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"Can Our Kids Hack It With Computers?" Constructing Youth Hackers in Family Computing Magazines (1983–1987)

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Building upon existing scholarship on media representation of hackers and the social history of personal computing, this essay positions U.S. families making sense of microcomputers in the mid-1980s as central to the history of hacking. Archival material for this project consists of 74 issues of youth- and family-focused computing magazines of this era, within which discussions of hacking were frequent. This essay maps an array of discourses about young hackers constructed in relation to hopes and anxieties about networked technologies. Besides connecting microcomputers to particular family ideals, these magazines also put forth a family-friendly notion of youth hackers. While microcomputers entered the home with notions of hacking attached, I argue that family computing in turn shaped contemporary conceptions of hacking.

Keywords: *children, computing, families, hacker, magazines, youth*

Within a span of 3 months, between October 2012 and January 2013, *The New York Times* published two front-page stories about young hackers and their relationships with the U.S. government. An October 5 article titled "Worries Over Defense Department Money for 'Hackerspaces'" describes controversy (Altman, 2012) over the Defense Advanced Research Projects Agency's (DARPA) investment of $10 million into experimental high school technology workshops meant to promote science, technology, engineering, and math (STEM) education (O'Leary, 2012). DARPA's goal, the article states, is to "build closer ties to hackers," (p. A1) specifically adolescent and teen hackers.

Whereas the October 5 article focuses on federal support and enthusiasm for young hackers, the one on January 13 (Schwartz, 2013) presents youth hacking as having a very different relationship to governmental authority. The article, an obituary, details the federal prosecution of Internet activist Aaron Swartz. At the time of his suicide at age 26, Swartz had spent over a year and a half defending himself against 11 violations of the Computer Fraud and Abuse Act (CFAA) and two counts of wire fraud. The charges stemmed from Swartz' hack of MIT's essentially open computer system to download 4.8 million academic journal articles from the JSTOR database. Though JSTOR declined to prosecute, the Justice

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Department (with the support of MIT) took measures to go after Swartz in a manner tantamount to "bullying" (Lessig, 2013).

I preface this article by juxtaposing the Department of Defense's subsidy of high school hackerspaces and the Department of Justice's harassment of Swartz not because these two stories are of equal social, cultural, or emotional significance. I do so because they put into stark relief the complex ways in which notions of youth hacking shift in relation to social and political interests. Measures to curtail yet cultivate particular notions of hacking among U.S. youth may seem contradictory, with the state both "building ties to" and "bullying" young hackers. However, promotion and prevention function as complementary forms of adult regulation of young people's relationships with new media (Livingstone, 2009). Conceptions of youth hacking pivot around culturally and historically situated hopes and anxieties about networked technologies (Sturken, Thomas, & Ball-Rokeach, 2004).

This essay locates an origin for today's constructions of youth hacking as potentially both beneficial and harmful to society within popular conceptions and misconceptions about young hackers emerging during the mid-1980s (Halbert, 1997). Many Americans learned about hacking and the Internet for the first time through the 1983 film *WarGames* and surrounding mainstream news media debate about a real-life group of teen hackers known as the 414s (Schulte, 2008). The following excerpt from the proceedings of the 1985 Association for Computing Machinery (ACM)'s Panel on Hacking, convened in response to media coverage of rampant teen computer crime, suggests a clear historical precedent for contemporary moral tropes of youth hacking:

> Hacking then, must be regarded as a spectrum of usage ranging from the benign to extreme criminal activity. In this context, the problem of controlling misuse is two-sided. Means must be found to deal more effectively with the career criminal through the legal system, while channeling unbound inquisitiveness of the teenage hacker into constructive learning and use. This broad spectrum presents a challenge to every sector of society, from families and educational institutions, to government and industry. How can society nurture computer talent and appropriately deal with the computer criminal? (Lee, Steier, & Segal, 1986, p. 2)

Nearly 30 years later, that question remains not only unanswered but also intrinsically flawed. A "two-sided" moral approach to youth hacking is incompatible with the idea of an inherently "broad spectrum." Söderberg (2010) argues that legal and illegal uses of technology by "lay experts" are in fact mutually constitutive. By analyzing the origins and interpretations of such variations within a particular sociocultural context, we may gain a fuller understanding of the present complex cultural significance of youth hackers in the United States.

The current project focuses on one such sector, that of family life in the mid-1980s—or, more specifically, primarily middle- and upper-class U.S. families purchasing computers. This time period was marked by relative market stability between sharp rises in personal computer adoption in the early 1980s and early 1990s (following the introduction of the World Wide Web) (Campbell-Kelly & Aspray, 1996; Ceruzzi, 2003). This essay maps a "broad spectrum" of youth hacking in the mid-1980s as represented

through magazines, the media by which families were primarily constructed as a market for personal computers (Kelly, 2009). Historians of information technology often look to how periodicals positioned new technology in the home, particularly by appealing to existing concerns about the domestic sphere (Marvin, 1998; Spigel, 1992). As various scholars have noted, advertisements for home computers during this era relied heavily on traditional notions of gender and family life (Cassidy, 2001; Reed, 2000).

Earlier studies have analyzed popular magazines (e.g., *Better Homes & Gardens*, *Readers' Digest*) as well as general audience computer magazines (e.g., *Personal Computing*, *Creative Computing*). Cultural histories of hacking (D. Thomas, 2002; J. Thomas, 2005) have drawn from niche hacker magazines (e.g., *2600*, *Phrack*). This essay builds upon earlier research on popular conceptions of hackers and the cultural history of personal computing by locating a history of hacking within the specific niche of child- and family-oriented computing magazines first appearing in the mid-1980s—namely, the publications *Family Computing*, *K-Power*, *Microkids*, and *Enter* (Chadwick, 1983; Collins, 1983). The legacy of these four magazines can be traced to later publications such as *FamilyPC* (McPherson, 1996) and *MAKE* magazine (Sivek, 2011). Articles in these publications not only focused a good deal on educating parents and children about topics such as computer care and new software but also, quite surprisingly, about hacking and hackers (Appendix A).

Besides connecting microcomputers to particular family ideals, child- and family-oriented computing magazines in the mid-1980s positioned hacking as a potentially family-friendly activity.[1] While producing positive counternarratives to the dominant myth of the malicious adolescent hacker, these magazines also reinforced the need for youth to be protected from hacker activities and for institutions to be protected from youth hacking (Schulte, 2008). Employed in cultural histories of domestic technology, this essay utilizes textual analysis theoretically informed by the social shaping of technology approach (Lievrouw & Livingstone, 2006; MacKenzie & Wajcman, 1999) to develop a typology of positive and negative discourses about youth hacking. This project identifies a number of distinct yet overlapping discourses, following in the tradition of scholars looking to move beyond a moral binary of hacking (Coleman & Golub, 2008). To contextualize these renderings, the next section provides a brief overview of the historical origins of the term *hacker* as it was initially constructed among hackers themselves and the ways in which the image of the hacker continues to evolve in mainstream media.

Youth Hackers Inside and Out

Meanings of the term *hacker* have been much debated, and more comprehensive historical overviews have been provided elsewhere (Nissenbaum, 2004; Söderberg, 2010; J. Thomas, 2005). However, several points should be drawn about the innate relationship between youth and hacking. Computer hacking is a direct product of the youth-driven phone phreaking movement of the 1960s and 1970s (Lapsley, 2013). The first modern use of the term *hacker* appeared in a 1963 MIT student newspaper article about student members of the Tech Model Railroad Club hacking into the telephone system (Levy, 1984). Early hacker communities developing in the Boston and San Francisco areas in the

[1] The terms *family* and *child* mean various things depending on the social, cultural, political, and historical context (Coontz, 1992; Thorne, 2009).

1960s and 1970s were defined not only by their dedication to programming and high-level innovation but an informal hacker code emphasizing efficiency, meritocracy, libertarianism, and unrestricted access to information. Although some have suggested that the hacker ethic has broader social implications in that anyone can be a hacker (Himanen, 2001; Wark, 2004), the term was initially an elite category developed among and not bestowed upon this (primarily young, White, and male) group.

Whereas youth hackers are a historical reality, there is also a reality constructed around the perception of teen hackers in U.S. society. In the early 1980s, the ability to connect with other computers through modems and bulletin board systems (BBSs) made possible an online space for young, talented computer users to communicate and later compete with one another by sharing information obtained through unauthorized means (J. Thomas, 2005). Their activities led some onlookers to label those using computers for malicious and criminal purposes as "crackers" or "black hat hackers." The ensuing "moral panic" (Cohen, 1972; Goode & Ben-Yehuda, 1994) gave all hackers, even those who self-identified as benevolent or "white hat hackers," a bad name in media reports (Halbert, 1997; Nissenbaum, 2004; Söderberg, 2010). The relationship between youth and hacking is further entwined when one considers the "script kiddie" figure in hacker culture, a derogatory term emerging in the late 1990s used to describe an immature person who uses existing programs to exploit weaknesses in computer security systems (Mollick, 2005).

Cultural perceptions of young hackers have also shaped the historical reality of hacking. Schulte (2008) argues that the movie *WarGames*, in which teen computer hacker David Lightman (played by Matthew Broderick) unintentionally uses a modem to connect to the Pentagon's nuclear defense system, largely provided the impetus and framework for congressional hearings that led to the landmark 1984 enactment of the CFAA. During the hearings, policy makers screened clips from the film and overtly spoke of real-life threats supposedly presented therein. Recall that, of the 13 crimes that Aaron Swartz was charged with committing, 11 were CFAA offenses. The cruel irony is that Swartz, his actions having been mischaracterized by the Department of Justice, was essentially being charged with breaking a computer crime law that was itself based on a particular mischaracterization of young hackers.

Hacking at Home

Adult-inscribed conceptions of childhood have long figured into U.S. political discourse (Jenkins, 1998). Congressmen and technologists of an older generation, outpaced by the "natural" proficiency of young hackers, both encouraged strict measures over teen hackers and suggested their parents send them to computer camps to channel their talents into socially beneficial activities (Lee et al., 1986; Schulte, 2008). The discursive construction of young people as hackers is enmeshed within a larger set of discussions about adults managing children's relationships with technology inside and outside the home. Ethnographic work in the mid-1980s (Haddon, 1992; Turkle, 1984) suggests that hacker culture intersects with family life. Beyond just material support, the work of sociologist Annette Lareau (2003) illustrates how middle- and upper-class U.S. parents also provide significant social and cultural capital for cultivating young people's educational experiences outside of school. Haddon (1992), in his research into adolescent British computer clubs, notes the importance of locating male youth hacker experiences within individual homes. He writes of boys who "see themselves as 'hackers,'" and asks,

> How is this role supported or hindered within the family? After all, buying magazines, software, hardware, books, travelling to computer fairs, etc. may require financial support, or parents might be expected to comment on how their children spend their own savings. (pp. 92–93)

The present study conceives of the domestic sphere as a site where a material, social, and cultural components of youth hacker culture is constituted, motivated, and influenced by factors specific to families' everyday lives.

This essay builds upon earlier research on popular conceptions of hackers and the cultural history of personal computing by locating a history of hacking specifically among families making sense of microcomputers in the mid-1980s. The next section presents a historical analysis of the different discursive constructions of the youth hacker in child- and family-focused computer magazines as a means to reveal the social shaping of the personal computer in the mid-1980s and to better understand complex contemporary understandings of youth hacking.

As a discursive arena, popular magazines have traditionally played a key role in rendering visible public hopes and fears around children and technology (Selwyn, 2003; Wartella & Jennings, 2000). Considering the state's paternalistic approach to hacker activities in the mid-1980s and the present-day relevance of adult-defined conceptions of youth hackers, this project considers the leading family computing magazines of the mid-1980s a rhetorical site for representing and producing family-friendly child, adolescent, and teen hackers. Personal computers entered the home with notions of hacking attached to them, but family use of computers also became embedded in conceptions of hacking; as one journalist put it succinctly, "Can our kids hack it with computers?" (Howlett, 1986).

The Making of a Hacker in Family Computing Magazines

Spanning 1983 to 1987, the source material for this project consists of 74 issues of the four leading U.S. youth- and family-focused computing magazines of the era (Collins, 1983): *Microkids* (published by Warner), *Family Computing* (Scholastic), *K-Power* (Scholastic), and *Enter* (Children's Television Workshop, now Sesame Workshop) (see Table 1). Despite containing a wealth of editorial content pertaining to hacking, these publications are entirely absent from existing analyses of the popular construction of hackers, likely due to their brief existences. Moreover, they have received no scholarly attention to date.[2]

[2] This is somewhat understandable, considering digitized issues have only been circulated online and easily available to non-collectors within the past five years through websites such as archive.org.

Table 1. Study Sample of Mid-1980s Youth- and Family-Focused Computing Magazines.

Title	Publisher	Publication dates of study sample	Number of issues
Family Computing	Scholastic	September 1983 to July 1987	47
Enter	Children's Television Workshop	October 1983 to May 1985	17
K-Power[a]	Scholastic	February 1984 to October 1984	7
Microkids	Warner Publishing	December 1983 to May 1984	3
			N = 74

[a] After Scholastic ceased production of *K-Power*, the magazine was revived as an insert within *Family Computing* from September 1985 to July 1987.

Figure 1. "Hacker Heaven," K-Power, February 1984.

It is important to bring the magazines researched here into focus, because they offer an alternative discursive space from the mainstream media portrayal of adolescent hackers at the time. A key departure is that all the magazines in the sample directly addressed the hackers within its readership. For example, a March 1984 questionnaire to readers of *Microkids* begins, "Dear Microkids, Buffs, Whizzes, and Hackers" (Selby, 1984, p. 23). As opposed to making hackers into "folk devils" (Cohen, 1972), *K-Power* featured a section titled "Hacker Heaven" (see Figure 1) that printed original computer programs for amateur programmers to run on their own machines.

The magazines discussed in this article capitalized on the influx of middle- and upper-class parents buying into the hyped educational opportunities afforded by personal computers, at least compared to arcade and home video games, which were maligned as a waste of time and a distraction from homework.[3] Wealthy families were considered a primary market for home computers due to perceived "hard" but "fun" learning opportunities for children, such as the benefits of learning how to code, which was widely promoted by MIT Professor Seymour Papert and his popular book *Mindstorms* (1980). By September 1983, an estimated 70 computer magazines were on the U.S. market, but none were specifically family focused (Chadwick, 1983). In the same year, *Time* magazine declared the personal computer the "Machine of the Year" in lieu of "Person of the Year." Of the 5.5 million U.S. homes with personal computers in 1983, households with children made up an estimated 70% (Collins, 1983). Upon launch, *Enter* and *Family Computing* guaranteed advertisers a monthly circulation of 200,000. By May 1986, *Family Computing* had reached a circulation of 410,000, counting 1.7 million adults and 1.3 million teenagers among its readership.

These magazines also targeted specific age demographics. *Microkids*, *K-Power*, and *Enter* were directed toward children ages 10 to 16. The latter was more educationally geared and, as such, was explicitly kid focused and adult inclusive. For example, the magazine's subscription forms read, "Parents will love *Enter* too. It'll explain why computers are such an important part of everyone's future." Although *Microkids* and *Enter* had folded by 1985, *K-Power* lived on through 1987 as a mini-magazine within *Family Computing*, a more adult-focused/kid-inclusive publication.

From these four publications, six distinct but overlapping themes for characterizing youth hacking emerge: (1) *legal*, (2) *entrepreneurial*, (3) *commercial*, (4) *civic*, (5) *historical*, and (6) *social*. This analysis also led to the identification of an *ontological* metadiscourse, discussed briefly in the next section.

Ontological

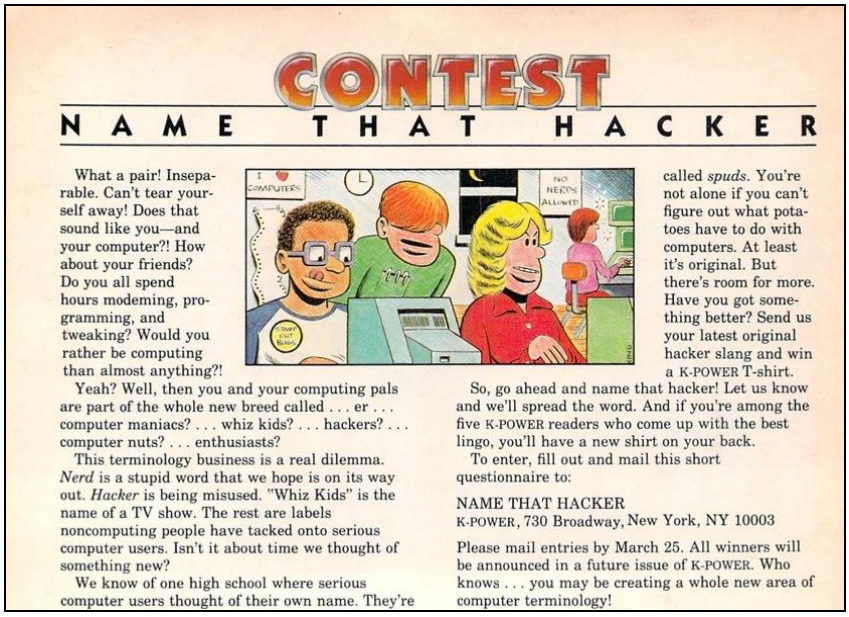
This metadiscourse involves explicit discussions about the shifting meaning of the term *hackers* and attempts to define and refine cultural understandings of the category. Nissenbaum (2004) argues that the transformation of popular conceptions of hackers since the mid-1980s must be read in relation to the ontology of the network society. This shift, Nissenbaum contends, "is not merely a matter of a change in evaluative judgments of hackers and hacking, but in the very meaning of the terms" (p. 213). The

[3] At the time, many parents in other countries with thriving gaming industries, such as China, also shared this attitude (e.g., Zhang, 2013).

magazines under study present heightened awareness of a crisis of terminology. The first issue of *K-Power* in 1984 suggests abandoning the label *hacker* altogether, already having been imbued with a negative meaning. The publication offers readers a mail-in contest to alternatively "Name That Hacker" (see Figure 2):

> You and your computer pals are part of the whole new breed called . . . er . . . computer maniacs? . . . whiz kids? . . . hackers? . . . computer nuts? . . . enthusiasts? This terminology business is a real dilemma. *Nerd* is a stupid word that we hope is on its way out. *Hacker* is misused. "Whiz Kids" is the name of a TV show. The rest are labels noncomputing people have tacked onto serious computer users. Isn't it about time we thought of something new? (Krueger, 1984a, p. 72)

Not all readers were so quick to abandon the term. Among the entries, "Robert McCool, 19, of Richmond, Kentucky, had the last word on new names for hackers—HACKERS OR ELSE!!! (He adds: 'I'm still proud of the name!')" (Holmstrom, 1984c, p. 13). In an article in *Family Computing*, a profile titled "Anatomy of a Hacker," the hacker interviewed notes that his university friends enjoy being identified and recognized as hackers, "because it makes them feel that they are a special, known group of people. . . . They've read articles about themselves in the *New York Times*" (Kortum, 1984, p. 48). Although these articles predate the contemporary "ontological transformation of hackers from heroes to hooligans" (Nissenbaum, 2004, p. 211), they express early concerns among readers over the obfuscation of the category *hackers*. I now turn to a discussion of the six primary discursive constructions of youth hackers found within the sample.



CONTEST

NAME THAT HACKER

What a pair! Inseparable. Can't tear yourself away! Does that sound like you—and your computer?! How about your friends? Do you all spend hours modeming, programming, and tweaking? Would you rather be computing than almost anything?!

Yeah? Well, then you and your computing pals are part of the whole new breed called . . . er . . . computer maniacs? . . . whiz kids? . . . hackers? . . . computer nuts? . . . enthusiasts?

This terminology business is a real dilemma. *Nerd* is a stupid word that we hope is on its way out. *Hacker* is being misused. "Whiz Kids" is the name of a TV show. The rest are labels noncomputing people have tacked onto serious computer users. Isn't it about time we thought of something new?

We know of one high school where serious computer users thought of their own name. They're called *spuds*. You're not alone if you can't figure out what potatoes have to do with computers. At least it's original. But there's room for more. Have you got something better? Send us your latest original hacker slang and win a K-POWER T-shirt.

So, go ahead and name that hacker! Let us know and we'll spread the word. And if you're among the five K-POWER readers who come up with the best lingo, you'll have a new shirt on your back.

To enter, fill out and mail this short questionnaire to:

NAME THAT HACKER
K-POWER, 730 Broadway, New York, NY 10003

Please mail entries by March 25. All winners will be announced in a future issue of K-POWER. Who knows . . . you may be creating a whole new area of computer terminology!

Figure 2. "Name That Hacker,"* K-Power, *February 1984.

Legal

This discourse involves the ambiguous legality of hacking. For example, "*WarGames* was just a movie. But it brought the fantasies and realities of computer raiding to America's attention. The reality is that a lot of computer users are performing some less-than-legal computing feats" (Horowitz, 1984, p. 27). In an article titled "Backing Hacking (Not Attacking)," a *K-Power* editor defends hackers who identify with hacker ideas and ideals of earlier decades, declaring, "A hacker is a hacker is a hacker. . . . But a hacker isn't necessarily a criminal." The editor further contends, "So, when some computing pros penetrate a bank's computer system with their modem and take or transfer money that's not theirs—they're raiders or criminals. Some computer crooks are hackers, but—c'mon—not all hackers are crooks" (Holmstrom, 1984a, p. 6).

Another article describes how working in collaboration with law enforcement can morally redeem formerly deviant youth hackers. One 15-year-old boy had recently collaborated with police to crack an unsolved case after law enforcement had caught him "inadvertently tapping into" into a bank's computer. "This time around," however, he "used his investigative computing on the side of the law and earned himself praise" (Krueger, 1985, p. 72). Many readers believed such second chances actually encouraged illegal hacking. "However innocent it may seem to a teenager who just enjoys the 'challenge' of breaking and entering computer systems illegally," wrote one *Enter* reader, "no computer magazine—especially one geared for youth—should encourage this type of ethics. Our penitentiaries are full of people who sought after very similar 'challenges'" (July/August 1984, p. 4). Another reader thought that the discussions of hacking and legality within *K-Power* were inconsistent and contradictory:

> Fact is . . . the bad press "hackers" are getting is NOT a "bum rap," as John [Holmstrom, *K-Power* writer] would lead us to believe. Even some of the "hackers" quoted on pages 32 and 33 didn't seem to think illegal access was wrong!! (June 1984, p. 6)

Younger readers seemed particularly unclear about ways in which hacking blurred boundaries between right and wrong, legal and illegal, fiction and nonfiction. A youth response section in *K-Power* posed the question, "Accessing unauthorized files—a threat to privacy, or just a good movie plot?" One 12-year-old girl wrote in, "I loved the movie *WarGames* . . . but the plot scared me" (February 1984, p. 3). Younger readers likely had little personal experience with hacking. A letter from the editor in *Enter* notes that only 10% of readers responding to a recent poll said they knew someone who had hacked into a computer mainframe illegally (July/August 1984, p. 4). Hacking as a legal, illegal, and "less-than-legal" practice composed a major theme.

Entrepreneurial

The next discourse characterizes hackers as young entrepreneurs who parlay their technical skills into business, moneymaking, and prizes, similar to what Selwyn (2003) summarizes as computers "transforming the child's abilities into the realm of the adult" (p. 359). Independently wealthy computer prodigies frequently appeared in the magazines surveyed. Making money pertains specifically to hacking

in an announcement for *Family Computing/K-Power*'s[4] "How to Make a Fortune Contest," which rhetorically asks readers, "What's your *favorite* use for your computer? Game playing?" The contest presents moneymaking as a key source of pleasure for adolescent hackers, as the announcement continues, "'No way,' said the hackers that hang around the *Family Computing* office. 'Making money!' they all sang in unison'" (Grey, 1986b, p. 117).

This entrepreneurial discourse overlaps with the legal discourse in presenting employment as an enticing way to lure young people away from the "dark side" of hacking. A teen hacker interviewed in *Enter* replied, "'I could try writing software to sell'" when asked, "What other computer-related things could you be doing that would be challenging?" (Horowitz, 1984, p. 29). Several magazines also featured profiles on a "reformed" hacker-turned-entrepreneur, the aptly named Geoffrey Goodfellow, a Department of Defense computer security consultant at SRI International (Holmstrom, 1984b; Goodfellow, 1984). These profiles highlight Goodfellow's conversion from malevolent to benign youth hacker, a shift enabled by his hire as a full-time employee by the very company whose system he hacked. Other scholars have similarly noted a reframing of children's work with hacking computers in the mid-1980s as a future job skill (Kelly, 2009). Those promoting positive alternatives to computer misuse by young hackers encouraged an entrepreneurial spirit.

In another variation on the entrepreneurial discourse, articles featured nonhacker but technically savvy youth capitalizing on their peers' misdeeds by developing and selling antipiracy software. *Family Computing/K-Power* profiled a pair of teenage boys who had won the 1986 Apple Computer Club Competition with "a comic book that discourages hackers from pirating software," of which one of the boys noted, "'we'd like to get one of the big publishers to handle [selling] it'" (Grey, 1986a, p. 77). Another teen entrepreneur was said to be "battling against a favorite pastime of many of his own peers—piracy" by developing a software protection program and generating a lucrative $100,000 per year through his endeavor. The 17-year-old "advises hackers to 'come up with new creative uses with the computer. Do something profitable. Pirating isn't profitable'" (Horowitz, 1984, p. 28). Crime doesn't pay, the entrepreneurial discourse puts forth, but fighting computer crime is potentially lucrative.

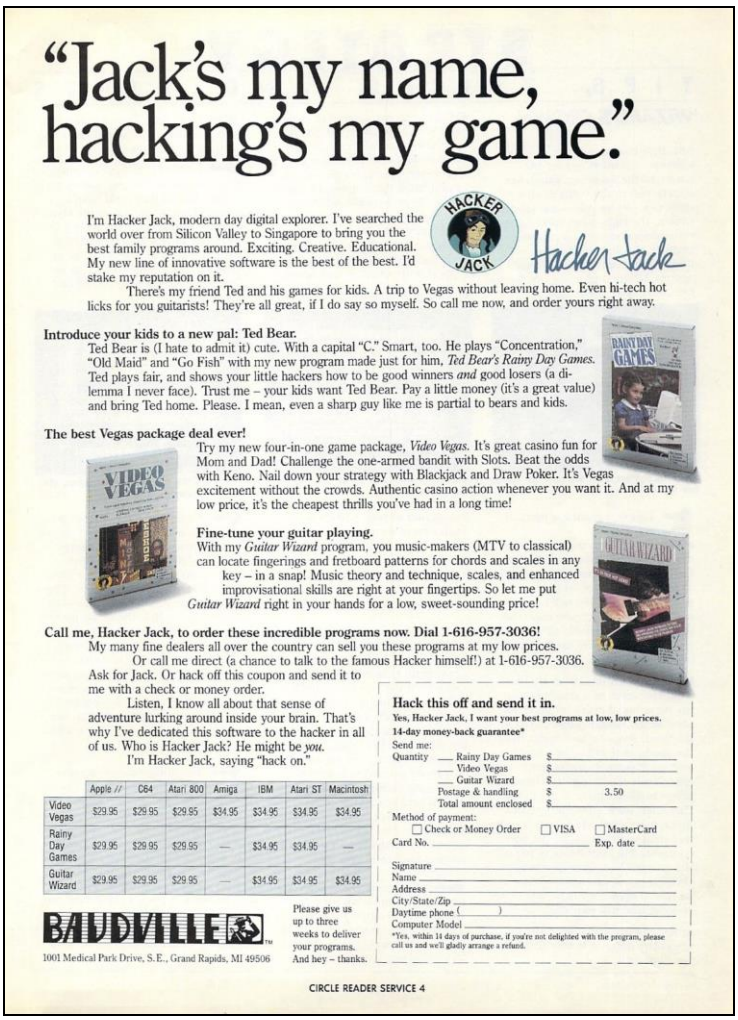
Commercial

The commercial discourse involves cultural appropriation and monetization of the hacker as an icon. One educational software brand, Hacker Jack (Baudeville), adopted faux hacker jargon to appeal to adults and teens alike. "Listen," reads copy for one such ad (see Figure 3),

> I know all about that sense of adventure lurking around inside your brain. That's why I've dedicated this software to the hacker in all of us. Who is Hacker Jack? He might be *you*. I'm Hacker Jack, saying "hack on."

[4] Issues of *K-Power* appearing as a mini-magazine within *Family Computing* are denoted in this manner.

Another game, Hacker (Activision), positioned itself as a safe simulation of hacking. *InfoWorld* described the game as bearing "a strong resemblance to real-life instances in which young computer virtuosos occasionally cross the legal boundaries of remote computer systems" (Mace, 1985, p. 6).



"Jack's my name, hacking's my game."

I'm Hacker Jack, modern day digital explorer. I've searched the world over from Silicon Valley to Singapore to bring you the best family programs around. Exciting. Creative. Educational. My new line of innovative software is the best of the best. I'd stake my reputation on it.

There's my friend Ted and his games for kids. A trip to Vegas without leaving home. Even hi-tech hot licks for you guitarists! They're all great, if I do say so myself. So call me now, and order yours right away.

Introduce your kids to a new pal: Ted Bear.

Ted Bear is (I hate to admit it) cute. With a capital "C." Smart, too. He plays "Concentration," "Old Maid" and "Go Fish" with my new program made just for him, *Ted Bear's Rainy Day Games*. Ted plays fair, and shows your little hackers how to be good winners *and* good losers (a dilemma I never face). Trust me – your kids want Ted Bear. Pay a little money (it's a great value) and bring Ted home. Please. I mean, even a sharp guy like me is partial to bears and kids.

The best Vegas package deal ever!

Try my new four-in-one game package, *Video Vegas*. It's great casino fun for Mom and Dad! Challenge the one-armed bandit with Slots. Beat the odds with Keno. Nail down your strategy with Blackjack and Draw Poker. It's Vegas excitement without the crowds. Authentic casino action whenever you want it. And at my low price, it's the cheapest thrills you've had in a long time!

Fine-tune your guitar playing.

With my *Guitar Wizard* program, you music-makers (MTV to classical) can locate fingerings and fretboard patterns for chords and scales in any key – in a snap! Music theory and technique, scales, and enhanced improvisational skills are right at your fingertips. So let me put *Guitar Wizard* right in your hands for a low, sweet-sounding price!

Call me, Hacker Jack, to order these incredible programs now. Dial 1-616-957-3036!

My many fine dealers all over the country can sell you these programs at my low prices. Or call me direct (a chance to talk to the famous Hacker himself!) at 1-616-957-3036. Ask for Jack. Or hack off this coupon and send it to me with a check or money order.

Listen, I know all about that sense of adventure lurking around inside your brain. That's why I've dedicated this software to the hacker in all of us. Who is Hacker Jack? He might be *you*.

I'm Hacker Jack, saying "hack on."

	Apple //	C64	Atari 800	Amiga	IBM	Atari ST	Macintosh
Video Vegas	$29.95	$29.95	$29.95	$34.95	$34.95	$34.95	$34.95
Rainy Day Games	$29.95	$29.95	$29.95	—	$34.95	$34.95	—
Guitar Wizard	$29.95	$29.95	$29.95	—	$34.95	$34.95	$34.95

BAUDVILLE™

1001 Medical Park Drive, S.E., Grand Rapids, MI 49506

Please give us up to three weeks to deliver your programs. And hey – thanks.

Hack this off and send it in.

Yes, Hacker Jack, I want your best programs at low, low prices.

14-day money-back guarantee*

Send me:

Quantity ___ Rainy Day Games $_____

___ Video Vegas $_____

___ Guitar Wizard $_____

Postage & handling $ 3.50

Total amount enclosed $_____

Method of payment:

☐ Check or Money Order ☐ VISA ☐ MasterCard

Card No. _____ Exp. date _____

Signature _____

Name _____

Address _____

City/State/Zip _____

Daytime phone (_____)

Computer Model _____

*Yes, within 14 days of purchase, if you're not delighted with the program, please call us and we'll gladly arrange a refund.

CIRCLE READER SERVICE 4

Figure 3*. Family Computing*, October 1986.

In addition to games, readers could also hack vicariously through TV. Producers looked to capitalize on Matthew Broderick's character in *WarGames*, which had made hackers seem cool as opposed to stereotypical computer nerds. In a profile on *Whiz Kids* (a prime-time *WarGames* derivate starring a Matthew Broderick look-alike), the lead actor explains how he hopes the show counters popular conceptions of hackers as nerds: "I'm not a computer nerd, I'm a hacker," is Richie's famous line, and Matt [Laborteaux, star of *Whiz Kids*] stands by it. "Richie's just a nice intelligent guy who just happens to be great with computers" (Michel, 1984, p. 34).

The network, however, thought the producers of *Whiz Kids* went too far in their positive portrayal of hackers. After screening the pilot for advertising agencies and CBS-affiliate owners, network executives gave extensive notes to tone down the unlawful computer tampering (Smith, 1983). The revisions only further repelled audiences, as the show was cancelled after one season. Wrote one 17-year-old in *Enter* about the ridiculousness of the show, "It took advantage of the hype and hysteria about computer break-ins and software piracy. . . . And it reinforced the stereotypical image of the computer user as a genius. . . . Besides, the show was boring, and not funny at all" (Wolfman, 1985, p. 22). Although youth hackers were packaged into various popular media in the mid-1980s, not all audiences were buying it; nor did all advertisers care to cash in.

Civic

Defined here as freely donating one's computing talents for public good, the civic discourse associates hacking with community benefit and presents civic hacking (Crabtree, 2007) in a nascent form. The announcement for *Family Computing/K-Power*'s "Hacker Heroes Contest" reads,

> We're interested in "hacker heroes"—kids who are putting their computing to good use by helping parents, their school, senior citizens, the handicapped, or their community. Send us a description of the "hero" or "heroine" and what he or she is doing to give hacking a good name. (Krueger, 1985, p. 72)

The ccompanying illustration reinforces the gendered culture of hacking (Douglas, 1999), depicting a muscular superhero figure with an anthropomorphized computer monitor head and smiley screen face helping a much older woman cross the street. Despite the gender-inclusive call for participation, the two winners (see Figure 4) include a ninth-grade boy who teaches computing to children in a special education class and a seventh-grade boy who leads computer workshops for the PTA (Krueger, 1986).

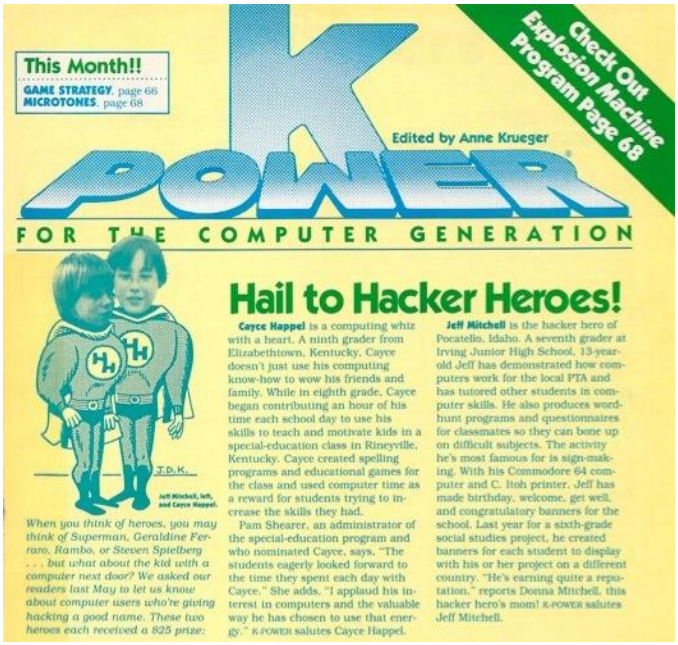


Figure 4. "Hail to Hacker Heroes!"* Family Computing, *February 1986.

The civic and commercial discourses overlap in regard to a generational branding of helpful hackers as "activists." In a profile on *Whiz Kids*, the executive producer declares, "Kids today are preoccupied with what they can do with their computers. They're activists in the real sense of the word. They don't protest, they change" (Michel, 1984, p. 35). The producer associates young hackers with activism, as in active social and cultural participation, not to be confused with political "hacktivism" (Jordan & Taylor, 2004).

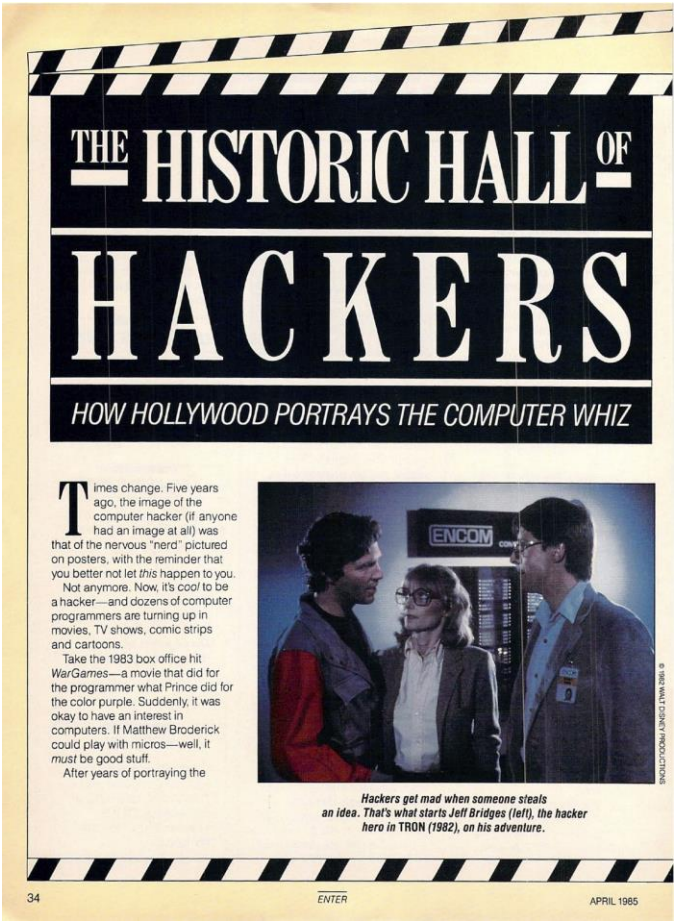
Another article illustrates how to be a "hacker helper" by highlighting a teenage girl named Andrea and her high school classmates, who built computers and donated them to their cash-strapped high school for use in word processing and grade handling. "In fact," the article notes, "Andrea plans to loan the computer she built to a former science teacher" (Jarrell, 1984, p. 49). The magazines analyzed here amplify the stories of those young people contributing their technical know-how to the public good, thereby giving hacking a good name, or at least a better one than "criminal."

Historical

The publications also positioned hacking as a phenomenon with a historical precedent in fiction and nonfiction. A satirical piece in *K-Power* entitled "Famous Hackers in History" retells the stories of historical figures such as Sir Isaac Newton and Marie Antoinette through computer puns (King, 1984). Other articles took a different approach to delineate real hackers from representations. An article in *Enter* titled "The Historical Hall of Hackers: How Hollywood Portrays the Computer Whiz" (see Figure 5) put forth the following preamble:

> On these pages, *ENTER* skips down computer memory lane and takes a look at top hackers from the past. But these aren't *real* hackers (Our apologies to Steve Wozniak, inventor of the Apple computer.) These are the famous hackers from *media* history. (Berry, 1985, p. 36)

Drawing on the ontological metadiscourse, another historically oriented article in *K-Power* addresses the question, "Where did the word 'hacker' come from?" The article offers one origin for young readers: "Back in the early days of computers when everyone worked on large mainframes, programming wasn't always orderly and sophisticated. Some people liked to write unconventional, 'quick and dirty' programs with poor documentation" (Krueger, 1984b, p. 14). The article goes on to frame "today's computer whizzes" as direct descents of hackers of the 1960s and 1970s. The historical discourse reflects an editorial strategy for legitimizing young hackers of the 1980s by cultivating reverence for "legendary" hackers.



THE HISTORIC HALL OF HACKERS

HOW HOLLYWOOD PORTRAYS THE COMPUTER WHIZ

Times change. Five years ago, the image of the computer hacker (if anyone had an image at all) was that of the nervous "nerd" pictured on posters, with the reminder that you better not let *this* happen to you.

Not anymore. Now, it's *cool* to be a hacker—and dozens of computer programmers are turning up in movies, TV shows, comic strips and cartoons.

Take the 1983 box office hit *WarGames*—a movie that did for the programmer what Prince did for the color purple. Suddenly, it was okay to have an interest in computers. If Matthew Broderick could play with micros—well, it *must* be good stuff.

After years of portraying the

Hackers get mad when someone steals an idea. That's what starts Jeff Bridges (left), the hacker hero in TRON *(1982), on his adventure.*

Figure 5. "The Historical Hall of Hackers,"* Enter, *April 1985.

Social

The four magazines presented various social contexts for and constructions of hacker collectives, including peer groups and families. *K-Power*'s youth editorial board, the "Special Ks," were put forth as a model teen hacker group, aspirational yet relatable figures that the adult editors of *K-Power* relied upon for youth credibility in the form of game tips and software reviews. Noted one Special K, "We are the personification of the computer generation—we eat, sleep, and talk computers! Well, actually, most hackers at school are pretty nerdy except us: we're just average guys" (Harvey, 1985, p. 58).

While emphasizing the social bonds among hackers, the trope of the antisocial hacker does appear as well. The university hacker profiled in *Family Computing*'s "Anatomy of a Hacker" reports being so engrossed with hacking that he misses dates with friends, stating "I don't think the computer has improved my social life. It's only damaged it!" (Kortum, 1984, p. 46). The same hacker identified the desire for recognition among fellow hackers as the "reason some hackers prefer the company of other hackers to the exclusion of anyone else. But this may stem from an insecurity that, 'without their computers they're virtually nothing'" (Kortum, 1984, p. 47). These excerpts reflect tensions between a notion of hackers preferring the order of computers to the randomness of human relationships (Levy, 1984), and the assertion that social bonds, belonging, and peer recognition essentially define hacking (Coleman, 2012).

These publications also discussed families as being both outside and inside the social world of hackers, and hackers as both home intruders and homegrown. The 1985 ACM Panel on Hacking notes that hacking with the family computer became the domain of children by default, stating that "to the majority of the family the glamour of game playing has worn off, the complexity of programming anything beyond simple" (Lee et al., 1986, pp. 9–10). Considering these issues, Claudia Cohl, the editor of *Family Computing*, regularly defined its family readership in opposition to hackers. Announcing the launch of the magazine's annual "Computing Family of the Year" contest, Cohl writes of the motive behind the contest, "a new generation of computer users is out there, not lone hackers but whole families who are putting computers to work for them" (Cohl, 1984, p. 4). This boundary maintenance also takes the form of unifying families in opposition to the "homebrew" hackers and hobbyists of the 1970s:

> When the first computers came into the home, it was the hackers who embraced them. In fact it was these early computers that created the hackers. . . . Their goal was to see how much *they* could make the computer *do*. That's not what being a *user* is all about. Being a user means instead seeing how much your *computer* can do for *you*. As I hope all of you know, that's who *Family Computing* is for: users. (Cohl, 1986, p. 4)

Although *Family Computing* positioned itself as being for "users" and not "hackers," by folding *K-Power* into its pages, that categorization did not truly hold. Meanwhile, other publications portrayed families and hackers as highly compatible. In *Enter*, a 13-year-old girl named Lisa Subeck writes, "In my family, *everyone*'s a hacker." As opposed to the lone hacker/whole family binary mentioned above, she presents a family recreationally united by their affinity for computing:

> My parents, my brother and I own 10 computers. . . . [My brother] and I each have a machine in our rooms for doing homework (and playing games of course). The bulletin board is running 24 hours a day. And everyone programs in at least one computer language. (Subeck, 1985, p. 35)

Although the characterization of a whole family as hackers is atypical, the Subeck family conforms to dominant ideals of the White, upper-middle-class, nuclear family (see Figure 6). Class considerations such as the cost of 10 computers, the price of electricity to run them, and ample space in the home are not an issue. This is not to say that the four magazines portrayed all families of hackers as wealthy. In a profile titled "Making of a Hacker," teenage Andrea talks about bonding over technology with her working-class father, an elevator repairman. She notes, "My dad and I have a game where we quiz each other and compare elevator parts to computer parts. This game helps us both brush up on new systems" (Jarrell, 1984, p. 49).

RANDOM ACCESS

MY COMPUTER-CRAZY FAMILY

© KEVIN HORAN

In my family, we never fight over the computer—we've got 10!

BY LISA SUBECK, 13

In my family, *everyone's* a hacker. My parents, my brother and I own 10 computers. All together, we've got four Atari 800s, four Atari 400s, two TRS-80s, and an assortment of disk drives, cassette recorders, monitors, printers and modems. Everything in our house—recipes, phone numbers and addresses, our finances, school grades, medical records—can be found on the computer.

My grandparents think we're completely bananas. My friends just think I'm lucky.

It wasn't always like this. Four years ago, dad was the only one interested in computers. He worked with one in his office. But one weekend, he came home with a TRS-80 Model III. He was considering getting a compatible machine so he could spend more time at home.

My brother Scott and I needed no convincing. We had worked on computers at school. Mom was the only doubter. "Why do we need one?" she asked. "Is it worth the money?"

It looked like our home computer might not happen. But then Mom started playing Scott Adams's *Adventure* on Dad's borrowed Model III. Once the game was loaded, my brother and I couldn't get *near* the machine. The very next day, we bought our own Model III.

With Mom and Dad so wrapped up, getting our homework done on the computer—forget about playing video games!—was impossible. So, soon after buying the Model III, we bought a Model I, with disk drive and modem.

Two machines were fine...for a while. Then Mom noticed Scott Adams adventures were coming out with color graphics. Before we knew it, we were the owners of an Atari 800 with color capabilities.

With all this equipment, we had everything we needed to start a bulletin board (BBS). So a year ago, we started our own.

We've all become more serious about computers. My mom now writes for *Antic*, Atari's monthly magazine. Scott and I each have a machine in our rooms for doing homework (and playing games, of course). The bulletin board is running 24 hours a day. And everyone programs in at least one computer language.

It's great being in a computer household, but there are drawbacks. For one thing, electrical storms make the whole family go nuts. The BBS goes down and everything has to be rebooted. There's also a space problem. We've had to rearrange the furniture with every new machine. And there are never enough outlets or extension cords for the peripherals.

Even when we leave home, there are problems. Most families go out of town and wonder if they've remembered to disconnect the coffee pot. We wonder if we've remembered to turn off the disk drives and monitors.

Life in a computer family can be complicated.

LISA SUBECK lives near Chicago.

MARCH 1985 ENTER 35

Figure 6. "My Computer-Crazy Family,"* Enter, *March 1985.

Not only were families described as sharing a hacker identity, but hacking was also packaged into products for family consumption. The Hacker Jack brand was explicitly directed to families. The magazines also described pricey computer camps as "'hacker heaven' for computer lovers." Children's Television Workshop–owned *Enter* included a listing of its own computer camp at amusement park Sesame Place and an accompanying photo of parents and children using computers together, captioned "Hacker's delight: 30 Apples programmed for fun at Sesame Place, PA" (Durso, 1984, p. 50).

The magazines in this analysis presented a great deal of moral ambiguity among parents regarding hacking. The authors of the 1985 ACM Panel on Hacking report were alarmed that parents

> had provided their children with the necessary computer and communications equipment (sometimes extended by the acquisition of hardware and software through BBS participation) and had been highly pleased that the young people were spending their evenings in their rooms rather than cruising the streets! (Lee et al., 1986, p. 9)

Such mixed-messaging is a recurring theme. One teen hacker noted, suggesting parental ambivalence, "Our parents don't care. Sometimes, they ask us to pirate certain programs for them. They don't condone using fake phone numbers on the modem or 'hardcore' piracy, though" (Horowitz, 1984, p. 29). In discussing his early escapades breaking into a local computer system, the 414 hacker profiled earlier noted that when his parents found out at first, "he was scared. But then he started getting mixed signals. His parents 'didn't really think it was that bad a thing'" (Treaster, 1984, p. 21). Within the pages of *Enter*, *K-Power*, *Microkids*, and *Family Computing*, the social world of young hackers was constituted through peer and family relationships as well as negotiation between public and private spheres increasingly networked together.

A Broad Spectrum of Hackers?

As evidenced by these distinct yet overlapping typologies, the popular portrayal of youth hackers has proved multifaceted since the very introduction of personal computers into U.S. homes. We should further scrutinize though who is missing from these narratives: girls and youth of color. Selwyn (2003) reminds us that, "In examining societal discourses about children and technology it is therefore important to consider what such 'stories' omit (and therefore imply as insignificant) and question the assumptions presented to us as 'fact'" (p. 353).

Young women and children of color had little opportunity to see themselves portrayed as computer capable in 1980s mass media (Cassell & Jenkins, 1998). For example, only 20% of the pictures in major computing magazines in 1985 were of women or girls, and those who did appear were primarily looking over the shoulder of men or boys using computers (VanGelder, 1985, as cited in Reed, 2000). Hacker Jill did not often accompany Hacker Jack. Of the magazines in this sample, only *Enter* explicitly aimed for equitable representation. Stated the editor upon the magazine's launch, "We're committed to nonsexist, nonracist and nonviolent ideals. We feel it's very important to present as role models girls who use computers, and minority kids who use computers" (Collins, 1983). The rarity of popular representations of women as hackers is bemoaned in *Enter*'s profile of positive portrayals of hacking in

Hollywood. The article applauds *Knight Rider*'s Dr. Bonnie Baston, stating "finally, a female computer specialist!" (Berry, 1985, p. 35).

When female hackers are made visible, discussion is primarily limited to either their social exclusion or their initial lack of "natural" technical skills. "Making of a Hacker," the only multipage article in the sample focusing on a young woman as a hacker, frames her as a neophyte: "Talk about a nontechnical person: Three years ago, Andrea Leptich could barely change a light bulb! Today, at 18, she's building, operating, and repairing computers—and loving it!" (Jarrell, 1984, p. 49). The article also emphasizes lack of social acceptance of women as technically knowledgeable: "Since starting the computer program, Andrea has been going into computer stores and shocking salespeople by talking like a hacker" (Jarrell, 1984, p. 49). No stories about male hackers portray this transformation from novice to nerd. Considering the era, though, a full-page photo of a teenage girl confidently posing with a computer that she built herself in a national magazine is fairly remarkable (see Figure 7).

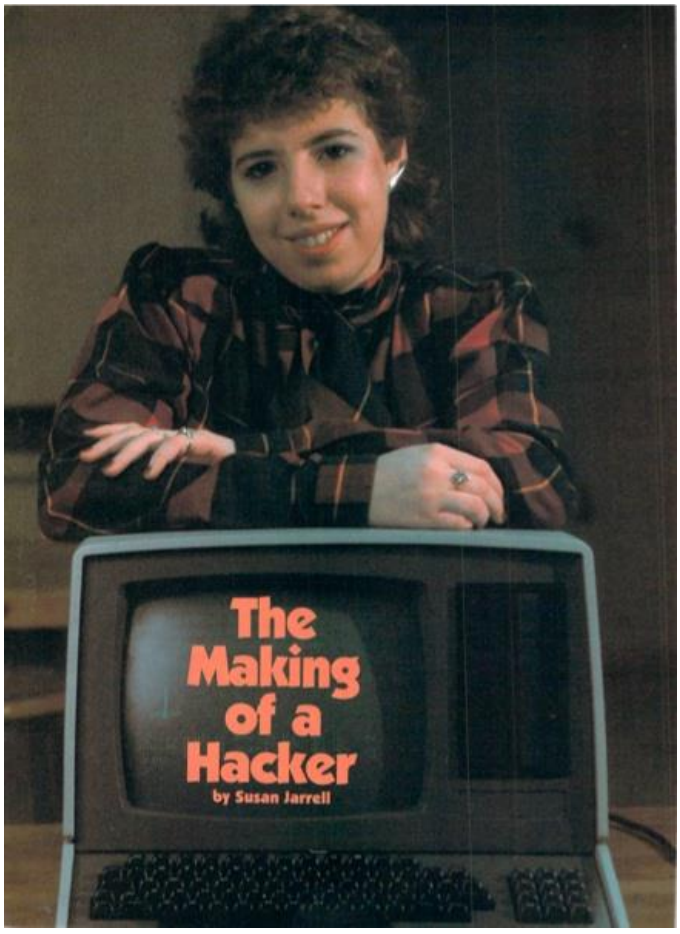


Figure 7. "Making of a Hacker,"* K-Power, *July/August 1984.

People of color are sparsely represented in the sampled publications. A *Family Computing* feature on a community computer center in East Harlem, New York, notes, "From the tidy 'young professional' couples in computer advertisements, to the electronic voice of . . . Ataris, the computer industry has directed its marketing to the white middle class" (Kaplan, 1984, p. 46). A profile on African American Yankees baseball player Dave Winfield frames the computer literacy program he started as giving, "disadvantaged kids a chance to join the computer generation." When asked whether he would "have been a computer hacker if he had been given the tools as a kid," Winfield replies, "Probably not." But for those kids who are interested, "Once they gain the skills, they can carry them with them the rest of their lives—it's long-lasting" (Rogoznica, 1985, p. 35). Although the six discourses found in the analysis portray a wide range of representations of hackers, the broad spectrum is not so expansive as to meaningfully include girls and children of color.

Conclusion

This analysis positions the U.S. families making microcomputers meaningful in their lives as central to the cultural history of hacking, creating a bridge between existing scholarship on the social history of personal computing and media representations of hackers. This article calls attention to an understudied component of hacker culture in the domestic sphere, one found not just among teenage and adult male computer enthusiasts but also specifically among parents and children incorporating personal computers into their homes. Instead of being limited to the garages of home hobbyists, hacking was portrayed in the four publications analyzed here as also belonging in the living room. Magazines such as *Family Computing* and *Enter* also illustrate the deep entwinement between perceptions of young hackers and the historical reality of hacking.

The discourses about young hackers found in these magazines were constructed in relation to families' understandings of both the promises and perils of the modems and BBSs further blurring boundaries between private and public spheres. Scholars have convincingly argued elsewhere that the "revolutionary" rhetoric of new technologies often relies on traditional social roles, values, and structures (Kelly, 2009). As McPherson (1996) noted, writing in the 1990s about the selling of the "wired household" to families, "new technologies do not enter the home pristine in their packages; they also come wrapped in a lot of cultural perceptions about their role in the household and family" (p. 120). New computers brought into the home, be they bulky IBM PCjrs or slim iPads, are inherently based on some political assumptions (Winner, 1986), and through their use they become part of a struggle over power and signification inside and outside the home (Lally, 2002).

Besides connecting microcomputers to particular conceptions of family life, *Family Computing*, *K-Power*, *Microkids*, and *Enter* acquainted parents and kids with a family-friendly version of hacking. These four magazines are a rich untapped resource for historians interested in children and families' evolving relationships with media and technology. Microcomputers were brought into the home entangled in cultural perceptions about hacking, but families' adoption of personal computers also became further entwined with popular representations of youth hackers. By associating hacking with six different discourses—legal, entrepreneurial, commercial, civic, historical, and social—the magazines analyzed in this

study translated the exclusive hacker subculture (what Friedman, 2005, calls the "hacker mystique") into something more aligned with middle- and upper-class family values.

"Right now, your kids are talking a new language: COMPUTER LANGUAGE," reads an ad for *K-Power* in *Family Computing*, suggesting that if you can't talk to your kids about computers, then buy them "a computer magazine that talks to the kids who are talking the new language," and perhaps glean some understanding yourself. The periodicals in this study addressed a readership of family, friends, and family-friendly hackers, domesticating hacking by associating it with law-abiding citizenship, contribution to the public good, independent wealth, commercial appeal, historical precedent, and intergenerational bonds. Certainly, the discussions about hacking sometimes reinforced the need for youth to be protected from hacking and for institutions to be protected from deviant young hackers, but these publications also constructed positive counternarratives to the myth of the malicious adolescent hacker dominating mainstream media and policy making at the time.

One recent rhetorical repositioning of the term *hacker* within the context of the domestic sphere that merits further inquiry has been the term *maker*. The educationally focused, family-oriented commercial Maker Movement, led by O'Reilly Media spin-off Maker Media, has often been at odds with its countercultural hacker roots (Ratto, 2011; Tocchetti, 2012). *MAKE* magazine, heir to the magazines analyzed in this study, presents the purchase of often-pricey technical kits to upper-middle-class parents as a way to foster new family traditions around homemade computational crafts (Sivek, 2011). Another new context for youth hacking has been the development of a national club called Hacker Scouts, which attempts to align hacking with associations like the Girl Scouts and Boy Scouts. NPR reports that the kids involved "are not breaking into computer networks. They make things with their hands" and learn through creative computing projects (Kalish, 2012). Even in this description of the Hacker Scouts, contemporary tensions between various historical notions of youth hacking are apparent.

The six discourses described in this article are strategies for identity maneuvering around the term *hacker,* constructing a palatable and marketable notion of youth hacking for computer-savvy upper-middle-class parents in the mid-1980s. These magazines encouraged parents to see the value in hacking as an educational opportunity and fun for the whole family. Taken together, the four publications analyzed in this study do not portray a singular discourse about youth hacking, but rather a variety of meanings. It is impossible to reconcile representations of good and bad youth hacking, as they historically co-constitute one another and challenge us to conceive of hacking beyond a moral binary. Different uses of the term *hacker*—and its contemporary variation, *maker*—may help explain contemporary mixed messaging about young people's computing practices as both creative and destructive. These magazines illustrate the entwinement that Gabriella Coleman (2012) writes of between the historical reality and cultural signification of hacking. Through a richer understanding of what qualities were initially associated with youth hacking as it entered the popular imagination, though, we come away with a better explanation of how today's progressive and repressive attitudes toward young people as hackers can possibly coexist.

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