meant to be masculine in the midcentury United States. Hi-fi discourse helped bring the researcher to the home front and set him to testing voltages on the living room floor. Alongside DIY speaker enclosure advertisements that capitalized on the traditionally rugged masculinities associated with carpentry and craftsmanship, new expansions of masculinity emerged in the form of the amateur engineer who was as comfortable with a hacksaw as he was a soldering iron.

Connections across components are what make modularity an effective framework for the analysis of masculinity. They show that no one aspect of the Hi-Fi Man can be scrutinized without a careful consideration of the ways that part interfaces with the whole. As I and others

continue to consider the complex relationships between home audio and gender, new connections will reveal themselves, perhaps even calling for the development of organizational systems of understanding beyond modularity. This is to say that there are more stories to tell and, in the next section, I offer four future directions that draw on the framework and methods I have presented in this dissertation.

Future Directions: Japanese Audio Manufactures & The U.S. Hi-Fi Market

One such story is that of the emergence and eventual dominance of Japanese audio technology manufacturing and the tensions that arose between the nationalist rhetoric I point to in Chapter 3 and the globalization of the audio industry. Indeed, while a handful of American-made brands are still available today like Bose, Klipsch, and McIntosh, Japanese makers such as Onkyo, Sony, Denon, and Hitachi remain synonymous with good-quality, accessible, and affordable audio equipment. As featured in a 1955 *Audio* article titled, "Hi-Fi Goes to Japan," there was a growing midcentury interest among Japanese consumers in home audio as well as innovations such as hi-fi listening bars and coffee shops.[330] The 1955 article states that Japanese consumers were primarily buying gear imported from America, but by 1963, tape recorder reviews in *High Fidelity* and *Hi-Fi/Stereo Review* noted that both machines sold by Japanese brands and American-branded machines manufactured in Japan were leading the amateur-grade market in both value and quality.[331]

[330] Warren Birkenhead, "Japan Goes Hi-Fi," *Audio*, February 1955, 22–23, 68.

[331] Robert Silverberg, "And Be Sure to Pack a Tape Recorder!" *High Fidelity*, July 1963, 32–34; "Just Looking…At the Best in New Hi-Fi Components," *Hi-Fi/Stereo Review*, November 1963, 16.

The first space purchased by a Japanese company in a hobbyist magazine was for Fukuin Electronic Corporation in the January 1957 issue of *Audio* under the name "Pioneer." After receiving praise in January 1959 for their TFM-151 Portable AF/FM radio, Sony began advertising in *Audio* May 1959, and was joined in the same year by Fukuyo Sound (Coral) and Sansui. These same brands did not enter *High Fidelity* or *Hi-Fi/Stereo Review* until 1961. Most component brands advertised in all three of these major magazines, but it is hard to say why there was a delay before Japanese companies crossed over to the latter two. One explanation may be that space in *Audio*—with its less polished publication style and substantially smaller distribution—was more affordable for manufacturers who were dipping a toe into a new foreign market. It also made sense to get established in *Audio*, as it was oriented to more technical readers who might be willing to experiment with new and novel gear.

Whatever the reason for the measured introduction to the American market, Sony, Fukuin Electric (Pioneer), and Fukuyo Sound (Coral) were also experimenting with how to portray their "brand origin," that is, the place or country a brand is perceived to belong by its customers. It was no secret that these were Japanese brands, but companies like Sony appear to purposefully obfuscate their origin by establishing United States subsidiaries like the "Sony Corporation of America." Fukuin Electric operated under the brand name Pioneer (which seems like it was a not-so-subtle appeal to U.S. American sentiments) and oscillated on whether or not to include their Tokyo address at the bottom of their advertisement, a standard practice for manufacturers throughout the midcentury. Many 1959 Pioneer advertisements contain no mention of Japan but their first full-page spot in January of 1960 included "FUKUIN ELECTRIC, TOKYO, JAPAN" in large block lettering as well as a banner photo featuring a fashionably-dressed Japanese

woman lounging in front of a loudspeaker (Figure 41).[332] Fukuyo Sound uses the brand name Coral, but unflinchingly proclaims in an October 1959 advertisement, "Superior to European and American Products. Products Sold Profitably Everywhere."[333] Based on the rosy reviews of Japanese-made products that trickled in the late fifties—then poured forth in the early sixties—Fukuyo Sound's claim might not have been much of a stretch.

To simplify a complicated relationship, the United States federal government generally viewed Japan's post-war industrial prosperity as a boon in the global fight against communism, but U.S. citizens were slower to adjust to Japan (and Japanese manufactures) as an international ally. Despite positive performance reviews, Japanese products were treated with suspicion for being too cheap, too hasty to enter the hi-fi market, and, in one case, a threat to national security. As reported in *High Fidelity Trade News*, The Electronics Industries Association (EIA) requested that the Office of Civil Defense Mobilization investigate the growing imports of Japanese transistors to determine whether they threatened American security.[334] The EIA acknowledged that the United States produced far more transistors in 1958 (47 million) than it imported from Japan (26 million). The cause for alarm was that while the number of transistors produced per year in the U.S. from 1956 to 1958 had quadrupled, the number produced in 1958 in Japan was forty-five times what it had produced 1956. EIA president D.R. Hull appealed that, "representing one of the major United States electronic inventions in recent years, transistors constitute a vital part of our defense program and are used increasingly in the development of

[332] Fukuin Electric (Pioneer), Magazine Advertisement, *Audio*, January 1960, 39.

[333] Fukuyo Sound Co., Ltd. (Coral), Magazine Advertisement, *Audio*, October 1959, 109.

[334] "EIA Asks Investigation of Transistor Imports," *High Fidelity Trade News*, October 1959, 46.

military weapons systems."[335] Hull's specification that it is a "major *United States* electronic invention" betrays a nationalistic possessiveness of transistors and, more broadly, a commitment to American technological exceptionalism that I discuss in Chapter 3. There is a complex story to be told about post-war international relations, anti-Japanese prejudice, technological superiority complexes, and racially-inflected issues of masculinity unfolding from the mid-1950s and into the 1960s and beyond.

[335] Ibid.

FOR BETTER
HIGH FREQUENCY REPRODUCTION . . .
A HORN TYPE TWEETER

The model PT-4 is offered to the public at the price heretofore unthought of for a horn type speaker, the drastic price reduction being effected by eliminating all inessential parts as much as possible and also by facilitating mass production by employing conveyer systems, and moreover from the standpoint of efficiency, it is just as good as a conventional horn type speaker, and in addition improvements made in vibrating elements have brought about a superior high frequency characteristic, successfully solving a difficult problem considered inherent to such a speaker. If used in conjunction with the PIONEER 8″, 10″ or 12″ woofer, it will give a highly satisfactory performance, reproducing high frequency sound of violin and trumpet in their pleasing natural tones.

- Ideal for home high fidelity systems
- Despite its low price, the PT-4 provides identical performance as costly horn tweeters manufactured heretofore.
- Incorporating PIONEER's unique diaphragm and powerful magnetic field, the PT-4 provides clean undistorted high frequency reproduction.
- With its handsome appearance, the PT-4 horn tweeter will serve as a decorative accessory that will enhance the atmosphere of the listening room.

SPECIFICATIONS

Voice coil impedance	16 ohms
Cutoff frequency	1,500 cps
Frequency response	1,500—16,000 cps
Maximum power input	20 watts
Sensitivity	105 db/watt
Crossover frequency	over 3,000 cps
Total flux	22,500 maxwell
Flux density	14,400 gauss
Weight	694 g (24.5 oz.)

FUKUIN ELECTRIC, TOKYO, JAPAN

5 OTOWACHO 6-CHOME,
BUNKYOKU, TOKYO, JAPAN

Figure 41. A woman who appears to be a Japanese model in front of a Fukuin Electric/Pioneer hi-fi system. Fukuin Electric (Pioneer), Magazine Advertisement, *Audio*, January 1960, 39.

Future Directions: Hi-Fi Heroes

While there are a handful of high-quality biographies of influential figures in the history of hi-fi, there has been little scholarly engagement with the "heroes" of hi-fi and their performances and understandings of masculinity that were reproduced and amplified in print media. Audio engineers such as Paul Klipsch and Harry Olson were both of celebrity status in the audio community, yet worked in vastly different environments and represented opposite arms of the home audio industry. Klipsch, a polymath with experience in railway engineering, geophysics, and aviation, filed his first patent for a loudspeaker design in 1945 and started his audio manufacturing business in 1946. His piece on speaker design was the first featured article in the premiere issue of *High Fidelity* in 1951 and he is lauded in contemporary audiophile media as an example of an American self-made man. Klipsch was a passionate force in the field of audio engineering, but deeply critical of hi-fi culture and advertising. He disdained the influence of advertising that oversold the "major breakthroughs" in loudspeaker development—he was notorious for shouting "Bullshit!" while reading hi-fi magazines—and felt that the fetishization of home audio as a cultural commodity alienated amateur audiophiles who "practiced the art for love."[336]

In contrast to Klipsch, who owned and ran his independent manufacturing business for over 50 years (Klipsch passed away in 2002 and his company was purchased by electronics conglomerate, Audiovox, Inc. in 2011), Harry Olson worked as a research engineer for the consumer electronics giant, RCA. Some credit Olson as the "father of hi-fi," citing his 1934 development of a compact loudspeaker cone capable of reproducing sound from 80 to 10,000

[336] Paul Klipsch, "Quotes and Anecdotes," collected by Klipsch Museum of Audio History curator Jim Hunter, shared with the author via email, 18 January 2022.

hertz, and his 1947 experiment that found that listeners preferred "full frequency range" sound reproduction over recordings that filtered out any sounds over 5,000 hertz.[337] Throughout the 1930s and 1940s, it was common practice for recording engineers to filter out any frequencies above 5,000 hertz because, with available sound reproduction technologies at the time, higher frequencies were thin, shrill, and accompanied by a substantial amount of noise. Olson argued that, by 1947, improved recording playback technologies lessened unsavory problems such as a hiss and better handled harmonics and overtones.

Klipsch and Olson are often listed in the same breath, alongside other pioneers of the early midcentury audio world such as James B. Lansing, Saul Marantz, and Frank McIntosh, and they were amiable colleagues who circulated in the same circles of professional organizations like the Audio Engineering Society. However, their work environments, professional goals, and public personas were vastly different, each embodying a variant of the Hi-Fi Man. Extended examinations of Olson—a wizened member of the industrial ivory tower—and Klipsch—an eccentric folk-hero—as they appear in their archives and in audiophile media would provide a better understanding of how legend-making and masculinity intersect in midcentury hi-fi culture.

Future Directions: The Hi-Fi Woman

While I engage briefly with depictions of femininity and women's bodies in Chapter 4, and portrayals of marriage and motherhood in Chapter 2, I did not make an extended inquiry into women and 1950s hi-fi discourse. In the instances that I do include images or mentions of

[337] Harris, *Harry F. Olson*, 401; Harry F. Olson, "Frequency Range Preference for Speech and Music," *The Journal of the Acoustical Society of America* 19, no. 4, 1947, 549–55.

women, I point to the specific ways they work as symbols against which the Hi-Fi Man might define himself. This is partly because this project is committed to viewing history through a masculinist lens and to apply this framework to women's voices and bodies risks reinscribing the misogynist readings and essentializations that I am working to resist. Similarly, I have grappled with how I might fit the understudied work of women in hi-fi into the narrative that configures each component as a piece of a masculine identity. Modular masculinity is a novel way to consider the relationships between men and gear, but can it be applied to the study of marginalized genders that already have a fraught history of association with objects and objectification?

I tease out this question with a two-pronged approach: One critiques depictions of women as listening objects of desire, and a second shines a light on the perspectives of women who generated content for hi-fi magazines. No matter their gender, publishers, writers, and critics have been paid little attention, despite their influence on audio culture. Authors like Milton Sleeper (founder of *High Fidelity* and *Hi-Fi Music at Home*), Charles Fowler (editor and publisher of *High Fidelity* 1951–1961) and Edward Tatnall Canby (staff writer for *Audio Engineering* and widely published audio critic) had a strong hand in fusing light-hearted sarcasm and serious technical evaluation to create the editorial style idiomatic to audiophile publishing. Among this sprawling network of writers was a handful of women who published 83 articles across *High Fidelity*, *Audio*, *Hi-Fi Music at Home*, *Hi-Fi/Stereo Review*, and *Audiocraft* between 1950 and 1961. Among these magazines, *High Fidelity* published the most work by women, with 38 total articles by 25 different authors. *Hi-Fi Music at Home* only ran for five years between 1954 and 1959 but printed 27 articles by 20 different women, suggesting that publisher Milton Sleeper and his staff might have been purposefully seeking out women to write for them. *Audio*,

on the other hand, only had three articles by women between 1950 and 1961, one of which was a highly technical discussion on distortion by engineer Alice Brooks, while the other two were humorous essays about what it was like to be married to a hi-fi enthusiast.

There are several names that repeat throughout the decade, most notably Eleanor Edwards—who penned colorful essays about her personal experiences with hi-fi to *Audio* and *High Fidelity*—and Shirley Flemming—who contributed articles, wrote album reviews, and acted on the editorial board for both *Hi-Fi Music at Home* and *High Fidelity*. These two women establish authority differently. Edwards typically writes from the perspective of the naive "hi-fi wife," even though she shared with a publisher that, "she plans to spend the money [*High Fidelity*] sent her on an eight-knob preamplifier-equalizer."[338] Flemming very rarely refers to herself in her writing and uses a more journalistic tone in her features that range from the art of audio engineering to an interview with classical guitarist Andrés Segovia. As I read through the work of women in hi-fi discourse, I take special note of the ways these authors situate themselves relative to technological objects, describe their listening practices, relate to the hi-fi men in their lives, letters to the editor written about articles by women, and the ways they modulate their voices for different topics and publications.

The second pathway follows the already established logic that hi-fi publications were, at their core, men's magazines, and print representations of women can therefore inform readings of masculinity, femininity through a masculinist lens, sexuality, romance, and gender dynamics in the midcentury. A method that has proven illuminating is the collection of data on how often and in what situations women are depicted in hi-fi advertising. In examining *High Fidelity* issues

[338] "In This Issue," *High Fidelity*, November–December 1953, 3.

from 1950 to 1960, I found that most audio advertisements do not include a photo or drawing of a person. Those that do usually include either a picture of a man or of a man and woman together. In the early part of the fifties, there are about three times as many pictures of men alone as there are men and women together, but as the decade unfolds, the number of presumably heterosexual couples and solo men become roughly the same.[339] This quick tabulation supports my assertion in Chapter 2 that, as the influence of hi-fi culture spread, so too did the prevalence of couples and families participating in the activity together.

When women are shown on their own, however, they are most often lounging on the floor in front of a loudspeaker. Men are *only* shown on the floor if they are repairing something or with a woman. Musicologist Tom Perchard recognizes this trope and points out that 1950s and 60s magazines were "full of fabrics…especially carpets…that invited the touch, promising a sensual comfort not always available to earlier generations. This was denoted by a theme that stretched across domestic advertising and hi-fi literature in the 1960s, in which a female listener sprawled in close, sensuous contact with tactile modernity."[340] While modeling on the floor gives ample opportunity to take advantage of the artfully arranged fabric of A-line dresses or the long lines of slender legs, it is also important to consider the floor as a listening position. Tony Grajeda has described the midcentury development of prescriptive acoustically ideal sitting positions and living room arrangements, especially as they pertained to the male reader's listening perspective. Orientation suggestions typically depict a man sitting in a recliner in the

[339] To come to this conclusion, I counted images from the March and October issues from each year, 1950–1960. I chose March and October so as to avoid months with more romantic advertising (such as that for Valentine's Day in February) or months that might include more family-oriented advertising (such as that for family summer fun in July, back-to-school in August, or holiday gatherings in November or December).

[340] Perchard, "Mid-century Modern Jazz," 62.

center of the room at some carefully calculated nexus of soundwaves emitted from the system. Contemporary manufacturers typically construct speakers in the form of towers, since most people sit on a couch or chair in their living space and it is widely accepted that speaker cones should be as close to the level of the listener's ears for the best acoustic experience. Low-boy speakers—not towers—were fashionable in the 1950s and lowered the speaker cone height, meaning that the acoustically ideal listening position was closer to the floor. The pretty model perched on a pillow in front of the hi-fi set was at once an adornment and a perfectly positioned listener. A lesson to be learned from the disparaging claim that a device is, "so easy a woman can use it," is that we should take more seriously that women were using hi-fi sets so frequently that advertisements needed to mention them.

* * *

In the opening pages of this dissertation, I turned to Ruth Oldenziel's question, "how [have] boys historically been socialized as technophiles?" Throughout this study I have shown that midcentury media has much to tell us about the ways men engaged with sound technologies, as well as the ways publishers, manufacturers, government actors, and marketers influenced formations of gender in hi-fi culture. I have positioned hi-fi magazine content within larger historical developments to reveal the complexity of midcentury social constructions of gender, and highlighted the people and institutions that profited from the socialization of midcentury men as technophiles. In doing so I developed a framework for understanding the broad range of masculinities at play for hi-fi users, and offered steps toward expanding the language and thinking around masculinity and technology in music studies.

As I explain the opening pages of this dissertation, this project is also deeply personal. As one of the 1% of audiophiles who are women, I have a stake in understanding the history of the gendered biases in music technology discourse. In the course of this work, I have found that the contemporary gender inequities in high-end home audio, music production, and electronic music that I regularly encounter have roots in the powerful cultural and identity work done in the midcentury media that I have analyzed and contextualized in these pages. Modular masculinity not only reveals the gendering of hi-fi use but also exposes the network of culture makers who benefitted financially and politically from the masculinization of hi-fi. Those who benefitted from the masculinization of hi-fi in turn established gatekeeping structures that continue to make it difficult for women and femme-identifying people to enter technical careers and hobbies. These same structures restricted access to queer folks, non-white people, and other marginalized groups as well. There is power in identifying previously unmarked gatekeepers, for it is the first step towards opening the gates wide. Spun a different way: We made the Hi-Fi Man. We can also remake him.

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