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## **Geeks, Meta-Geeks, and Gender Trouble: Activism, Identity, and Low-power FM Radio**

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**ABSTRACT** In this paper, I consider the activities of a group of individuals who tinker with and build radio hardware in an informal setting called 'Geek Group'. They conceive of Geek Group as a radical pedagogical activity, which constitutes an aspect of activism surrounding citizen access to low-power FM radio. They are also concerned with combating the gendered nature of hardware skills, yet in spite of their efforts men tend to have more skill and familiarity with radio hardware than women. Radio tinkering has a long history as a masculine undertaking and a site of masculine identity construction. I argue that this case represents an interplay between geek, activist, and gendered identities, all of which are salient for this group, but which do not occur together without some tension.

**Keywords** activism, ethnography, geek identity, gender, low-power FM radio, radio technology

## Geeks, Meta-Geeks, and Gender Trouble: Activism, Identity, and Low-power FM Radio

*Christina Dunbar-Hester*

This paper is part of a larger ethnographic investigation of activism surrounding low-power radio in the USA. It discusses a weekly gathering known as 'Geek Group', in which a small group of people meet up to tinker with FM radio technologies. I am interested in how the group is organized around a technology and set of technical practices. I am also attentive to their experiences of identity, as activists or people dissenting, as gendered beings, and as persons with technical skills. I examine the interplay of these identities as they complement each other or come into conflict.

Largely because the relationships between gender identity and technology receive a relatively large degree of scholarly attention, I was initially interested in highlighting other, less well-theorized relationships between technology and identity, and I therefore set out to do this research with gender in the background (see Wacjman, 1991; Oldenziel, 1999; Lerman et al., 2003). Yet when I arrived at the site, I found in place a gendered division of labor about which the participants were uneasy, and which specifically hinged on technical skill. Quickly, I found that though both activism and technical predilections were salient in individual and group identity, gender was also playing an important role for the group, and I set out to explore

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gender in this context as well. I observed that while women were members of the group of radio activists, few of them attended Geek Group or possessed technical skills related to FM *hardware*. In contrast, the regular Geek Group attendees were all men (except for me). However, it was not the case that women did not identify as geeks or possess technical skills at all.

To explain this, I argue that the tensions experienced by the geeks as they struggled with a gendered division of labor can be illuminated by paying attention to the interplay of gender, geek, and activist identities at the site of work with FM radio hardware, as well as to the history of radio tinkering as a masculine pastime (see Douglas, 1987, 1999; Haring, 2002). These difficulties occur even in spite of the geeks' deep commitment to egalitarianism and social justice. Following the work of Julian Orr (1990, 1996) on Xerox technicians, Susan Douglas (1987) and Kristen Haring (2002) on radio, and Sherry Turkle on personal computers (1995), who have highlighted relationships with machines as sites of identity construction, I conceptualize these geeks not as people who simply work with and on radio, but as people who actively construct identities around that work.<sup>1</sup>

This paper is primarily concerned with highly local performances of expertise and identity. But because the geeks conceive of themselves as part of a larger social movement working to promote media diversity, it is necessary also to consider these performances in light of what the geeks may hope to gain through them for the movement at large. In other words, the question is: How do their conceptions of the movement or goals for the movement inform their local performances? Much scholarship on activism and technology has tended to focus on participants in movements formed around environmental and biomedical issues and technologies (Yearley, 1991; Epstein, 1996; Berglund, 1998; Rabinow, 1999; Fortun, 2001; Parthasarathy, 2003; see also Wall, 1999). David Hess (2005) discusses the category of 'technology- or product-oriented movements (TPMs)' and their relationship to other social movements. As in Hess's examples of TPMs, low-power radio activism is a contestation over property and power (Hess, 2005: 530) that emphasizes building and diffusing alternative forms of material culture.<sup>2</sup> I am interested in adding activism around a *media* technology to the study of technological activism or TPMs. And while I do not employ a movement-level analysis, I hope to consider how in this case, highly local performances of identity and expertise may be related to actors' self-understandings as members of a movement, and how local identity performances, and especially the strain and tension that occasionally surrounds these performances, are part of the process of construction and negotiation of a sense of their work as having relevance beyond the confines of this local gathering.

## General Background

Low-power FM (LPFM) is a legal designation in the USA, meaning 10–100 watts, which is enough power to reach a few square miles from the site of transmission at best.<sup>3</sup> It specifically refers to locally owned, non-commercial

radio stations that tend to broadcast a significant amount of original, locally produced content.<sup>4</sup> Activist pressure in the 1980s and 1990s on the Federal Communications Commission (FCC), which included a proliferation of unlicensed, illegal broadcasting, as well as court battles,<sup>5</sup> resulted in a renewal of licensing of low-power stations in 2000; the FCC had ceased to grant low-watt non-commercial licenses in 1978.<sup>6</sup> The geeks whose activities are the focus of this paper must be viewed in the context of this activism, as well as the more general media reform movement whose criticism of corporate media consolidation mounted in the wake of the Telecommunications Act of 1996 and the attempted re-write of telecommunications policy that occurred in 2003 (see Hazen & Winokur, 1997; McChesney et al., 2005). In 1996, the US Congress relaxed rules that prohibited certain forms of media ownership and consolidation<sup>7</sup>; for radio, corporations were now permitted to own an unlimited number of stations nationally and up to eight per market (allowing, for example, Clear Channel Communications to own more than 1200 radio stations nationally at the time of writing). Greg Ruggiero states that ‘The Act’s defining feature [was] the toleration of a higher limit of media outlets – radio and TV stations – that any corporation can own. It also ease[d] restrictions preventing these huge media conglomerates from merging into one another ...’<sup>8</sup> Members of the group had been involved in a collective that broadcast without a license in the mid 1990s and was raided by the FCC in 1997, and the Geek Group is officially a project of the Philadelphia Independent Media Center (IMC). IMCs are rhizomatic<sup>9</sup> citizen-journalist media centers devoted to creating and disseminating alternative news content, founded in reaction against neoliberal ideology and globalization. IMCs have sprung up all over the USA, and indeed the world, over the past several years; one estimate is that there are currently about 60 in the USA (Wolfson, 2005).

Media activism is sometimes viewed as an end itself, but often people interested in media activism are involved in other social justice issues, and then identify media access as a key component of work on any issue; Carroll and Hackett state that ‘media activist groups tend not to respect existing [social] movement boundaries, but to exceed them’ (2006: 86). This was the case for the West Philadelphia group, whose members were active in various causes, including ACT UP, the AIDS activism group, before concluding that their work was essentially futile without a media system that gave them time to air their views and cover the work they did. One person stated:

The whole reason that ... I lean towards media democracy movements and struggles is that when I moved out here [Philadelphia], there were so many causes I wanted to be involved in, and I never could have done all of them, I felt like I was flooded with requests for help, to volunteer ... nobody can do it all ... A big problem [for] a lot of activists is that the more you get involved, the more you see how fucked up everything is, and how you really have to change everything in order to change one thing ... A big problem of oppressed groups and activists is that they don’t have any access to the media, and I thought that building something [so] they

could have their own show[s] would be a way to help everybody that I wanted to without focusing on one thing.<sup>10</sup>

This is a fairly representative viewpoint among people whose goal is media reform. At the 2005 National Conference on Media Reform in St Louis, MO, plenary speaker Malkia Cyril, director of Oakland-based Youth Media Council, echoed this sentiment: 'For people of color, queer people, women, and young people, there has never been a free press, and without racial, gender, and economic justice there never will be,' and led the audience in a chant ('When I say "Media!", you say "Justice"!') to illustrate her belief that these issues are deeply intertwined.<sup>11</sup> This should not be taken as an indication that only people with left politics are concerned about media consolidation. In fact, the groundswell of opposition to then-FCC Chairman Michael Powell's June 2003 recommendations to promote further consolidation united people and groups across the political spectrum, making for such strange bedfellows as these radio activists, the National Organization for Women, and the National Rifle Association, who all mobilized their constituents to comment opposing consolidation, resulting in more than two million comments being filed at the FCC.<sup>12</sup>

Radio itself is viewed by some as a unique media technology, making access to it very appealing: radio does not require producers or listeners to be literate; it can reach a small, local community or area; production and broadcast technologies are relatively inexpensive and easy to use; radio is very inexpensive to receive; and it is easier and cheaper to provide programming in an aural-only medium than in a visual one. In spite of charges of radio being a dead or dying medium,<sup>13</sup> both activists and corporate broadcasters view the FM band as valuable. When the broadcast lobby and National Public Radio (NPR) opposed the LPFM service, they argued that the issuing of new licenses would overcrowd the airwaves and interfere with the service and transmission of incumbent broadcasters. Though the objection they raised was technical, many LPFM advocates saw it as motivated by a political agenda or fear of competition,<sup>14</sup> and the new LPFM service introduced in 2000 was almost immediately decimated when Congress, at the behest of the broadcast lobby, held up issuing many licenses in order to study the issue of interference. Several years later, the original LPFM service has not been restored, though about 650 new LPFM stations were on the air by the end of 2005. Consequently, media diversity in general, and legal access to radio in particular, remain sites of contestation and struggle. An activist group's promotional sticker states 'How many ways [have we] fought corporate media ... today?!?'

### *History of the Group*

In Philadelphia, the IMC was formed on an ad hoc basis in the summer of 2000 in anticipation of the Republican National Convention (RNC), which was to be held there that August. The group formed in response to

a perceived need to counterbalance the mainstream media coverage of the Convention—in particular, legal protest activities, which were largely ignored by mainstream coverage, or being covered in ways that were unsatisfactory to activists. One person told me that another group member had called a local television station to ask why the station was not covering protest activities and had been told, with no irony, that ‘it is against [the station’s] policy to cover “staged political events”’. This anecdote may or may not be apocryphal, but it points to dissatisfaction with mainstream coverage, and the perceived need for the ‘counter-hegemonic textual products’ (Carroll & Hackett, 2006: 88) of alternative media that were to be exemplified in the IMC coverage. In order to cover the RNC, the IMC established a bank of volunteer press and set up a website for print, audio, and video content, as well as an unlicensed FM radio station to broadcast for that week. Many people found this experience to be a powerful and galvanizing one, and committed to making independent media activities a more stable and permanent part of the activist landscape in Philadelphia after the convention was over.

As mentioned above, some of the geeks were part of a ‘pirate’ broadcasting collective, Radio Mutineers, in the 1990s (Piette, 1998; also see Karr, 2005). Members of that collective later were involved with Radio Goldman, which was formed later as part of the IMC, and which for a time shared an FM license with another neighborhood group, but has predominantly been an Internet radio station, due to the difficulty of obtaining an FM license.<sup>15</sup> After the Mutineers’ collective was shut down, members went on to found an activist non-profit group, Pandora Radio Project, formed in 1998, which provides technical and legal assistance to groups wishing to apply for licenses and set up legal LPFM stations. Pandora also follows the climate and regulatory activities in Washington closely and advocates for LPFM, and one of the members of Pandora was a participant in drafting the 2000 LPFM regulations.

This paper draws on fieldwork conducted in 2003, as part of an ethnographic examination of the radio activism in Philadelphia, comprised of members of both Goldman and Pandora, as well as some people who were more loosely affiliated with the social and activism scenes. I interviewed members of all of these groups, but in my participant-observation I focused most intently on Geek Group, a weekly gathering of people who met to work on technical problems. Goldman and Pandora together comprised at least 20 individuals, while Geek Group was usually attended by four to eight people, ranging in age from about 20 to 35 years old. (According to the participants, Geek Group attendance was unusually low during the period I observed, having enjoyed slightly more participation in the past.) ‘Geek Group’, ‘Pandora’, ‘Goldman’, ‘Radio Mutineers’, and names of participants are pseudonyms.

## Identity

Judith Butler has famously argued in her writing on gender that identity is not something which is given; it is something which is constantly constructed

and remade: 'the "doer" is variably constructed in and through the deed' (Butler, 1990: 142). In the case of the geeks, I accept and apply this line of argument with regard to identity construction. Butler's argument has been interpreted by some as a statement that since gender identity is not an assigned, fixed category, it is infinitely malleable and flexible, a criticism to which she responded in her 1993 book *Bodies That Matter*. Like Butler, I do not treat identity as endlessly fluid merely because it is performative or iterative. Rather, identity is constituted through performance, through materiality, through practice, through social relations, through signification; in my use of identity throughout this paper, I take seriously the idea that identity is constituted through each of these means. It is tricky business, but both individual agency (individuals 'doing') and social structure (which may act on individuals and groups) are tenets of identity in this analysis, particularly with regard to gender (see Lerman et al., 2003: 4). In STS, literature on technology and identity has often tended to focus on the concept of identity to debate or reify the boundary between modern and postmodern selfhood (see, for example, Gergen, 1991; Turkle, 1995; Haring, 2002). However, I argue that the use of identity as a space to debate the boundaries between modern and postmodern is potentially an inadequate use of a category that can do other useful things; the benefit of using it in the first place is to get at parts of human experience that are moving targets, slippery, constructed, and yet 'real'.

### *Geek Identity*

The *Oxford English Dictionary* defines 'geek' as: '*depreciative*. An overly diligent, unsociable student; any unsociable person obsessively devoted to a particular pursuit.' It lists a more recent definition as 'a person who is extremely devoted to and knowledgeable about computers or related technology' and notes that '[i]n this sense, esp. when as a self-designation, not necessarily *depreciative*'.<sup>16</sup> My use of this term originates in the fact that these actors call themselves geeks and call their gathering 'Geek Group'. Though the word originates as a term of insult, as noted in the *Oxford English Dictionary* definitions above, the use of it by these geeks (and many others) to describe themselves is a fond, self-aware form of teasing and playfulness. It may be that as with other iterations of identity politics, geeks have laid claim to a title that had a history as a term of disparagement in order to gain power over its use.<sup>17</sup> In this way they might derive strength from a label that had once been injurious to them, and use it instead to highlight their own uniqueness from others and commonality with each other.

One evening a week, a small group of people met at a home for Geek Group. Geek Group alternated between two residences, and activities typically consisted of troubleshooting electronics equipment, building equipment such as antennas and transmitters for use by Goldman, Pandora, or other groups, and tinkering and thinking about how to solve technical problems. Not everyone who attended Geek Group is active in Goldman, but the regulars are generally closely affiliated with the collective and Geek Group was viewed as an offshoot of the IMC. Much of the activity during the summer

of 2003 involved looking up, building, and testing antenna designs, beaming signals across the neighborhood from rooftop to rooftop, or trouble-shooting instruments that didn't work properly, using scavenged diagnostic equipment. Sometimes, the geeks were just playing around, as was the case one night when Rolf was downloading large files from the Internet using a wi-fi connection while Simon picked up the signal on a spectrum analyzer and amplified it through a speaker, listening to the data transfer and pauses.

The basement of one Geek Group house was piled floor to ceiling with carpentry and electronics tools, PCs, radio equipment and other electronic equipment, lumber, and cables. The house upstairs was often cluttered as well, with pieces of computers and miscellaneous electronic components. Its residents included a composer who built instruments for electronic music pieces and a Goldman member who worked for the University of Pennsylvania's (henceforth referred to as the University) Computer Science department, who tended to bring home cast-off equipment from the Electrical Engineering department. (One Geek Group continued late into the night, picking through cast-off electronics in a University building slated for demolition.) Additionally, novels by popular science-fiction writers William Gibson, Philip K. Dick, and Neal Stephenson were flung about the living room and kitchen, as were books on media theory and philosophy. Another Geek Group participant told me that his bedroom in his own home was so cluttered with PC shells that he used them for furniture.

During my time with the group, the Geek Group collective hosted an evening film screening, at which they viewed *Incubus*, an obscure pre-*Star Trek* movie starring William Shatner that was filmed in Esperanto, and *Forbidden Planet*, a 1950s sci-fi film that is generally credited with the first all-electronic movie score. One evening while looking up some information about building directional wi-fi antennas using a Pringles can ('cantennas'), Rolf was absentmindedly whistling to himself; I recognized the tune as the Death Star motif from the *Star Wars* films. Another geek said that he had recently taken up knitting and that one of his most satisfying projects so far was knitting a hat in the shape of a Klein bottle (a closed, continuous shape with one surface, like a Mobius strip). Another person writes radio plays, one of which was about the early history of radio, a drama that centered on Nora Stanton Blatch, a feminist activist and Cornell University civil engineering graduate who was married to Lee DeForest and worked with DeForest in his laboratory (Oldenzil 1999: chapter 5). And finally, a few of these geeks collect and circulate 'Radio Boys' books, a serial from the early 20th century similar to the Hardy Boys, that emphasized virtues of masculine technical competence and boyish adventurousness.

It is apparent in the above description of the Geek Group participants that identification with a geeky or technical conception of self is high; like Haring's (2002: 8–9) ham radio enthusiasts who display 'technical identity', these geeks have a closer relationship to technology than do average users. Here, geek identity is not only linked to technical skills per se; it is also reflected in having and displaying arcane knowledge, and not only about technical matters. Indeed, many of the geeks were quite self-aware in embracing a sense of self



related to their technical skills, and in enjoying other activities which, though not strictly technical, are considered 'geeky': one woman volunteered to me that she enjoys role-playing games, and seemed concerned that I might not learn of this aspect of herself if she didn't tell me. Additionally, one evening some of the geeks teased me, calling me a 'meta-geek' for studying geeks; coming from them, I couldn't help but take this as a compliment.

There are some analytical resonances between the geeks and STS literature on hackers in computing (Turkle, 1984; Høpnes & Sørensen, 1995; see also Levy, 1984); it is worth considering the hacker ethos in relation to radio tinkering and 'geeking'. Turkle (1984) has addressed the relationships hackers form with computers; in these relationships, 'computers have become more than a job or an object of study, they have become a way of life' (p. 200). In many ways, including the strong affective, even intimate relationships forged between these geeks and the technologies they embrace, the geeks do resemble hackers (p. 218).

In certain key respects, however, the radio geeks differ from, and even challenge, the hacker ethos (which has also historically been overwhelmingly masculine). According to Turkle (1984), hackers value control, mastery, and virtuosity: '[Hackers'] mastery games and initiations test the ability to win over complexity and break out of confining situations ... [In hack situations like lock-picking or code-breaking, t]hey are not after material goods, but after the thrill of triumph' (p. 232). Though she mentions that for some hackers the willingness to defy the establishment may be tied to a diffuse notion of being an 'electronic Robin Hood' (p. 235), the politics of the hacker ethos she describes are far less considered than those of these geeks. Geeks are committed to political consciousness-raising above all else; they do not value technical virtuosity in and of itself. They view the acquisition of technical skills as a means for demystifying technology and an alternative to the often corporate, often expert, culture of decision-making around technology, but technical skills alone are never enough to sustain this consciousness. One person stated that while 'understanding corporate dominance is radicalizing for some,' he perceived what he called a libertarian or technocratic streak in a lot of people with technical skills, which was opposed to the value of participatory democracy. Thus, while some people may distrust the government or corporate power, Jasper said that 'people who become experts often come not to believe in democratic decision-making processes'.<sup>18</sup> Another person characterized hackers in particular as people who already have technical skills and a nascent anti-establishment sensibility, as a group in which activists could perform outreach activities in order to help the hackers put their dissatisfaction into a more sophisticated or useful framework. Thus, for these geeks, technical virtuosity without political consciousness is limiting, and technical virtuosity alone is insufficient for forming geek identity.<sup>19</sup>

### *Activism and Identity*

Anthropologist Dominic Boyer, who has studied journalists and intellectuals, has introduced the concept of 'critical intellectual agency' (Boyer, 2003). For

Boyer, 'critical agency' implies the existence of a belief in a critical space within or outside of normal social relations from which the intellectual can articulate objective critical knowledge of those relations. Though Boyer applies this to intellectuals, the concept is an important one for activists as well, as they tend to believe that they have critical agency, and may even *need* to believe they have critical agency, in order to articulate their positions of dissent or alterity. In the case of the geeks, identity work occurs around this critical stance. Work with and on radio is perceived as a direct application of critical agency; in their conception, work with low-power radio is a particularly viable, indeed crucial, way to express criticism of mainstream, corporate media for its failures as an instrument of democracy. They also evince a more general activist identity in which they value a range of social justice causes.

Although many of these individuals hold bachelor's degrees from elite institutions and possess a variety of skill sets, including being bright and articulate, they choose to live in a diverse, low-income neighborhood of Philadelphia, often not earning very much money and committing themselves to activist work, both paid and unpaid (though a few work as programmers and one does engineering research). These choices are reflected in many aspects of self-presentation. The same person who plays role-playing games also plays music with a punk band, and there is a decidedly anti-bourgeois or countercultural<sup>20</sup> (for lack of a better term) sensibility in how many of them dress, wear their hair, display tattoos, and the like. Also, some of the geeks live together in a communal environment, where the Goldman studio was for a time located: a large Victorian home purchased at a sheriff's auction, which is now rather run-down and, though they now own the place, is identified with a legacy of squatting. I do not mean to patronize these people in any way with these descriptions; I merely wish to point out that they have made conscious choices to live and structure their lives in ways that they consider to be outside the mainstream.

When asked about their political leanings, the geeks universally declared themselves to be 'garden-variety lefties', 'leftist activists', and 'committed to social justice'. Only a couple of them mentioned anarchism to me as an explicit ideal, but the group clearly identifies with radical politics. Just one example of this is the name of the radio station, Radio Goldman, named for feminist anarchist Emma Goldman. The group may represent a range of politics from anarchism to commitment to participatory democracy, but all consider themselves to be left-leaning and activist.

With regard to radio, the geeks view the work they do with LPFM or community radio as integral to their activist agenda. Many spoke of media access as being a central tenet of social justice work, feeling that local, diverse programming is important to community self-determination. Rose said that she first learned about microradio in 1997 at an activist conference on media and democracy in New York City, where one of the participants was a New York City pirate station, *Steal This Radio* (which echoes Abbie Hoffman's 1971 title *Steal This Book*). 'They did a presentation at night in this big auditorium with the lights turned down so we couldn't see their faces, it was like you were listening to the radio, only they were right

there ... it was all so exciting and I felt I was in the middle of a revolution ...<sup>21</sup> Immediately afterwards she volunteered herself to the Mutineers collective in Philadelphia, which was engaged in unlicensed broadcasting. Others felt that radio activism was an end in itself, such as one man who said that 'the airwaves belong to the people, and the FCC isn't doing its job'. This individual also claimed to be a 'free speech absolutist' who often feels like a 'rogue' in the Goldman group because he is more committed to free speech than to normative leftist ideals.<sup>22</sup>

The geeks' leftist politics and activist identities are in some ways complementary to their geek identities. From the outset, it should be noted that both activist and geek identities involve a celebration of being outside the mainstream and defined in opposition to it. Some of their activities convey that sense; for example, the geeks' delight in scavenging cast-off electronics from the University may be read as a performance of rejection of mainstream values of consumption through re-using old equipment, but of course this activity requires technical engagement as well, in order to identify components and ascertain which are worth taking home. Jasper ruefully noted after one of these sessions that he had seen ultrasound equipment, which he thought would be great to grab for 'midwife or DIY [do-it-yourself] abortion friends', except it had been missing the transducers (paddles), which he said were expensive to replace, so he opted to leave it in the trash.<sup>23</sup> Also that summer the geeks celebrated Bastille Day. Their celebration included remembrance of the storming of the Bastille and freeing of prisoners, implying reverence towards anti-elite values and a desire to change or overthrow current social orders; it also involved a technical project that invoked the Gas Laws to launch hot air balloons made from dry-cleaning bags and Roman candles.

The legacy of pirate radio, with which only a few of the later Goldman/Geek Group members have ever actually been involved, still carries on in spirit, and I argue that this represents a nod to both activist and geek values. In one session of Geek Group, a portable transmitter the group was working on was screwed into a tin lunchbox painted with the Jolly Roger, left over from the days of the group's unlicensed broadcasting. Additionally, one member told me that when Goldman went off the air due to a conflict with the community station whose license they were sharing, they received an anonymous email from pirates who said they would still broadcast the webstream. Goldman's official stance is that while they strongly value FM, they are committed to broadcasting legally; nonetheless they were pleased to hear this news and clearly they do identify with people who have chosen to take the airwaves into their own hands, flouting the law. One man who used to be a pirate but now chooses to focus exclusively on legal efforts said that his personal legal standard is 'Will a judge laugh at you?' Thus he is not condemning pirate activity, he is merely being circumspect about how closely Goldman should entangle itself with pirate activity if it wants to retain its status as a legitimate organization, or hold open the possibility of being involved with legal broadcasting in the future, should the opportunity arise. This is a particularly real concern as the FCC

has chosen to attempt to deter unlicensed broadcasters by pledging that it will deny them licenses in the future if they are known to have participated in illegal broadcasting.<sup>24</sup> However, one woman said that pirates will continue to broadcast regardless of the potential of legal access, some because they feel that the airwaves are inherently public and they need not apply to the government for the right to broadcast<sup>25</sup> and I would speculate, some in part for the sake of doing something illegal related to activist beliefs and self-expression. In any event, pirate FM broadcasting is clearly a site in which technical skills are used in the service of activist or anti-establishment beliefs, and only certain people who define their identities around both of these precepts are going to be active participants. Interestingly, a couple of people also expressed the idea that pirates actually have the 'best' technical skills, the logic here being that pirates' technical skills and solutions are born of necessity and therefore result in greater ingenuity.

It should be noted that activist and geek identities are not always in harmony. The question of technical expertise presents a real challenge for the geeks. Indeed, there may be an essential tension between activist selves and geek or technical selves, because being an expert is part of geek identity, while these people are dedicated to egalitarianism. Their iteration of geek identity is a uniquely participatory one, in contrast, for example, with hackers. An extension of the Geek Group commitment to equal participation, in another setting, is the Pandora Radio 'barnraising' concept. As stated earlier, Pandora is a nonprofit group that helps new LPFMs get off the ground once they have been granted construction licenses. To do this, they and other volunteers travel to the site of the new LPFM and spend a weekend getting the station together, both in terms of technical requirements and in terms of offering strategies for governance and running the station. The ideal for the technical part of the barnraising (a term self-consciously borrowed from the Amish) is that 'no one is allowed to do anything they already know how to do'. Thus, in theory, everyone learns something new, people who already know a lot provide guidance while letting neophytes tinker, and when the volunteers depart, the new station has enough technical know-how to run and maintain their equipment. Yet Jasper said that in practice this can be a bit more challenging; for example, he described a situation in which someone who had spent a lot of time building a transmitter was reluctant to let other people do the final steps in readying it because he was worried they would 'blow it up' (configure the circuit incorrectly) and waste all the time and care he had put into it.

## Enter Gender

Though FM radio is consistently cited by both this group and others as being desirable<sup>26</sup> due to its relatively low-tech and inexpensive nature, there still remains a barrier to access. In the activist group, women tended not to participate in technical work when it came to the FM hardware.<sup>27</sup> This represents a significant tension for a group which is founded on, and genuinely committed to, equality and diversity. Indeed, I was routinely the

only woman present at Geek Group. One week Janet, an experienced reporter and producer of independent radio, accompanied one of the men, but she spent nearly the entire time off in another room in the house playing with one of the men's young daughters (also a regular attendee), while the men attempted to determine the frequency of a horn antenna they had found in University trash and measured its gain. Simon eventually concluded that it wasn't of much use to them, stating: 'We can build a better antenna than that.'

This raises the issue of my own participation as an ethnographer, as a woman, and as a novice to electronics tinkering. Sharon Traweek (1988: 10) states:

The fieldworker needs to remain marginal. If she were to become a fully integrated participant in the community, its sociocultural assumptions would no longer stand out in the foreground of her attention; and in any case it would no longer then be appropriate for her to be asking questions about the meaning of social actions.

In some ways, it seemed a hindrance that I was not more versed in the skills of the group, as I could then perhaps have contributed more fully to the projects and work undertaken by the geeks. But at the same time, my relative unfamiliarity was a benefit in terms of being able to make critical sense of social actions, as mentioned by Traweek; also, since much of Geek Group was purportedly about imparting skills, there was merit in doing this as an active participant, rather than trying to reconstruct this through interviews or observation. (There is less pedagogical dynamic to observe when the rest of the group is relatively expert.) And while I cannot say that my experience as a woman in the group was a universal one, not least because I was there as an observer and social scientist in addition to a female person trying to learn, the geeks' treatment of me and interest in my experience as a novice, woman, ethnographer, and participant in the group did of course contribute to the analysis I am able to make.

The activities that summer varied. As stated above, malfunctioning equipment was a constant concern and often a whole evening would pass as a couple of people painstakingly used multimeters to test circuits on a board to figure out which one(s) had the short(s), while other people worked on another task nearby. One project that was ongoing involved experimenting with and building home-made directional wi-fi antennas out of pieces of metal or tin cans, and beaming signals across the neighborhood. Work was usually sweaty, dirty, and slow; the group would painstakingly build a 'c-antenna' design and connect it to a cable and small transmitter box in a basement, take it onto the roof to install it, split up while some people waited around for other parties to arrive at the target destination's roof at which the signal was aimed, and receive a call saying they were there and trying to pull in signal, which often failed to reach them properly, requiring adjustments to the design or configuration. The experimentation with wi-fi was important to the FM radio geeks primarily because a radio station often needs to locate its transmitter and studio in different places (necessitating a studio-transmitter

link [STL]), and wi-fi is often preferred over running a cable to transmit the audio signal produced in the studio to the transmitter and antenna location.<sup>28</sup> There was often a good deal of standing around waiting for one or two people to make an adjustment before the next step was attempted, at which point everyone would gather around excitedly to take note of whether the adjustment had worked. I often used the time-lags to ask questions about people's backgrounds and past experiences working with this technology, about the evening's project, about the equipment, or to gently prod the geeks into storytelling, which was usually not too difficult, though some people were more reticent than others. One night Jasper told of a mythical room inside the FCC called the 'trophy room', in which, he claimed, all the seized pirate equipment is tagged and exhibited. He had not been in the room, but claimed to know of its existence down a certain hall.

In addition to the measuring and cutting of cans, cables, and wires, disassembling routers, and soldering together coaxial cables and connectors, improvised carpentry was necessary to build antenna towers and stands to hold up the antennas without damaging the roofs (sometimes a dubious process, as were some of the antenna tower adjustments, which could include people perching several feet above the roof's surface, often navigating between old antennas that had been installed earlier for other purposes). Events that contained an element of danger were not performed with an overly dramatic flair, but at the same time, I argue that the display and management of risk in some of these settings (working with and stories about high voltage/current, power tools, and heights) did include some masculine bravado. Some of these sessions were not only precarious but intimate, such as a time when, taking advantage of some dead time while we waited for Simon to call and tell us he was in position at the other site, Jasper requested that I hold his legs and brace myself on his roof, while he hung off the side and nailed onto the side of the house shingles that needed replacing. I experienced anxiety about my ability to sufficiently support Jasper's weight at the angle at which he was pulling me, entertaining a worry about how dreadful it would be to be an interloping graduate student who allowed this geek to plummet three stories. The physical closeness I was required to sustain with him was something I had not expected; yet the only option was to marshal physical strength and attempt to overcome the uneasiness I felt holding onto the legs of a person who was a man, and in many ways a stranger, in order to support him; in turn, he expected me to support him and to not seem fearful.

The role of gender in people's relationships with technologies is a fairly well-theorized area of scholarship (Wajcman, 1991; Horowitz, 2001; Lerman et al., 2003). I have sought to explain why the women in the radio activist group tended not to have hardware skills by looking at other workplaces in which gender disparities with regard to technical skills arise (Hacker, 1989; Cockburn, 1999; see also Oldenzel, 1999), by examining the past of radio tinkering, which has been constructed as a nearly exclusively masculine province, enabling construction of masculine identity around work with the technology (Douglas, 1987; Haring, 2002; see also

Takahashi, 2000), and by examining the dynamics of this group through participation, observation, and interviewing. Judy Wajcman argues generally that masculinity takes historically and culturally specific forms and that there may be multiple versions of masculinity in effect at any time; for Wajcman, technical competence is often a key component of masculinity, and in order to maintain male dominance over new and unfamiliar kinds of machinery, men willingly adapt and modify ideas about masculinity (1991). In spite of the fact that the geeks are deeply committed to egalitarian principles, they have not proven immune to gendered aspects of work and skill.

Gender categories should not be taken as monolithic. Neither traits nor competences, for example, may be viewed as always feminine or always masculine, even in a particular moment in time. Gender is a relational system, and thus a masculine gender identity may be reinforced vis-à-vis a feminine one, or vice versa (Kline & Pinch, 1996: 780; Lerman et al. 2003: 4). As stated above, the values that are associated with either masculinity or femininity are various, and the *kind* of masculinity these men embodied is worth noting. Susan Douglas (1999: 16–17) writes of the historic shift from a physically powerful, brawny masculinity to a technical masculinity,<sup>29</sup> and it would not be unfair to extend her analysis to the geeks. While these geek men certainly displayed a gender identity that was masculine, it was not a masculinity based on strength; notably, a couple of them wore long, unkempt beards, which I argue functioned both as a marker of masculinity and as a performance of an anti-bourgeois identity. Likewise, the femininity displayed by women was not a particularly mainstream femininity. Many women opted to not remove leg or underarm hair, and would sometimes comment on this, for example; yet, while this is clearly a rejection of mainstream mores regarding femininity, their presentation of self should still be characterized as feminine, as opposed to androgynous or masculine (thus underscoring the point that there are, of course, multiple femininities in effect as well).

Technical mastery itself is a well-documented means of displaying masculinity, though it made the geeks uneasy to explicitly or deliberately associate technical skills or mastery with a specific gender identity. In a private conversation while walking home from the gathering one evening, one of the men in the group wondered aloud about the women who attended Geek Group once or twice but then stopped showing up. He said that even though most of the men in the group are conscientious and ‘enlightened’ about gender relations<sup>30</sup> and attempt not to put off women who attend, he wondered if there was something they were doing that women who opted to discontinue participating found unpleasant. He suggested that I as a woman researcher ought to ask the women, who, he felt, might be more open with me than with the men, a strategy to which I was amenable.

Through interviews, I learned that most of the men at Geek Group had technical backgrounds, often originating in high school or earlier, which enabled them to bring a great degree of seemingly native competence to the group. Additionally, as Rolf described to me, even though he didn’t come to Goldman/Geek Group with FM electronics skills, his past experience tinkering with computers enabled him to feel confident that he could

figure out FM, and the confidence he possessed was an asset to him. Thus, social practices that afford men greater access to technical skills at an early age inform the skills these adults possess, or lack, when they encounter Geek Group. People who are truly novices, including most women, may not possess this degree of confidence, let alone skill. In discussing technical skills in a more general context with other people, including women who were active in the larger activist group but did not attend Geek Group, more features of the situation came to light. It was not the case that the women involved in FM radio production have no 'techie' skills – a few of them are adept at computer programming, and many of them use radio production technologies; further, they identify as geeks, sharing with the men an affinity for geeky pastimes and displays.

For most of the people I *directly* observed at Geek Group during this fieldwork, the performance of an activist or non-mainstream identity was complementary to a binary performance of gender; that is, with the demarcation between markers of masculinity and femininity salient and readily identifiable. Yet outside of the immediate Geek Group, particularly at barn-raising, there is a salient contingent of attendees who enact and display non-binary gender characteristics. Some of the women, particularly those who may be found doing more 'masculine' work tasks such as carpentry, antenna tower or tuning activities, or studio wiring and set-up, enact a self-presentation that is counter to mainstream femininity, wearing their hair short, eschewing make-up and feminine jewelry, not removing body or facial hair, and wearing unisex clothes. There is a high awareness of and acceptance of queer politics and lifestyles in the activist group generally, as well as focused attention towards not being heteronormative in speech, for example. Trevor Pinch and Frank Trocco suggest that in some cases, relationships with technologies may be sites in which people enact, or change, gender identities; they speculate that this may have been the case with synthesizer player Wendy (formerly Walter) Carlos.<sup>31</sup> My argument here is rather speculative, but the self-presentation of some of the participants suggests that the performance of technical mastery may enhance a gender identity that is in other ways challenging a traditional feminine presentation of self.

To understand this, it may help to explore the history of how hardware tinkering came to be constructed as a masculine domain, or, as Haring might put it, how radio technology acquired a masculine identity.<sup>32</sup> Susan Douglas has discussed amateur operators' work with radio as a site of reinforcement of ideas about masculine identity and technical competence in the early 20th century. She discusses how the tinkering work performed by men and boys, celebrated in the press, helped attenuate tensions between conflicting definitions of masculinity. Tinkering offered access to a masculine technical domain which was accessible and valued, and which stood in contrast to masculine ideals of ruggedness, strength, and plunder, which according to Douglas were becoming less accessible and less valuable. Douglas' account demonstrates that users seized the new technology and interpreted it in a way that emphasized masculinity and different gender roles in relation to it: she shows that the technology was used to reinterpret masculinity itself. Thus the operators were



able to construct a masculine identity for themselves through controlling the interpretation of what the artifact and their work with it should mean. Haring's work provides an updated look at ham culture in the latter part of the century which is largely consistent with the picture painted by Douglas.<sup>33</sup>

The example of the history of computing also shows that coupling of gender roles with technical skill may be complex. Jennifer Light (1999: 454) has explored the gendered division of labor in early computing, demonstrating that in the early days of Electronic Numerical Integrator and Computer (ENIAC) programming was designated a clerical skill, and thus was viewed as women's work. According to Light (1999: 468), this 'idiom of sex-typing' was not consistent with the actual work performed, which also required familiarity with hardware, but the gendered division was important as it enabled men to give orders and take credit for the proper functioning of ENIAC.<sup>34</sup> Ruth Perry and Lisa Greber (1990: 83) note that computers were introduced into the logic that characterized the historical trend of mechanization, de-skilling, and concomitant 'feminization' of many kinds of work: 'work becomes more fragmented and isolated, output is tightly monitored and the pace and stress of the work is increased' (Perry & Greber, 1990: 78). Cynthia Cockburn has discussed in more general terms the gendering of work skills, arguing that one component of gender construction involves sorting men and women into relationships of complementarity and hierarchy, and demonstrating that technologies initially gendered as masculine may become re-gendered, and correspondingly de-valued, as they are mastered by women (Cockburn, 1999: 183; see also Davidson, 2001).

In the case of the geeks, resources and time are scarce in a situation in which everyone's time is volunteered. Thus, the women are likely to be deemed most useful when they are using skills they already possess, such as doing audio production, setting up and maintaining webpages, writing databases, writing press releases and correspondence, and writing programs. Although in theory everyone is welcome to share and learn skills, in practice, it might feel like a drain on resources to 'waste' time teaching electronics skills to some people when others already have them, and when those without electronics skills could be doing something else productive for the group. In spite of the strongly expressed willingness to share hardware skills and expertise, Geek Group in practice can seem quite technical and intimidating, and can make one feel that asking basic or repeated questions is a hindrance to the activities of the group. I experienced some tension between the desire to at times observe work without intruding beyond my presence with a notebook, and at other times wishing to learn, to put my hands on things, and to ask for explanations, both to learn and to enrich my data-gathering. I did not feel like my questions were unwelcome, but at the same time, I felt that as someone whose purpose in the group was to observe and analyze, in addition to participating as a novice, it did not seem appropriate to hold up the tasks in which the others were engaged. I speculate that this discomfort was also felt by other people without a high degree of expertise, even without the added outsider status of 'social scientist'; in fact, the status of 'ethnographer' may have made it seem more appropriate for me to interrupt. And yet each

time I did so, I was also self-conscious about interrupting the flow of work, about my presence as an ethnographic observer and my disruption of the geeks' social space. One geek acknowledged to me that while Geek Group is intended to be an informal instructive space for the transfer of skills, more formal efforts would probably need to be in place to effectively close the gaps in knowledge. Thus, a disharmony exists between Geek Group as a space for pedagogy and as a space where the needs of the group to complete repairs and troubleshooting projects are met.

The outsider status experienced by a novice may be particularly challenging or intimidating when the gender of the people who have expertise is different from that of the people asking the questions. In an interview, Ellen, who had attended Geek Group occasionally, but no longer participated by the time I was observing the group, said that she felt that the dynamics of the group were masculine and competitive, stating bluntly that 'Geek Group as a formal activity is an opportunity to show your balls'.<sup>35</sup> By this she meant that she felt that asking questions that exposed her ignorance was discouraged, and instead participants tacitly encouraged each other to speak up only if they were able to guess correctly or display useful knowledge. She said that she felt that novices – men or women, but perhaps particularly women – who might be most comfortable in the group were people who were 'quiet', who would, when presented with something they didn't understand, make a mental note of it and look it up later, and would come to the next Geek Group armed with this new knowledge. For her part, in contrast, she said 'I'm a loud girl, I've always been a loud girl',<sup>36</sup> and added that she found that her inclination to ask a lot of questions was at odds with the dynamic of the group; in particular, she said that Geek Group reminded her of childhood experiences in which she was made to feel as though her loud, curious behavior was inappropriate for a girl, and she was self-conscious about this, in spite of the group's professed commitment to being a space for pedagogy. She felt that the way the group functioned was therefore particularly insidious in terms of its unintentional likelihood to exclude women, who were already more likely to be novices than men, and who, like her, would be likely to become frustrated and stop attending if they did not fit into the quiet, competitive dynamic forged by the men in the group, or if they could not learn tangible new things by attending the group and instead had to play catch-up independently after each session of Geek Group. I interpret this as a situation in which the 'outsider' status Ellen already felt as a novice was exacerbated by her additional 'outsider' status as a woman; conversely, men were perhaps more likely to feel comfortable 'tak[ing] advantage of the group opportunity to learn ... I didn't feel like, for whatever reason, that I was encouraged to do that ... It's riskier for a woman to ask a potentially stupid question.'<sup>37</sup> She said that in other settings (at home, and with other friends and colleagues), she taught herself to build transmitters and wi-fi antennas. For her, participating in these experiences outside of Geek Group was more enjoyable and comfortable than Geek Group had been for her. She said that with other people, the dynamics were more 'patient and mellow ... it's a lot more reciprocal, and curiosity feels like a much more natural thing for me to exhibit'.<sup>38</sup>

The masculine display of technical mastery was not only exhibited by men. Louisa, a volunteer at Pandora barnraisings who was not a Geek Group member, described a situation at a barnraising where female technical volunteers were present. In this case, the resistance she encountered to participating as a novice came from these women. She said:

There's a thing that happens when [some] girls turn about 18, they are little superstars. And they aren't quite adults yet, and they don't quite identify with other women as being a support system, they view them as competition. So I tried to go in and be a part of the construction team when I saw there was another woman building the studio. And I got shoved out of the way. This is [supposed to be] community[-building] and I'm not here for that, so again I walked away.<sup>39</sup>

Thus, Louisa argues that for these young women, who were probably still working out gender politics and identity, there was a 'macho' component to their display of gender and technical prowess; they chose to identify with men or perhaps with other virtuosic women, but they set apart Louisa, who was older than they were and did not have the technical skills they possessed. She speculated that they had not yet developed a sense of solidarity with other women and that this contributed to their willingness to ignore her. I argue that for these young women who have learned carpentry and electronics skills, it is perhaps the case that as they have learned the skills, they have also learned to associate these skills with a gender performance that is masculine, and that they may have adopted some 'masculine' traits such as being competitive and demonstrating mastery, 'showing off', because they are consciously or unconsciously opting to not decouple the skills from a gender identity.

Clara, a woman whose day job is in computer networking and who became a Geek Group participant after the period of this fieldwork, offered some very provocative insights on this topic. She said that, to her, often the people who 'build the strongest bridges' with regard to technical skill and gender equality are people who are non-traditionally gendered. She spoke of a case or two of people she knew who were transgendered and had transitioned from being women to being men. She said that while she was very happy to see these people become who they wished, it was 'sad to lose awesome women [with great tech skills and a strong awareness of gender politics] to [becoming] guys'.<sup>40</sup> Clara also said that in her opinion, amongst the radio activists, the reason for the lack of gender equity among people with technical skills was not sexism or exclusionary behavior on the part of the men, but a shortage of women willing to participate in these activities or learn and display technical skills. She said: 'The framework is there, ready for women like me to jump in – this community is ready for women with good tech skills, and [these women] are who I most get along with. Unfortunately, I keep finding kick-ass men.'<sup>41</sup> She felt that part of the problem for the activists to realize their vision of gender equity with regard to technical skills was a shortage of women who have the range of competence and comfort with radio technology, or who

see technical skill as desirable and commensurate with a feminine identity; she feels that the feminist men's attempts to be inclusive towards women were genuine and mostly adequate. As a woman who is not intimidated by technology and who already possesses a high degree of technical expertise, she may feel differently than Ellen, who found masculine gender displays to be off-putting as she tried to learn technical skills. It seems that perhaps the women who are most comfortable taking on the challenges of learning and exhibiting technical skills are people who are already comfortable rejecting or reinventing mainstream femininity.

Clara noted the reluctance of some women to expand beyond a traditional feminine domain or attempt to synthesize 'feminine' skills with 'masculine' ones. She said:

[Sometimes I'll] walk into a [place with] really cool women in one room, lots of really cool men in another room. Women, knitting or cooking, some neo-traditional urban hipster sort of activity. I like to knit, but some women seem sort of icy to me when I want to go into the other room and fuck around with a fuzzbox [an audio processor]. I feel as though they feel that ... I'm saying I've had enough of knitting. I feel like a little bit of a traitor and like I'm leaving behind the women, to go do boy stuff.

Modern, urban, progressive women are building solidarity through bitch-stitch, and I get the sense that I'm regarded as a little bit of a traitor [for having an interest in technical projects]. I think that's great, make yourself a hat, teach your boyfriend to make a hat, but I already know how to craft, and I will go where the novelty is ... And I feel like there are examples of this, I'm talking to one friend about [an] audio driver and then another about the baby and how she's feeling, and often they're partners with each other ... sometimes I wonder about why I can't ask the men about their feelings and the women about audio drivers.<sup>42</sup>

Fred Turner has written a detailed account of a social group he calls the 'New Communalists', who in the 1960s and 1970s turned towards communal living and selective acceptance of technologies to enact their beliefs about social change.<sup>43</sup> He discusses the neotraditional gender roles subscribed to by the New Communalists: 'On the communes of the New Communist movement ... women often pursued authority by asserting a neotraditional femininity in the domestic sphere' (Turner, 2006: 76). He gives an example of commune dwellers who 'did not so much leave suburban gender relations behind as recreate them within a frontier fantasy', quoting a contemporary man who stated: "'A girl just becomes so ... so *womanly* when she's doing something like baking her own bread in a wood stove. I can't explain it. It just turns me on'" (Turner, 2006: 77; italics in original). Turner could be describing the situation discussed by Clara, who is essentially pointing to a conflict between a feminist vision of women's equality that hinges on shared and equitable work for men and women, versus a New Communist ideal that values separate spheres for men's and women's work. A desirable means of performing one's gender identity is at stake in these conflicts. Clara notes that she feels like these

women implicitly challenge her status as a woman, making her feel like a 'traitor' to both femininity and women's solidarity.

It is also obvious that the 'work' that occurs at Geek Group is *fun* for some people, yet most of these people happen to be men.<sup>44</sup> As mentioned above, sometimes during downtime between 'productive' activities, the geeks were simply playing (as in the example of Simon listening to the data transmission while needed files were downloading). Since Geek Group was a leisure activity, regular participants were likely to be people who found the radio tinkering enjoyable, as opposed to finding it hard, unfamiliar work. Novices may feel intimidated by being unable to fully contribute to not only work but also play; some technical expertise or vocabulary could be equally required to make or get the geeks' jokes as to diagnose a broken transmitter. In my experience, the attempts on the part of the men to be inclusive, to explain the activities of the group and encourage my participation were genuine; but then it is hard to speculate how I would have felt after several weeks of participation if I were 'only' there to learn and participate, rather than to pursue my own research agenda as well. The 'meta-geek' comment may have been an attempt to demonstrate that I was welcome to be part of Geek Group. It was both playful and offered in order to elide differences between us, highlighting the fact that to them, we were both species of geeks with something in common; even if I couldn't diagnose what was wrong with a transmitter board, I could be an object and subject of geeky humor.<sup>45</sup> The film screenings and Bastille Day celebrations, by contrast, were activities that were not directly in service of the group's 'need' to produce working radio hardware; these events were 'fun' for a wider array of people, and were more widely attended by both women and men.

It seems age might play a role, in addition to gender, as programming skills seemed to be distributed by age. It appeared that most of the people who were under 25 years old had programming skills, regardless of gender, and both older men and women were less likely to have them. It may be the case that a majority of young people with similar educational and socioeconomic backgrounds acquire some programming skills, but that women less often acquire hardware skills. This is reminiscent of Cockburn's discussion of skill as embodying the idea of 'wholeness'. Cockburn (1999: 190) uses this concept to illustrate the struggle between capital and skilled and unskilled labor (or, as it was at times construed, masculine and feminine labor), and in her account, 'wholeness' could be invoked by male workers when skill was contested or threatened. Wholeness included competence with a whole range of activities, and anyone without the full range could find his or her status as an autonomous worker challenged; significantly, since women tended to lack the physical power of men, they were not as readily seen as whole, and thus were less able to defend their position as skilled laborers. Physical prowess does not play a significant role in the wholeness of FM technology competence (with some exceptions, perhaps, in cases of climbing antenna towers and the like), but with the geeks a sense of wholeness, or usefulness at a whole variety of skills, is more often claimed by men.

Thus, perhaps, the skills held by women merit less recognition because the women are not ‘whole’ – even when women have programming skills, they are less likely to *also* have hardware skills, and the full range of competences is what contributes to wholeness. In this way, it would not be surprising if the geeks are reflecting a shift in cultural values with regard to programming; it will be interesting to observe programming work over time to see if it becomes re-gendered as feminine and reacquires a clerical connotation, at least in some contexts.

Women who do have technical skills related to FM or more ‘hardcore’ electronics tinkering claim to feel empowered by these skills, and some women who do not have them have expressed regret, or to some extent resentment. Janet said how exciting it was for her to ‘demystify’ FM production technology by learning to use it, and stated that the next step in the process of ‘demystification’, which she would find interesting if she had more time, would be something akin to learning ‘to look under the hood’. Rose, who was no longer active with Goldman, told me that a few years earlier she and another female friend built a transmitter and a limiter explicitly in hopes of starting an all-woman-run station. For a number of reasons, this never got off the ground, but they were keen to have a station (‘Sugar-Free Radio’) that was not reliant on men to furnish, build, or maintain hardware. (She said that they were planning to allow anyone to be a disk jockey, however.) She recalled:

It felt really empowering to move to the technical side of radio ... being a woman and doing that ... It was like we were in a Marge Piercy novel ... we were women furtively working against the system on 21st and Walnut [a relatively posh section of Philadelphia]. [I felt like] hey, I’m a girl and I’m soldering and using flux and I have my own soldering iron and I know exactly what this limiter and this capacitor does and where to put it ... it made me really think that I can do stuff that wasn’t relegated to women traditionally. Which I had always known, but I had never done it before, I never played sports, I never soldered anything, I’d never built my own bed ... it was the first thing that I had really done that women in the 1940s would never have done.<sup>46</sup>

Rose said that while her desire to have an all-woman station was not at the time fully articulated in her mind as a critique of gender relations at Radio Mutineers, the collective struggled with what she felt were gender-based difficulties and the fact that one member of the group, a man, preferred to work solo on the technical aspects of the station, while women in the collective repeatedly criticized him for not being inclusive and (they felt) not making the effort to communicate effectively with them about the technical aspects of the station. More generally, it is clear from her description that her ‘learning to use flux’ was for her a self-conscious gender-boundary crossing.

And as noted above, the Geek Group participants are aware of and willing to speculate on the dearth of women in the hardware group. Interestingly, there is a bit of a mythology about women with good electronics skills. More than one person said that while there weren’t any in their current group, women with skills were known to be ‘out there’ (in

particular there was one in Canada who merited a lot of admiration). Whether or not these people exist, and I imagine they do, it is curious that the geeks are compelled to mention them; it nearly seems an apology for the disparity in their own group. Additionally, these other women are really regarded with a degree of awe, characterized as exceptionally 'hardcore' or 'kickass'.<sup>47</sup> One woman told me about a group in the Netherlands, run by women to teach other women about computer hardware and software; she admired both the group's mission and its name, the 'GenderChangers' (a pun on both the gendering of electronics skills and the use of gendered naming of parts in computer hardware).

Ronald Kline and Trevor Pinch write of the dynamic relationship between users and artifacts in their historical study of the automobile in the rural USA in the early 20th century. With regard to the question of identity, they give particular attention to gender relationships and their role in the interpretation of the artifact, and how in turn the uses of the artifact affected or shaped the users through reinforcement of gender relationships (Kline & Pinch, 1996: 768). According to Kline and Pinch, the way in which the auto was accepted and used on the farm reinforced gender identities by providing another site in which masculine technical competence was exercised and valued, which stood in contrast to the skills valued in women. Interpretation of the artifact occurred within the context of existing mores, and the acceptable interpretations of the artifact conformed with and in fact came to *reinforce* ideas about gender roles. The technology thus served as a focal point around which gender identity was generated and reinforced, but which, not surprisingly, resulted in a construction of roles that largely mirrored gender roles in other aspects of users' lives.

Kline and Pinch's attention to social relations, in this case gender relations, and how the uses of the artifact affected or shaped users through reinforcement of gender relationships, proves quite useful in interpreting the geeks' attitudes about gender and FM technology. In this case, gender has already shaped the skills and attitudes they bring to their radio activism. Certainly in the history of radical political groups, even those nominally committed to equality, neither sexism nor gendered division of labor is novel,<sup>48</sup> but these explanations are not relevant at Geek Group; this is a group composed of both women and men who are genuinely struggling against the status quo. Geek Group was originally conceived as a forum to teach technical skills that empower both women and men, and implicitly, this was seen as a radical opportunity for women. Yet in practice, the geeks' interactions with the technology paradoxically challenged their ability to subvert it. The social arrangements surrounding electronics hardware skills, evident in both the history of FM tinkering and the geeks' own experiences (learning electronics skills in high school, for example), play a role in deciding which people will come to the group already comfortable with electronics hardware. And the culture of a group of men working on hardware tinkering (even a group of men committed to feminist ideals) has not abolished 'masculine' identity displays, exemplified in both the performances of bravado surrounding risk and the 'competitive' culture described by Ellen, which may serve to make

the Geek Group work feel unfamiliar or uncomfortable to many women. This is frustrating for women who want to identify with technology and the skills associated with it, frustrating for men who do not wish to be in the position of teaching women whom they desire to treat as equally as possible, and frustrating for a group with limited time and resources who find themselves confronted the realities of gender differences they did not create while attempting to realize their activist goals.

### **Conclusion: Tensions Remain, in Spite of Complementarities**

From the above description, it should be clear that each of the three aspects of identity on which this paper focuses – geek, activist, and gender – plays a role in the complex negotiation of self and technical practices that Geek Group participants experience. My goal has been to illuminate how these various identities come into play for a group of self-described geeks who are uniquely involved with media activism and radio technology. The intersection of activism, gender, and technical skills sometimes becomes a sore point for the radio geeks, as their different levels of comfort and expertise with the technology run primarily (though not exclusively) along gender lines, and the egalitarian beliefs that they hold dear run counter to some of their everyday experiences interactions with each other and with FM radio technology.

I have tried to account for this disparity by considering the history of radio technology's construction as a masculine undertaking, as well as reflecting on contemporary social arrangements in which boys are more likely than girls to be socialized into electronics hardware tinkering. In spite of the intentions of this small group of activists, the gendered technical experiences and skills that they bring to their site of work tend to overwhelm the ideal of equality, and even to reinforce the gendered divisions between them, especially since the group works together on a volunteer basis and resources of time and skill are often strained. Consequently, these activists are left with a sense of frustration as they try to reconcile their deeply held ideals about participation, including their discomfort with the gender lines along which technical work is performed, with the necessity to delegate tasks. They are discomfited by the fact that, while reconciliation is possible, in theory, in practice it is difficult to resist the settled conventions and tendencies associated with gender. Sexual discrimination by itself does not provide an adequate explanation for the absence of women in the Geek Group, though of course sexism and gendered divisions of labor in the wider culture contribute to the differences in skills established well before individuals of either gender are confronted with the choice of whether or how to participate at Geek Group. More subtly, however, gender identity and performance contribute to the dynamic that novices experience at Geek Group, and, as in Kline and Pinch's history of the automobile, the geeks' relationships with the technology predispose them to reiterate a gendered interpretation of FM electronics hardware.



This episode serves to highlight the intractability of meanings and relations associated with an historically settled artifact. This does not imply that individuals or groups cannot resist these conventional meanings and relations.<sup>49</sup> In this case, the geeks elect to resist the dominant interpretation of radio technology as masculine, and I argue that the deployment of geek identity is an attempt to attenuate the gendered disparity in technical skills. A self-conscious adoption of geek identity is seen as a gender-inclusive means to challenge conventional social arrangements that have led to inequities in skills. This leads to explicit efforts to include women, even when the dynamic of the group may fail to do so. Susan Douglas' account of gendered relations with technology may offer a vision for hope, as she demonstrates that ideas about masculinity and identity are malleable and that users may have the power to effect changes in how artifacts and skills are viewed and (de)gendered. However, in the case of the geeks, Geek Group alone was inadequate to overcome ubiquitous and persistent disparities in technical knowledge and familiarity.

My discussion of the interactions among geek, activist, and gender identities begins to show how these identities are generated in relation to each other and to technology and technical practices. Julian Orr points out that the photocopier technicians he studied face identity construction *as workers* through their interactions with machines (1990); this echoes Kristen Haring's (2002) argument that the identities of humans and machines are co-produced. In this case, geek identity, activist identity, and gender identity are all mutually involved, and are performed and constructed together around work with LPFM. The construction of geek and activist identities both share participatory ideals, for example, but geek identity incorporates a sense of identification *with a technology* that activist identity, by itself, lacks. As I have defined geek identity in this particular case, it relies on a political engagement with technology that typical computer hackers may lack; thus for these activist-geeks, technical affinity may enhance activist identity, deeply binding their social justice values to a site of technical work. Like Orr's technicians, their work with machines serves to deepen and expand their distinctive identities. This may distinguish their activist identities from those of activists who do not engage with complex equipment as a central political activity. Geek identity hinges at least as much on political ideals in a technical space as on virtuosity, and it can be attained even when technical skill or expertise are lacking, but as the cases of novices or women demonstrate, it is difficult to sustain geek identity when 'wholeness' in terms of technical competence is lacking. Promulgation of this particular geek identity involves both the ideal of hands-on accessibility and ease with technology, and the creation and maintenance of political consciousness. Thus Geek Group and barnraisings are organized as sites at which to form and consolidate geek identity, whether or not technical skill is significantly enhanced. It seems worth speculating that this may be a worthwhile means of building or sustaining identification with the particular sort of activism desired by or necessary to sustain a media reform movement, in spite of the fact that gendered divisions prove refractory.

The activist identity and the gender identity presented by these activists may be complementary. The feminist ideals held by both men and women in the group in this case promote the decoupling of skills and work tasks from gender identity as well as the acceptance of non-binary gender performance. Some people in the group of activists have self-consciously forged gender identities that incorporate participation in tasks that would not traditionally be associated with their genders, such as Simon's penchant for knitting, Clara's 'fucking around with a fuzz-box', or Ellen's and Rose's eventual self-taught proficiency at soldering and 'using flux'. Notably, all these people identify as geeks as well.

Geek identity and gender identity, considered together, present a nexus meriting scrutiny. Ron Eglash's work on geek/nerd identity (2002) presents geek identity as a gatekeeper for technocultural access; for Eglash, the whiteness and masculinity embedded in geek identity may restrict the access of non-whites or females from embracing a geek identity, thus causing members of these 'other' categories to in some cases improvise or innovate different strategies for attaining technocultural access or identification, to varying degrees of success. In the case of these radio geeks, geek identity is intended to be a universally accessible identity: geek identity formation can occur without concomitant technical expertise, though increasing technical expertise may serve to heighten confidence with technology that may lead to a deeper identification as a geek. I have argued that one strategy the radio geeks use is to try to decouple skills from gender identity, thus making technical access and geek identity a gender-neutral proposition. However, while the geeks try to promulgate a geek identity that can harmoniously coexist with either a masculine or feminine gender identity, there are difficulties. It would seem that some iterations of feminine identity reject geek identity as incompatible with femininity, as in the case of Clara's feeling the need to question whether she is a 'traitor'. And masculine identity displays (by men and women) in the context of technical work can serve to alienate women, who may perhaps then shy away from building a relationship with technology or a geek identity because of the memory of having experienced masculine and geek identity displays performed together, to which they did not relate. In the cases of Ellen and Rose, each woman decided to continue to pursue technical knowledge, and opted to do this in environments that were either women-only (Rose) or simply not male-dominated (Ellen). But these were women who were already highly committed to radio and possess geeky conceptions of self (particularly Ellen). In spite of the attempts to open up geek identity, masculine identity displays in technical settings are hard to eradicate; geek identity is insufficient to gloss over the differences between gender identities.<sup>50</sup>

It would be foolish to discount the roles played by structures and institutions, as well as social relations, in constraining (or promoting) equality in terms of race or gender; consideration of identity alone would be critically lacking as a single explanatory mechanism for understanding the inequities in achievement of technical skills for women, people of color, or people in cultural contexts besides the Global North, of course. It is not my

intent to overlook the importance of these factors, or the importance of representation in culture as a means of perpetuating them. The focus here is rather the role identity work may play in (re)imagining a particular role for radio technology and technical skills, which in some cases appears to be a successful strategy for the radio geeks, and in others, continues to present limitations. Eglash has convincingly argued that certain aspects of identity work alone may themselves present constraints, as in the case of the racial categories embedded in nerd/geek identity. Additionally, though this analysis highlights identity work, the activists do not restrict themselves to identity work, of course: their attempts to reinterpret radio technology include not only attempts to get people to identify as geeks, but attempts to change social structure/relations.

This analysis has attended to ways in which the multiple identities constructed by the geeks around radio technology may either complement or conflict with one another, especially since identity work may exist on both conscious, reflexive levels and less considered ones. Their relationships with radio technology are varied, complex, and rich; I have tried to show the meanings the geeks derive from their work with and use of FM radio technology. Speaking of the synthesizer, Trevor Pinch and Frank Trocco (2002: 308) quote Victor Turner: 'Liminal entities are "neither here nor there; they are betwixt and between positions assigned and arrayed by law, custom, convention, and ceremony"'. Pinch and Trocco argue that the synthesizer is a liminal entity because it passes between worlds and means something different in each, and in the process enacts transformations in these realms. Radio technology of course also moves; it is in fact portable (it fits in a lunchbox), even ubiquitous, and the barnraisings are instances of technological migration into spaces that formerly did not have radio stations. In addition to the obvious use of the technology for broadcasting, the meaning vested in radio by the geeks also may produce transformations, as they come to define their very selves around it, and encourage others to do the same.

## Notes

1. According to Haring (2002: 8–9), 'some people choose, because of their technical inclinations or skills, to identify with a technology. This identification can arise either through leisure or through work, but technical identity conveys a closer relationship to technology than is achieved by the average user.'
2. See Hess (2005: 516). However, it is worth noting that in this case, the contestation is not over a new technology but an old one, FM radio.
3. Low-power radio, free radio, community radio, and microradio are all terms that refer to noncommercial radio, often being broadcast at a low wattage (though not all community radio stations are low power). I use 'LPFM' or 'community radio' to indicate legal stations, and 'unlicensed' to refer to illegal broadcasting. See Dick & McDowell (2000: 331).
4. LPFM stations are not *required* to broadcast local content, but in cases where more than one group is in competition for a license, locally originating content is a factor in the FCC's decision regarding which group will receive the license.
5. Given that this activity was illegal and that the FCC did not confront or raid everyone who participated in illegal broadcasting, it is very hard to assess how many illegal broadcasters existed during this period, and particularly, how many were

broadcasting in self-conscious attempts to contest the FCC's refusal to grant licenses, though some estimate that there were around 1000 (Walker, 2007: 214). One strategy of these participants in 'electronic civil disobedience' was to flood the airwaves and overwhelm the FCC's ability to enforce regulations prohibiting unlicensed broadcasting. See Coopman (1995, chapter 2) Soley, 1998; Walker, 2001.

6. One significant factor was the young and ambitious National Public Radio (NPR), which lobbied the FCC to raise minimum wattage requirements in hopes of consolidating audiences, and in the 1990s opposed LPFM. See Ruggiero (1999: 18).
7. Robert McChesney (1999: 66) writes of the 1996 Act:

Whatever [the telecommunications industries' internal] disagreements, the one thing they all agree upon is that the corporate sector should rule U.S. media and communication to maximize profit – and that this precept should not be the subject of debate by Congress or the general public ... [D]iscontent is largely reigned in and neutered ... .

8. Ruggiero (1999: 18).
9. Deleuze & Guattari (1987). IMCs are loosely affiliated but not hierarchically organized or maintained.
10. Interview, July 2003.
11. Malkia Cyril, 'Justice By Any Name'. Free Press and Media Reform Conference Opening Plenary Speech, 13 May 2005.  
<[www.youthmediacouncil.org/publications.html](http://www.youthmediacouncil.org/publications.html)>, accessed 30 October 2005.
12. Media Alliance website: <[www.media-alliance.org/article.php?story=20050127173243183](http://www.media-alliance.org/article.php?story=20050127173243183)>, accessed 23 October 2005.
13. Radio has been called a dead medium at least since the advent of television. See Douglas (1999: 219 and Conclusion).
14. I do not wish to imply that technical versus political concerns are easily separated. See, for example, MacKenzie (1993: 5) for 'the role of the social in shaping technical change'.
15. Bandwidth is particularly scarce, and valuable, in urban areas, and Philadelphia is not likely to have a single available LPFM frequency even if the initial LPFM service of 2000 is restored.
16. *Oxford English Dictionary*, 2007. Accessed online at <[www.oed.com](http://www.oed.com)>.
17. For example, 'queer'. Judith Butler also points to a tension for these terms of exclusion, in that even as they are reclaimed and vested with a 'positive resignification' (1993: 223), a total metamorphosis, in which past derogatory valences are cast off, may serve to vitiate their full significance. She cautions that 'normalizing the queer would be, after all, its sad finish' (1994: 21).
18. This brings to mind Carolyn Marvin's (1988: chapter 1) work on 'inventing the expert', in which experts define themselves by opposition to an ignorant public.
19. It should be emphasized that these politics are not shared by all geeks; many geeks' attitudes about expertise and participation are significantly different from these geeks'. Later in my fieldwork, one of them sent me a text message to tell me that she was on a trip in Michigan and she had met 'the worst geeks ever' (sent March 2006). In a later interview she told me the following:

They give a workshop [to teach schoolchildren about technology] full of worthless shit. They specifically do not care about building tools for society ... They don't understand the intersection between technology and society, or how to use technology to be a better person, and they are threatened by other people with expertise. He [one of those geeks] said that what we did in Nashville [built a radio station at a 'barnraising'] was 'cute!' This [these geeks' understanding and enactment of what being a geek is or having expertise should be about] is disgusting behavior! (Interview, September 2006)

In this paper, when I use the term 'geeks' or 'the geeks', I am referring only to the local group in Philadelphia.

20. See Pursell (1993), Pinch & Trocco (2002) and Turner (2006) on technology and counterculture.
21. Interview, July 2003.
22. Interview, July 2003.
23. See Gelber (1997) for a discussion of the historical origins of DIY and Waksman (2004) for the intersection of technological enthusiasm and DIY among electric guitar musicians. Notably, the geeks' DIY ethic here applied to not only the traditionally masculine realm of FM tinkering but to the traditionally feminine one of childbirth and midwifery.
24. In the FCC's original language, only former illegal broadcasters who had not ceased broadcasting illegally when requested to do so, or by a certain date, were prohibited from obtaining licenses. The Radio Preservation Act of 2000, for which the National Association of Broadcasters lobbied, 'prohibited anyone who had ever broadcast without a license from applying for a low power radio station' (Microradio Implementation Project website); however, the US Court of Appeals for the DC circuit overturned this broad ban in 2002, but upheld the original ban against people who did not cease to operate their illegal stations when told to do so by the FCC. (See LPFM application, online at MonsterFM.) In contrast, in the UK, former pirates have not only been consulted in drafting the UK community radio service (similar to LPFM) but serve as regulating officials. Lawrie Hallett, the Senior Associate of the Radio Planning and Licensing Team for the Office of Communications (Ofcom), had in his earlier days been a pirate broadcaster. Sarah Champion quotes Hallett: 'I'm now on the other side of the fence – poacher turned gamekeeper if you like' (Champion, 2005).
25. The court cases of Mbanna Kantako and Stephen Dunifer engage these issues explicitly. See Shields & Ogles (1995), Coopman (1999), and Riisman (2002).
26. Interestingly, FM (and wi-fi antennas) are viewed as technologies that are *particularly* suited to teaching novices, as opposed to computers.
27. I am seeking an appropriate terminology that encompasses the distinction between hardware tinkering (for example, building antennas, transmitters), which I did observe firsthand, and studio production (for example, operation of these artifacts once they are in place, and using mixers, faders, audio production software, and so on), which I did not, and in which women do allegedly participate more. The interfaces are different, and it is not a requirement to know what goes on inside the black box to produce FM. Thus 'radio technology' indicates FM transmission hardware, and some wi-fi hardware, not studio/production equipment, unless otherwise specified. Also, this enables me to compare amateur tinkering of earlier eras with the geeks' FM tinkering.
28. Subsequently, the radio geeks also became interested in wi-fi mesh networks in their own right, as platforms for community media, for use in areas that cannot obtain LPFMs.
29. This should not be taken to imply that there is a *single* technical masculinity, either over time or at any particular historical moment. See Wajcman (1991, chapter 6).
30. Indeed, the men in the group generally identify as feminist men who seek to openly challenge masculine hegemony. See Connell (1995) and Digby (1998).
31. Pinch & Trocco (2002: 138). Sherry Turkle has also discussed performance of mutable gender in relation to technology, but the radio activists present a significantly different case since their gender performances occur in non-virtual spaces (Turkle, 1995: chapter 8).
32. Haring's use of 'technical identity' as having a dual meaning – that both artifacts and people may have technical identities, and that these technical identities are mutually reinforcing and co-produced – seems more convincing when applied to people. Thus, I refer to people as having technical or 'geek' identities, but choose to refer to the artifact as something that has a set of meanings and uses constructed by people. (Thanks to Cyrus Mody for conversations about this issue.) I do not wish to suggest that artifacts are vested with infinite interpretative flexibility, however.
33. Douglas also discusses ham radio later in the 20th century, arguing that,
 

hams have always insisted that listening in be an active, participatory pastime and that Americans always have a portion of the spectrum reserved for *them* – everyday

people. They have demanded and cultivated a commercial-free zone in the spectrum in which individuals ... are allowed to transmit, to explore, and to connect with one another. (1999: 330)

In this sense, these geeks share more than a passing resemblance to hams.

34. Paul Edwards argues more strongly that the ideology of the gendered division of labor in computing originates with the use of computers for military purposes, and that women were designated 'soft' and in need of protection, peripheral to war, 'a quintessentially masculine activity' (1990: 118). According to Edwards, '[computers] are culturally constructed as masculine mental objects' (1990: 125).
35. Interview, September 2006.
36. Interview, September 2006.
37. Interview, September 2006.
38. Interview, September 2006.
39. Interview, July 2006.
40. Interview, June 2006.
41. Interview, June 2006.
42. Interview, June 2006.
43. 1996: 4, *passim*. I argue that the radio geeks' partial heritage is the New Communalist or 'Appropriate Technology' movements of the 1960s and 1970s. By using the term 'heritage', I mean to imply that the radio geeks are successors to some of the New Communalists' ideals and values, but not that they are 'descendents' whose values were directly transmitted to them by people who were active in the New Communalist/Appropriate Technology movement. Turner notes that the New Communalists themselves owed a debt to Romantic and Transcendentalist ideals (2006: 62, 75). Carroll Pursell states that 'the culture of Appropriate Technology ... was more than a little reminiscent of two constructions of masculinity which were widely adhered to in the United States at the beginning of the 19th century: the republican gentleman ... and ... the independent producer' (1993: 636).
44. See Kleif & Faulkner (2002); Lindsay (2003: 46). See also Oldenzel (2001) for a discussion of the making of a male technical domain through leisure projects for adolescent boys.
45. Another geek word play: one night one of the men who still goes by his old 'pirate' handle told the rest of the group that sometimes people who do not realize that this is his given name ask about the ethnic background of the name, and he said that people most often guess it is French. Simon exclaimed, 'You should tell them it's Ancient Geek!'
46. Interview, July 2003.
47. Both men and women use this sort of language to describe technical or, interestingly, activist prowess.
48. For example, Annie Popkin, a member of Students for a Democratic Society at Harvard in the late 1960s, recalled being a 'second-class "Movement chick"' whose ideas were not valued by men in the group (Morrison & Morrison, 1987: 182). See also Hacker (1989) for a discussion of sexism in cooperative work environments.
49. See, for example, Spilker & Sørensen (2000), for a discussion of attempts to change conceptions of gender and technology around CD-ROMs and computing.
50. And while geek identity may include women or help elide gender differences in people who also strongly identify as activists, it does not seem elastic enough to make significant headway in terms of inclusion of non-whites; Eglash may be correct that the association of geekiness with whiteness is entrenched, even among activist and antiracist people, as the core group of activists and volunteers who are active in Philadelphia and on the barnraising circuit are mainly white. (In using this term, I invoke the insight provided by critical whiteness studies that views race as an historical, political category that constructs and privileges whiteness in relation to and at the expense of nonwhites. See Hill, 1997.)

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