Born Free: Gaming Software's Noncommercial Roots, 1975-1988

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This dissertation is a critical-historical examination of noncommercial gaming culture for early micro-, home, and personal computers (1975-1988). Rather than accepting games and software as a natural expression of technologized late-capitalist culture, this project seeks to fill the historical gap between 1970's hardware hobbyists and 1990's internet-enabled filesharing, by examining the changing position of amateur software as the industry became the dominant force in computing culture in the late 1970's. Through textual analysis of computer magazines, user-group newsletters, design documents, and marketing materials, combined with media archaeology of game programs, this project traces the resistant practices of amateur coders who rejected the discursively-constructed commercial norm. Drawing upon Marxist approaches to labor and technology, notably John Holloway's conception of "other-doing," this dissertation argues that reconstructing the noncommercial history of gaming software is crucial to reimagining computer technologies in the present, outside of a pro-industry commercialist paradigm.

The first chapter explicates the historical commercialization of computing culture, theorizing the possibility of noncommercial creation under late-capitalism, and the radical potential offered by amateurism. The second chapter examines the commercialization of computer magazines, examining the rhetorical means by which a larger commercialist paradigm took hold, and the category of "software piracy" developed. The third chapter offers a medium-specific analysis of the 5 ¼" floppy disk, positing that the floppy was more important as a medium for exchange than storage, allowing lay users to create and share games outside of commercial

channels. The final chapter is a case study of the public-domain electronic literature series Eamon, and the centralized system of the National Eamon User's Club. Though short-lived, the series represents the persistence of the amateur creative impulse in the face of the seeming totality of late-capitalism.

Located at the intersection of the history of technology, game studies, software studies, and history of the personal computer, this dissertation captures the development of a new technological form, and its attempted articulation into the late-capitalist commodity system. By decoupling innovation and commerce, of video games and neoliberalism, the project offers a new mode of *noncommercial* history, meant to recover alternative understandings of creative production.

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Preface

I want to thank my committee—Dr. Lester Olson, Dr. Brenton Malin, and Dr. Alison Langmead—for their continued support, especially my advisor, Dr. Ronald J. Zboray, for guiding such an interdisciplinary project. I also want to acknowledge other members of the Department of Communication faculty, including Dr. Paul Johnson, Dr. Caitlin Bruce, and Dr. David Marshall.

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1.0 Introduction

Within the early home computer period, games were significant because they answered the incipient question posed by new computer technologies: what can you do with it? The very idea of a personal computer was novel into the mid-1970's, when new microcomputer kits (like the Altair 8800) came into being. For many—and newcomers, especially—these were nearly as esoteric as mainframes, which had been largely hidden way for experts only. Indeed, they were often even more so, considering terminals were rather more user-friendly than the toggle-switch interface of the Altair. The popularity of gaming was noted as early as 1977, with *Creative Computing* founder David Ahl writing, "by my best estimate, at least 70% of the home users are using their computers almost exclusively for games and leisure."[1] For early home computer users, games provided a purpose, positing computers as objects for *play*. Further, just as groups like the PCC had used videogames to acclimate novices to computing, so, too, did gaming software help new home computer owners understand their machines. Such programs were typically instructional by their procedures, drawing upon conventions of arcade and even tabletop gaming while teaching practices of computer use. As Leslie Haddon observed in 1988 for example, computer games were "vehicles for learning about the machines" on which they were played, with the popular text-adventure form notable for teaching users "the planning and familiarity with the

[1] David Ahl, "Editorial: Reflections at the End of Our Third Year," *Creative Computing* 3, no. 6 (Nov. 1977): 6-8.

structure of databases."[2] The accessibility of computer platforms, and the coding agencies that they allowed, let games act as gateways into programming, as well.[3] Accounts abound of computer users modifying or trying to replicate a favorite game on their own, thereby becoming coders.[4] What they created, and often shared, was noncommercial software. This dissertation concerns such software during the era of its emergence.

1.1 Project Significance

Despite how common it once was, noncommercial software has largely gone unrecognized in the histories of both computing and video games. As I discuss further in the following chapter, games have become inherently linked to the ideology of late-capitalism, owing to both their co-

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[2] Leslie Haddon, "Electronic and Computer Games: The History of an Interactive Medium," *Screen* 29, no. 2 (1988): 52-73; Similarly, Nick Montfort posits that the popularity of adventure games, particularly text-based ones, was in part due to their instructive function, as their emphasis on exploration and puzzle solving was "connected with the experience of computing generally, which involved learning to format disks, copy files, program in BASIC, communicate over a modem with bulletin board systems, and manipulate text and graphics" (Nick Montfort, "Adventure," in *Debugging Game History: A Critical Lexicon*, eds. Henry Lowood and Raiford Guins [Cambridge, MA: The MIT Press, 2016], 18.)

[3] *Apple II Reference Manual* (Cupertino, CA: APPLE Computer Inc, Jan. 1978): 55-63. This program inspired Bob Clardy's "Dungeon Campaign" (1978) program, which would serve as the genesis of his company, Synergistic Software (Robert Clardy, *Cyber Jack: The Adventures of Robert Clardy and Synergistic Software* [Middletown, DE: Apple PugetSound Library Exchange, 2017]: 13-20).

[4] See Evan Hodson, "Sharing Adventures," *Softline* 2, no. 3 (Jan. 1983): 6-7.

occurrence in the late 1970's and the high-tech ephemerality of games themselves. By equating gaming with commercial activity from its very inception, as though the form was born a commodity, previous scholarship has implied that electronic games were a natural expression of the increasingly technologized culture of advanced capitalism. In such a view, the game-as-object comes to concretize the social relations of commodity production, thereby reifying entrepreneurial creativity, and limiting all creative activity to channels of profitability. But computer games were not born as commercial objects; they were appropriated *after the fact*, made to fit into the commercial logic at the heart of the nascent home computer industry. The problem is that, by insisting upon profit-making at the inception of gaming culture, current scholarship risks distorting our understanding of one of the most common recreational uses of computing. If commoditization is marked as a given, those who failed to monetize gaming culture are cast as losers, pirates, or "mere" hobbyists, with the implications that those who imagine a future noncommercial gaming culture are either crooks or naïve utopianists.[5] Such an attitude effectively discourages critical attention to commercialism in gaming. By looking to amateur programmers, I suggest that the noncommercial gaming cultures they built challenged the deterministic and totalizing concept of the "immanent market" as necessarily shaping cultural production.

[5] See Igor Kopytoff, "The Cultural Biography of Things: Commoditization as Process," in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge: Cambridge University Press, 1986), 64-91.

1.2 Situation in Scholarship

This project exists at the intersection of multiple fields, including the history of computing, video game studies, and cultural studies of amateur creative communities. Within the history of computing, the period between late 1970's and mid-1980's is widely regarded as underdeveloped. Much critical work has been done on the *earlier* years of computing, including hardware development and early user groups.[6] But histories of the moment after microcomputers took hold, and personal- and home-computer hardware and software developed into consumer markets, have been largely stuck in what Erkki Huhtamo deems the era of the chronicle—"built around the same landmarks, breakthroughs, and founding fathers"—such as Steven Levy (1984), Paul Freiberger and Michael Swaine (1984), Robert Slater (1987), even Martin Campbell-Kelly (2003).[7] Attempts

[6] Hardware in Paul Ceruzzi, *A History of Modern Computing* (Cambridge, MA: The MIT Press, 2003); For user groups, Elizabeth Petrick, "Imagining the Personal Computer: Conceptualizations of the Homebrew Computer Club 1975-1977," *IEEE Annals of the History of Computing* 39, no. 4 (2017): 27-39 Kevin Driscoll, "Professional Work for Nothing: Software Commercialization and 'An Open Letter to Hobbyists,'" *Information & Culture* 50, no. 2 (2015): 257-283; Kevin Gotkin, "When Computers Were Amateur," *IEEE Annals of the History of Computing* 36, no. 2 (2014): 4-14; Atsushi Akera, "Voluntarism and the Fruits of Collaboration: The IBM User Group, Share," *Technology and Culture* 42, no. 4 (2001): 710-736.

[7] Erkki Huhtamo, "Slots of Fun, Slots of Trouble: An Archaeology of Arcade Gaming," in *Handbook of Computer Game Studies*, ed. Joost Raessens and Jeffrey Goldstein (Cambridge, MA: MIT Press, 2011), 4; Henry Lowood and Raiford Guins, "Introduction: Why We Are Debugging," in *Debugging Game History: A Critical Lexicon*, eds. Henry Lowood and Raiford Guins (Cambridge, MA: The MIT Press, 2016), xiii-xx. Applying Huhtamo's theory to the history of computing, Nooney, Driscoll, and Allen assert that "Backlit by nostalgia and dominated by an innovator class merely looking to affirm their own memory, the history of personal computing has

to correct this oversight, and the white, male, commercial perspectives that it foregrounds, are only just beginning. Game studies, too, has often struggled to capture this period, with a gap between the early era of arcade, mainframe, and Atari dominance, and the Nintendo-inflected console gaming era post-1985.[8] Henry Lowood and Raiford Guins' *Debugging Game History* (2016) is situated as a *direct* effort to correct the chronicle model, and echoed in this by Laine Nooney

largely been left to the realm of first-person memoir and industry studies" (Laine Nooney, Kevin Driscoll, and Kera Allen, "From Programming to Products: *Softalk* Magazine and the Rise of the Personal Computer User," *Information & Culture* 55, no. 2 [Nov. 2020]: 124); Steven Levy, *Hackers: Heroes of the Computer Revolution* (Garden City, NY: Anchor Press, 1984); Paul Freiberger and Michael Swaine, *Fire in the Valley: The Making of the Personal Computer* (Berkeley, CA: Osborne/McGraw-Hill, 1984); Robert Slater, *Portraits in Silicon* (Cambridge, MA: MIT Press, 1987); Martin Campbell-Kelly, *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry* (Cambridge, MA: MIT University Press, 2003); Martin Campbell-Kelly, William Aspray, Nathan Ensmenger, and Jeffrey Yost, *Computer: A History of the Information Machine*, 3rd ed. (Boulder, CO: Westview Press, 2014).

[8] For arcade gaming, see Raiford Guins, *Game After: A Cultural Study of Video Game Afterlife* (Cambridge, MA: The MIT Press, 2014); for mainframe gaming, see Montfort, "Adventure," 13-19; Nicholas Montfort, *Twisty Little Passages: An Approach to Interactive Fiction* (Cambridge, MA: MIT University Press, 2003); David Craddock, *Dungeon Hacks: How NetHack, Angband, and Other Roguelikes Changed the Course of Videogames* (Canton, OH: Press Start Press, 2015); for Atari, see Scott Cohen, *Zap: The Rise and Fall of Atari* (New York: McGraw-Hill, 1984); Nick Montfort and Ian Bogost, *Racing the Beam: The Atari Video Computer System* (Cambridge, MA: MIT Press, 2009); for Nintendo and post-1985 gaming, see Mia Consalvo, *Cheating: Gaining Advantage in Videogames* (Cambridge, MA: MIT Press, 2007); Graeme Kirkpatrick, *Computer Games and the Social Imaginary* (Cambridge, MA: Polity Press, 2013).

(2017) and Laine Nooney, Kevin Driscoll, and Kera Allen (2020), though recent scholarship in both computing history and game studies can be seen to embody this same impulse in spirit.[9]

While I envision my project as a part of this historical "debugging," my particular intervention (countering the commercialist paradigm) has meant bringing these histories of technology into conversation with other studies of noncommercial activity. Although the negative connotation of "amateurism" has led to what Margaret Ezell calls an "imaginative gap" in historical study, with the activities and products of amateurism underrecognized, there has been significant consideration of the concepts which I would unite under the umbrella of a shared creative impulse.[10] Both Steven Gelber (1999) and Mihalyi Csikszentmihalyi (1990) have

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[9] Lowood and Guins, *Debugging*; Laine Nooney, "Let's Begin Again: Sierra On-Line and the Origins of the Graphical Adventure Game," *American Journal of Play* 10, no. 1 (2017): 71-98; Nooney, Driscoll, and Allen, "From Programming"; for similar efforts in the history of computing, see Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006); Matt Kirschenbaum, *Track Changes: A Literary History of Word Processing* (Cambridge, MA: Harvard University Press, 2016); Marie Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: MIT Press, 2017); Joy Lisi Rankin, *A People's History of Computing in the United States* (Cambridge, MA: Harvard University Press, 2018); Charlton D. McIlwain, *Black Software: The Internet and Racial Justice, from the AfroNet to Black Lives Matter* (Oxford: Oxford University Press, 2019); for such work in game studies, see Jamie Woodcock, *Marx at the Arcade* (Chicago: Haymarket Books, 2019); *Queer Game Studies*, eds. Bonnie Ruberg and Adrienne Shaw (Minneapolis: University of Minnesota Press, 2017); Bonnie Ruberg, *Video Games Have Always Been Queer* (New York: NYU Press, 2019); Bonnie Ruberg, *The Queer Games Avant-Garde: How LGBTQ Game Makers are Reimagining the Medium of Video Games* (Durham, NC: Duke University Press, 2020).

[10] Margaret Ezell, *Social Authorship and the Advent of Print* (Baltimore: Johns Hopkins University Press, 1999): 24.

examined the cultural role and history of hobbies, while Wayne Booth (2008) has worked to rescue the term "amateur," a practice which aligns with studies of amateur textual production, as well as zines, early radio enthusiasts, DIY music, and even the Free and Open Source Software movement.[11] More recent scholarship has begun to consider amateurism and hobbyism, not as discrete realms of leisure, but as radical, as resistance. Both John Holloway (2010) and Chris Carlsson (2008), as well as the first chapter of William Kirlinkus (2018), look to a wide array of activities, including urban gardening, tech workers knitting, and activist computer programming as efforts to work outside of narrow parameters of late-capitalist production cycles.[12] In so doing, these present-oriented works offer the possibility for retrospective analysis of *past* noncommercial communities, and the kinds of resistance that they once represented.

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[11] Steven Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999); Mihaly Csikszentmihalyi, *Flow: The Psychology of Optimal Experience* (New York: Harper & Row, 1990); Wayne Booth, *For the Love of It: Amateuring and its Rivals* (Chicago: University of Chicago Press, 2008); for amateur textual production, see Ronald J. Zboray and Mary Saracino Zboray, *Literary Dollars and Social Sense: A People's History of the Mass Market Book* (New York: Routledge, 2005); Ezell, *Social*; for zines, Stephen Dunscombe, *Notes from the Underground: Zines and the Politics of an Alternative Culture* (Bloomington, IN: Microcosm Publishing, 1997); for early radio, see Susan Douglas, *Inventing American Broadcasting: 1899-1922* (Baltimore: Johns Hopkins University Press, 1987); for DIY music, see Peter Woods, "Ethics and Practices in American DIY Spaces," *Punk & Post Punk* 6, no. 1 (2017): 63-80; for FOSS, see Christopher Kelty, *Two Bits: The Cultural Significance of Free Software* (Durham, NC: Duke University Press, 2008).

[12] John Holloway, *Crack Capitalism* (New York: Pluto Press, 2010); Chris Carlsson, *Nowtopia*: *How Pirate Programmers, Outlaw Bicyclists, and Vacant Lot Gardeners are Inventing the Future Today* (Oakland, CA: AK Press, 2008); William Kirlinkus, *Nostalgic Design: Rhetoric, Memory and Democratizing Technology* (Pittsburgh: University of Pittsburgh Press, 2018).

1.3 Project Overview

With this project, I offer a critical-historical examination of the production, use practices, and social interactions of noncommercial gaming culture, from the late 1970's through the rise of digital filesharing at the end of the 1980's.[13] These years marked a crucial moment of transition for computing: the rapidly-growing commercial market for software products, combined with the larger entrepreneurialism of the dawn of neoliberalism, led to the dominance of a commercialist paradigm in computer culture, which displaced the countercultural hobbyism of the 1970's. Despite the larger commercialization, amateur creativity and exchange did not disappear, it simply took on a new shape. My project seeks to recover the noncommercial software, specifically gaming software, produced in the shadow of the increasingly-dominant industry. By defining noncommercial production through design intention, circulation, and ethic, I work to capture the diverse methods through which users built and maintained their own cultural spaces, beyond the norms and bounds of the larger, increasingly commercial, computing culture.[14] To do so, I have developed a critical lens around the noncommercial, which has allowed me to read the crucial

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[13] As the editors describe the project in the first issue of *Critical Historical Studies*, critical-history brings a consciously political-economic focus to studies of culture, being concerned "with the historical processes by which economic, social, and cultural forms are interrelated" (Manu Goswami, Moishe Postone, Andrew Sartori, and William H. Sewell Jr., "Introducing *Critical Historical Studies*," *Critical Historical Studies* 1, no. 1 [2014]: 1-3).

[14] In terms of David Nye's distinction between internalist and externalist approaches to historical analysis, this is primarily an internalist study: I see the noncommercialism in early home computing as largely inhering within computing culture, not indicative of a broader sociocultural trend toward the noncommercial (unlike the counterculture of the 1960's, or the techno-utopianism of the early internet era). See David Nye, *Technology Matters: Questions to Live With* (Cambridge, MA: MIT Press, 2006).

segments of early home computing culture—the magazines, the media, and the community—against the grain, rejecting the prevailing commercialist paradigm which has long gone unquestioned in histories of computing.

1.4 Thesis

What noncommercial gaming software offers is a window into the development of a new and evolving form, and how the overarching system of late-capitalism articulates new products into the capitalist commodity system. Rather than taking commodification as given, I offer an alternative understanding of creative production, one which is open to and inclusive of many alternative modes of doing. By refusing to privilege commercial rhetoric, as has been common within histories of technology and game studies, I aim to decouple the troubling equation of innovation and commerce, of video games and neoliberalism.[15] With this project, I argue that reconstructing the noncommercial history of gaming software is crucial to rejecting the commercialist paradigm that has shaped understandings of computing culture since the late 1970's and early 1980's. Reframing the historical narrative in this way means not only bringing to light missing voices from the past, but of opening the range of possibilities in the present. Resisting the apparently hopeless dominance of late-capitalism, these past precedents offer essential imaginative resources, as evidence of the persistent "cracks" in capitalist totality and the enduring impulse to work within them, in order to create something new.

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[15] Espen Aarseth, *Cybertext: Perspectives on Ergodic Literature* (Baltimore: Johns Hopkins University Press, 1997), 48.

1.5 Methodology

This project is one of recovery, insofar as noncommercial software, and the methods surrounding its creation and exchange, is largely overshadowed in the historical record. Because the documentary evidence heavily favors commercial products and perspectives, accounting for noncommercial software has required reading widely, reading between the lines, and approaching "noncommercial software" broadly. To do so, I have compiled a large textual archive, composed primarily of computer magazines, which served as the dominant discursive apparatus within computer culture of the period, and thus a space where controversies and disputes were discussed as they happened. To build this archive, I have drawn upon freely-accessible collections, including the Internet Archive's "Computer Magazine Archive" and the digital collections of the Computer History Museum, as well as printed "Best of" editions of magazines like *Creative Computing*. There were simply too many publications in the period to be fully comprehensive (over 200 by 1984), however, so I have worked with a set meant to be representative of field. I have consulted nearly a decade of *BYTE*, the best-selling and most widely known magazine, as well as lengthy runs of those with a prominent history in amateur computing (*People's Computer Company*, *Creative Computing*), those with notable trajectories (*Softalk*, its sister publication *Softline*, *Compute!*), and small publications that made major interventions (*Hardcore Computing*), as well as the newsmagazine *Infoworld* (fully available via Google Books). Due to the platform-specific nature of some publications, I have focused a bit more directly on Apple users, as the longevity and compatibility of the Apple II family allowed a more coherent community of users to form. Nevertheless, I have also followed intertextual connections to other concurrent magazines as needed, including those specific to other computer platforms. To examine these publications, I utilized a mixture of textual analytical methods. When scans of magazine issues have been made

searchable, by the original archives and/or my own OCR software, I have used keyword searches when possible, though the lack of a consistent term for "noncommercial software" often made this difficult. Therefore, much of my analysis has been done through close textual analysis, as well as macro-level examination of nonverbal components, like images, page layouts, compositions, and front matter.

While magazines have been crucial in understanding the history of noncommercial software within larger discourses of computing culture, these documents were not sufficient by themselves. As is described more fully in my second chapter, user group newsletters and computer magazines were deeply interrelated, until they diverged in the late 1970's. Magazines then commercialized, while newsletters tended to remain amateur, in both production and audience. Although newsletters are not as consistently available via digital archives, I have turned to some—notably the Apple PugetSound Program Library Exchange's *Call A.P.P.L.E.* and the International Apple Core's *Apple Orchard*—to help reconstruct noncommercial communities. Within this project, the most prominent newsletter is the *Eamon Adventurer's Log*, the publication of the National Eamon User's Club (NEUC), all of which has been made publicly available by the Eamon Adventurer's Guild and informs much of my fourth chapter. Furthermore, I have put much effort into situating home computing software within larger discourses. For technical and legal contexts, I have turned to a wide range of other sources, including legal opinions and law review articles for issues of copyright, and patents, standards, memoirs, and tech-industry trade publications for design (see chapter three).

Finally, I have supplemented this textual approach with immersive, practice-based research, in both emulation and an archival setting.[16] For specific game programs, I have developed a collection of disk-image files from online depositories, including every Eamon adventure, downloaded from Eamon Adventurer's Guild (EUG) online.[17] Recognizing the radical decontextualization involved in emulation, I have also accessed programs on original hardware at the University of Colorado's Media Archaeology Lab.[18] This on-site experience informed my case-study of the Eamon Adventures (chapter 4), as I was able to catalog and play many of the MAL's 90-plus adventures and various utilities, as well as create my own using the Dungeon Design Disk. At the same time, I was able to develop practical experience with the use practices for 5 ¼" floppy disks as both a gaming and storage medium, and discover material objects otherwise undigitized, including the Penguin Software disk sleeve discussed in the third chapter (figure 4.3).

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[16] Joanna Cuttell, "Arguing for an Immersive Method: Reflexive Meaning-Making, the Visible Researcher, and Moral Responses to Gameplay," *Journal of Comparative Research in Anthropology and Sociology* 6, no. 1 (2015): 55-75; Kurt Borchard, "Super Columbine Massacre RPG! And Grand Theft Autoethnography," *Cultural Studies – Critical Methodologies* 15, no. 6: 446-54.

[17] "Eamon Adventurer's Guild Library Master List," *Eamon Adventurer's Guild Online*, last updated Nov. 8, 2012, http://www.eamonag.org/lists/list-master.htm.

[18] What Kirschenbaum describes as a "procedural friction imposed by different hardware environments" (Matt Kirschenbaum, *Mechanisms: New Media and the Forensic Imagination* [Cambridge, MA: The MIT Press, 2008]: 133).

1.6 Chapter Descriptions

To best capture every aspect of noncommercial software, I have built each chapter around a particular perspective on early home computing culture, encompassing the fledgling industry, the medium, and the users/creators. By operating through such varied lenses and methodologies, I hope to reconstruct the complex history of noncommercial gaming production in a way that avoids fitting the different developments into a clear and reductionist timeline. Nonetheless, I have tried to keep the chapters in a roughly chronological order, following the macro-level analysis of the first chapter. My discussion of noncommercial creativity in computer magazines begins earlier than any other chapter, spanning a period from the early-to-mid-1970's up to the solidification of the industry in the early 1980's. Foregrounding the earlier years is crucial to establishing the hobbyist roots of computing culture, and situates amateur communities both practically and historically alongside a process of rapid commercialization. The following chapter, focused on storage media, overlaps somewhat, in order to establish the means of circulation available to hobbyists. Much of my focus will be on the 5 ¼" floppy disk, which was introduced in 1977, and had become the dominant storage medium by the middle of the following decade. Likewise, the first Eamon program was developed in 1980, but its peak popularity (1984-1989) came *after* the industry "shakeout" of 1984, when corporate production models solidified.[19] Indeed, the Eamon Adventurer's Guild, successor to the NEUC, coincided with the rise of the internet, which marks

[19] Campbell-Kelly, *From Airline*, 279-84; Douglas Carlston, *Software People: An Insider's Look at the Personal Computer Software Industry* (New York: Simon & Schuster, 1985): 9; Henry Lowood, "A Brief Biography of Computer Games," in *Playing Computer Games: Motives, Responses, and Consequences*, ed. Peter Vorderer and Jennings Bryant (Mahwah, NJ: Lawrence Erlbaum Associates, 2006): 36.

the beginning of a new era of file-sharing and free software. Because Eamon's genre (the text adventure) and platform (the Apple II) were already moving into obsolescence by the latter half of the decade, the series is useful in understanding the failures of visions of the noncommercial in the pre-shakeout period *and* the competing visions that arose subsequently.

My first chapter, "Dreaming of Something Better: Envisioning the Noncommercial By Doing," examines the historical formation of the commercialist paradigm within personal computing culture, and with it the "paradox of motivation." In so doing, I theorize the possibility of noncommercial production under late-capitalism, and articulate the need for technology as a radical force in the present. With Chapter 2, "The Changing Conception of Amateur Production in Software Magazine Discourse," I trace the ways in which computer magazines, the dominant communication medium for early home computing, represented noncommercial software. I find that, as these magazines commercialized, they served to reinforce commercial perspectives as a whole, entrenching the industry-preferred commercialist paradigm. Chapter 3, "Imagining Noncommercial Affordances and Software Practices through the 5 ¼" Floppy Disk," takes a medium-specific approach, examining how the 5 ¼" floppy disk, and its inherent rewritability, became a means of other-doing. Considering the medium through the idea of imagined affordances—wherein uses of technology arise at the intersection of design intentions, the material, and user imagination—I posit that the floppy was far more important as a medium for exchange rather than storage, allowing lay users to create and share games outside of the narrow parameters preferred by software producers and disk manufacturers. In the fourth and final chapter, "Competing Visions of the Noncommercial in the Eamon Adventures Series," I offer a case study of a specific community built around noncommercial gaming software: the Eamon community, especially the National Eamon User's Club (NEUC). Whereas much noncommercial software

creation was isolated and decentralized, the NEUC strove to create a centralized organizational system, to develop a list of adventures, quality standards, and means of interactive communication. What sets the Eamon community apart, I argue, is not just the scale of the series (over 200 distinct games!), but the fact that it spanned multiple, different creative moments. From the early years to the NEUC, and its subsequent afterlife online, the Eamon Adventures demonstrate the persistence of the creative impulse, the ongoing desire to work in the "cracks," to do, create, and share even in the face of the seeming totality of late-capitalism.

1.7 Conclusion

As a whole, this project takes the ethic of debugging, and aims it at the heart of the pro-industry bias of the history of computing. I may not be the first to resist the overall capitalist framing of computer and game studies; what is unprecedented, however, is my effort to foreground the noncommercial in *this* period, when the commercial industry was ascendant, then dominant. Rather than allow amateur software production to be split in two, with a vast empty space between pre-commercial hobbyism and the internet-era open-source movement, my project seeks to recover the communities of creativity that existed in the interim. Of course, the realm of noncommercial computing between the late 1970's and early 1980's, underdeveloped as it has been, is simply too broad for a single study. While I draw out a variety of distinct histories—of printed newsletters and type-in programs, of user groups and their software libraries—there remains more to do to fully capture how ordinary users created and shared software outside of the commercial market. It is my hope that this project can act as both a model and a springboard for future study, to help

build a comprehensive *noncommercial history* of computing, capable of decentering entrepreneurialism from our continued understanding of technology.

2.0 Dreaming of Something Better: Envisioning the Noncommercial By Doing

In the decade between 1975 and 1985, copious amounts of noncommercial software were created for micro-, home-, and personal computer platforms.[1] The precise number of such programs is impossible to ascertain: some were exchanged within computer clubs and hobbyist groups, others led to commercial products in some form, and still more likely moldered into obsolescence on desks in family "computer rooms" or on basement shelves, forgotten or abandoned by a budding coder. What is clear, however, is that much noncommercial software was generated in a very short time. In this period, simply to use home computers entailed, in many cases, creating or editing software programs. These were sometimes unfinished experiments,

[1] As Laine Nooney, Kevin Driscoll, and Kera Allen explain, "The term 'microcomputer' encompassed both 'personal computer' and 'home computer,' as the latter terms referred to different buyers' markets and lines of hardware during the late 1970s through the early to mid-1980s," with personal computers associated with business operations and home computers taking on a general use or even gaming specific connotation (Nooney, Driscoll, and Allen, "From Programming," 126, footnote 2). These distinctions were particularly salient during the period, especially for the growing industry, but, considered retrospectively, the practices, discourses, and even programs themselves overlap significantly. For this analysis, I will be using these together, or under the "home computer" label, as 1.) the IBM PC and Mac-vs-PC debates have occluded the original connotation of "personal computers" for current readers, and 2.) I have seen "microcomputers" discussed in primary sources as distinct from home computers, rather than as an umbrella term, to include platforms like the ZX-Spectrum or the TRS-80 Micro. See also Edward J. Burn, "Understanding Where Microcomputers Came From and Where They Are Now," in *Learning about Microcomputers: Hardware and Applications Software* (Albany, NY: Delmar, 1986), 1–41; Jerry Willis and Merl Miller, *Computers for Everybody: 1984 Buyer's Guide* (Beaverton, OR: Dilithium Press, 1984).

bespoke homebrewed applications, or adaptations of previous (frequently commercial) software. More often, these were games. As *Softalk* publisher Margot Comstock Tommervik wrote in a 1981 editorial, "One real difference between gamers and business users is that nearly every game player has an idea for and dreams of programming something even better than the game he's playing now."[2] And gamers didn't just stop at imagining alternatives, but made these dreams real, coding new games and sharing them with peers.

Nevertheless, little attention is paid to noncommercial software in histories of computing. The hobbyists of the 1970's, especially those in the Bay Area, are widely remembered as the forefathers of personal computing, but their countercultural ideas and "gift-economy" sharing are merely cast as *pre*-commercial, setting the stage for the dominance of Apple and Microsoft.[3] By the same token, the Free and Open-Source Software (FOSS) movement of the 1990's has been lauded as the resurgence of free exchange and communal ethics, largely as a part of the tech-utopianist celebration of the nascent Internet.[4] Noncommercial software of the period from about 1975 to 1988, has been trapped in the shadow the computing Industry—or rather, the interrelated industries of micro-, home-, and personal computer hardware, software, peripherals, and services. As new affordable, compact platforms brought computing technology into American homes,

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[2] Margot Comstock Tommervik, "Editor's Letter," *Softline* 1, no. 1 (Sept. 1981): 2.

[3] Bill Ryan, *Making Capital from Culture: The Corporate Form of Capitalist Cultural Production* (New York: De Gruyter, 1991): 10-11, 47 (footnote 10).

[4] Fred Turner notes, the 1990's saw the development of a libertarian techno-idealism, wherein the link between computers and the late-capitalist economy "promised to liberate both individuals and society" by allowing continued decentralized control, individualism (as entrepreneurship and the pursuit of "enlightened self-interest"), and global connectivity (Turner, *From Counterculture*, 1-7, 14-21).

software was redefined as a consumer good.[5] Between 1975 and 1984, the consumer software industry boomed, growing from a handful of small, mail-order operations to a sprawling, multimillion-dollar industry. The commercialist paradigm, which had existed within computing culture since a segment of hobbyists (including Bill Gates) turned to entrepreneurship to spread computing to the masses, became the dominant perspective, and software production grew increasingly entrenched in the logic of commercial production.[6]

The problem in establishing a complete history of this period, however, is that the very existence of noncommercial software seems to contradict the core beliefs of this commercialist paradigm. Software creation was linked to monetary incentive as early as Bill Gates' 1976 "Open Letter to Computer Hobbyists." Gates began with a rhetorical question— "Will quality software be written for the hobby market?"—and, by way of answering, cast noncommercial sharing of software as an impediment to creation. He wrote, "As the majority of hobbyists must be aware, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid...? One thing you do is prevent good software from being written. Who can afford to do professional work for nothing?"[7] Without monetary compensation, he argued, no one would be able to devote sufficient energy to programming high-quality software. In this, Gates echoes a fundamental principle of American copyright law: "the

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[5] Campbell-Kelly marks the forced "unbundling" of IBM software in 1970 as an inciting incident, raising the possibility of a software industry, but much of this was for the mainframe environment and comprised of enterprise-level applications. I contend that the home computing market truly established software as a profitable, mass-marketed consumer good (Campbell-Kelly, *From Airline*, 6, 109).

[6] See Driscoll, "Professional," 257-83; Petrick, "Imagining," 27-39.

[7] Bill Gates, "An Open Letter to Hobbyists," *Homebrew Computer Club Newsletter* 2 (1976): 2.

very fact that ideas are free creates a disincentive to the development of ideas. It is only when people can fully exploit the benefits of their ideas and receive protection in these endeavors that they will donate the product of their work process to the public domain."[8]

Other hobbyists may have rejected this logic at the time (as Kevin Driscoll and Elizabeth Petrick have shown in studies of the People's Computer Company and the Homebrew Computer Club), but it soon became the conventional wisdom underlying the industry as a whole, and was frequently deployed in anti-piracy discourse throughout the early 1980's.[9] For some, like On-Line System's Ken Williams, the issue was one of *quality*, that the lack of monetary exchange implied by noncommercial sharing would mean only amateur, and thus *lesser*, products could be created.[10] Others took a systemic view of the still-developing software industry, and posed this as an existential threat. As Robert Clardy of Synergistic Software wrote in 1983, "If you eliminate or reduce any of [the profit shares from commercial game sales], the product is either not written (no one gets it), not promoted (no one knows about it), or not distributed (no one can find it)."[11] In this, Clardy clearly demonstrates that, on every level of a commercialized production model,

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[8] David B Hopkins, "Ideas, Their Time Has Come: An Argument and a Proposal for Copyrighting Ideas," *Albany Law Review* 46, no 2 (1982): 453. Hopkins, it should be noted, was particularly uncritical of this connection (he is noted as a "right-wing jurist" in John Frow, "Repetition and Limitation: Computer Software and Copyright Law," *Screen* 29, no. 1 [1988]: 4). As noted on page 98, the intention of copyright law is to balance accessibility with commercial incentive. As the commercialist ideology took hold in computing (c. 1977), so too did the push for copyright protections for software, and the passage of protections (in 1980) coincided with massive increase in growth.

[9] Driscoll, "Professional"; Petrick, "Imagining."

[10] As Williams told *Softalk*'s Matthew Yuen in 1980, "the most adverse effect of piracy… is the lower quality of new programs" (Matt Yuen, "Pirate, Thief.: Who Dares to Catch Him?," *Softalk* 1, no. 2 [Oct. 1980]: 15.)

[11] Robert C. Clardy, untitled letter, *Softline* 2, no. 4 (March 1983): 2.

noncommercial software would seem to be infeasible. With such thinking, computing culture came to be dominated by what Chris Kelty calls "the ostensible paradox of 'motivation," the question of "why anyone would spend so much unpaid time building software only to give it away for free."[12] And indeed, while the commercial perspective may have taken hold in 1980's, it has only grown more dominant, through the bursting of various "bubbles" (the "shakeout" of 1984, the dotcom bubble of the early 2000's) and resultant corporate consolidation, and the tightening of supposed "antipiracy" copyright laws (in 1977, 1980, and the 1998 DMCA) and rise of software licensing models, which foreclosed the new circulation possibilities of the internet age.

And yet, for the many people who *did* create and share their own software, the lack of monetary compensation presented no paradox, or at least did not pose a sufficient barrier to inhibit creativity. [13] The true challenge is *historiographic*: the dominance of the commercial paradigm during the period has shaped the historical narrative in its image, with a focus on best-selling platforms and killer apps, on "great men" and dominant companies, which has only recently begun to see sufficient critique.[14] The key question, then, is where do noncommercial programs, and games in particular, fit into the history of computing? In centering *noncommercial* products, and

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[12] Christopher Kelty, "Culture's Open Sources: Software, Copyright, and Cultural Critique," *Anthropological Quarterly* 77, no. 3 (2004): 502.

[13] Put another way, an issue of reification, or rather a rejection of the compulsion to understand all relations as relations between commodities (Georg Lukács, "Reification and the Consciousness of the Proletariat," in *History and Class Consciousness: Studies in Marxist Dialectics*, trans. Rodney Livingstone [Cambridge, MA: MIT Press, 1999]: 83-109).

[14] See Lowood and Guins, "Introduction," xiii-xx; Goswami, Postone, Sartori, and Sewell Jr., "Introducing," 1-3.

the creative communities that made and shared them, we can not only reshape the simplistic, sweeping commercialization narrative, but redefine our evaluative frameworks for determining what is successful, influential, or otherwise significant. At the same time, noncommercial software poses a methodological problem for historical analysis. Commercial products are simply much more visible to traditional methods of historical analysis, as they often have a large documentary footprint, including design and corporate documents, marketing materials and advertisements, third-party reviews, and interviews with the creators. Without such evidence, amateur creativity can be easily rendered invisible in the archive, leading to an unintentional pro-industry bias in the historical record. What is needed, and what I provide in the course of this project, is a recovery of noncommercial software—by reading widely, by reading between the lines, and by approaching the concept broadly. With such efforts, it becomes clear that lack of compensation *never* prevented creativity, invention, or productivity. The "paradox of motivation" was—and remains—little more than commodification at work, the ideology of late-stage capitalism bringing a new medium into alignment with the larger field of production.

With this chapter, I explicate the historical resonances of noncommercial software from the early home computer period, and how these programs, and the practices which surrounded them, are crucial to reframing cultural perceptions of technology. I begin by examining the connection between gaming software and the condition of late-capitalism. Situating the initial development of game programs as consumer commodities alongside the rise of neoliberalism, I assert that games have become the quintessential product of late-capitalism, embodying, in the popular imagination, its particular ideology. To decouple this association, and the commercialist paradigm it supports, I offer a counternarrative to the conventional historiography of gaming software, rooted in the noncommercial. Accordingly, I then endeavor to define the

"noncommercial," articulating a theoretical grounding for noncommercial activity and thereby reconciling a host of competing, sometimes contradictory, terms. In so doing, I seek to articulate the overarching lens of this project, which allows me to read against the grain of the archive, to recover the many misfitting which might be considered noncommercial. Finally, I confront the larger stakes of this project in the present, and consider how this history matters in today's technological environment. Accordingly, I answer the question: "Can technology, if created by forces of power, really be revolutionary?" Taking seriously the connections between technological design and the forces of power, I argue that technology must be a part of any possible future we imagine. What we need, however, is an understanding of technological creation and use *outside* of the confines of neoliberal capitalist production—the very possibility of which can be found in the amateur coders of early home computing.

2.1 "The Ultimate Rational Tool" as Entertainment: Gaming Software as Quintessential Late-Capitalist Product[15]

The video game industry remains extremely lucrative well into the medium's fifth decade, its estimated $137 billion in sales in 2018 a far cry from the catastrophic Crash of 1983.[16] Many gamers, perhaps even the *majority*, are too young to remember the doomsaying of the mid-1980's,

[15] David Sudnow, *Breakout: Pilgrim in the Microworld* (Los Angeles: Boss Fight Books, 2019), 50; originally published as *Pilgrim in the Microworld: Eye, Mind, and the Essence of Video Skill* by Warner Books, 1983.

[16] Liz Moyer, "Investors Use Indexes to Play in the Video Game Industry," *New York Times* July 12, 2019, https://www.nytimes.com/2019/07/12/business/invest-video-games.html.

let alone the heyday of the Apple II and other early computer platforms.[17] Nevertheless, the operations of the industry, gaming practices, and the larger cultural perceptions of video games all originate in the 1977-1983 period, when games became consumer commodities, delivered by a commercial industry. Like all media technologies, games exist at the center of an accumulating history of practices and uses; what sets games apart is that the form's rise to mass-cultural prominence coincided with rise of neoliberal economics, as both a rhetorical-cultural trend and an accompanying suite of policy initiatives. Since then, video games have become the quintessential product of late-capitalism, seeming in many ways to encapsulate the logic of the techno-historical moment, at least in the larger cultural imagination.

Despite being used interchangeably in the contemporary colloquial sense, "late-capitalism" and "neoliberalism" are separate, but deeply interrelated, concepts.[18] Both describe shifts which occurred in or around the mid-1970's, and rose to prominence in Reagan/Thatcher years. Writing in 1975, Ernest Mandel articulated three phases of historical capitalism, with the post-industrial economic shifts (in American and Europe) and increasing globalization being the newest: late-

[17] According to a 2017 Pew survey, "Six-in-ten Americans ages 18 to 29 and 53% of those ages 30 to 49 say they play video games often or sometimes, compared with smaller shares in older age groups" (Anna Brown, "Younger Men Play Video Games, but so Do a Diverse Group of Other Americans," FactTank, *Pew Research Group*, Sept. 11, 2017, https://www.pewresearch.org/fact-tank/2017/09/11/younger-men-play-video-games-but-so-do-a-diverse-group-of-other-americans/).

[18] Both terms have become catchall terms for the cultural milieu of the mid-late 2010's (see Annie Lowrey, "Why the Phrase "Late-Capitalism" is Suddenly Everywhere," *The Atlantic*, May 1, 2017, https://www.theatlantic.com/business/archive/2017/05/late-capitalism/524943/).

capitalism.[19] Only a few years later, the "stagflation" of the late 1970's and the perceived failures of post-war Keynesian economics led to a right-turn in economic policy, and thus the fiscal and economic conditions of what Harvey would deem "neoliberalism."[20] Although supply-side (re: "trickle-down") economics are typically associated with the Reagan administration, they first manifested in policy in the Revenue Act of 1978, which reduced the capital gains tax rate (to 28%) and made permanent the investment tax credit. Coupled with the Economic Recovery Tax Act of 1981 (ERTA, aka the "Kemp-Roth Tax Cut"), this legislation shaped an era of deregulation, low corporate and investment taxation, and an emphasis on entrepreneurship. Indeed, David Harvey formulated neoliberalism in just such a way, writing, "Neoliberalism is in the first instance a theory of theory of political economic practices which proposes that human well-being can be best advanced by the *maximization of entrepreneurial freedoms* within an institutional framework characterized by private property rights, individual liberty, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices."[21] In execution, this has meant significant deregulation across economic sectors, save for the entrenchment of private-property rights through policies like in the DMCA, and the decades-long

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[19] Ernest Mandel, *Late Capitalism* (London: New Left Books, 1975).

[20] J. Craig Jenkins and Craig M. Eckert, "The Right Turn in Economic Policy: Business Elites and the New Conservative Economics," *Sociological Forum* 15, No. 2 (June 2000): 308.

[21] Harvey attributes to neoliberalism a specific set of characteristics, including "conversion of various forms of property rights (e.g. common, collective, state) into exclusive private property rights; suppression of rights to the commons; commodification of labor power and suppression of alternative (indigenous) forms of production and consumption" (David Harvey, "Neo-Liberalism as Creative Destruction," *Geografiska Annaler* 88, no. 2 [2006]: 145, 153).

erosion of labor organization and the state in favor of corporate power and consolidation, and the increased concentration of wealth.[22] This process, Nick Dyer-Witheford notes, has been accompanied by discourse hailing a "new era of choice, liberation and personal fulfillment," with the resultant cultural focus on hyper-individualization and the fetishization of personal choice paving the way for explosive growth in entertainment and information markets.[23] As such, I will be primarily referring to the *moment* as late-capitalism, but will utilize the term neoliberalism to apply more broadly to the specific ideology, and which has shaped fiscal policy in the United States in the ensuing decades.[24]

The role of technology in late-capitalism, however, has been a point of contention for scholars, at least outside of post-industrial automation. Following Mandel, Fredric Jameson was hesitant to overemphasize the role of technology, writing in 1984's "Postmodernism, or the Cultural Logic of Late-Capitalism":

> I want to avoid the implication that technology is in any way the 'ultimate determining instance' either of our present-day social life or of our cultural production: such a thesis is of course ultimately at one with the post-Marxist notion of a 'post-Industrialist' society. Rather, I want to suggest that our faulty representations of some immense communicational and computer network are but a distorted fiction of something even deeper, namely the whole-world system of present day multinational capitalism.[25]

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[22] Harvey, "Neo-Liberalism," 148.

[23] Nick Dyer-Witheford, *Cyber-Marx: Cycles and Circuits of Struggle in High-Technology Capitalism* (Urbana: University of Illinois Press 1999): 118-19.

[24] Marshall Steinbaum, "The Tax Debate We Need," *Jacobin*, Oct. 20, 2017, https://www.jacobinmag.com/2017/10/trump-republicans-tax-plan-wealthy.

[25] Frederic Jameson, "Postmodernism, or The Cultural Logic of Late Capitalism," *New Left Review* 1 (1984): 79.

Here, Jameson's reservation is, in part, justified, as networking options in the mid-1980's (ARPANET, Usenet, various BBSes) certainly fell short of the tech-utopian idea of a globalized computer network.[26] By the turn of the millennium, however, this network had transformed from fiction to reality, in the form of the Internet.[27] Scholars of this latter period struggled to make sense of the social and cultural changes of the internet age and, perhaps influenced by the tech industry's perpetual emphasis on the "new," developed a host of terms for the contemporary condition, ranging from Tiziana Terranova's "informational culture" (2004) to Dyer-Witheford's "contemporary techno-capitalism" (1999).[28] In hindsight, it is clear that the tech-fueled cultural condition of the twenty-first century is merely part of the trajectory started in the late 1970's, now heightened, as "neoliberalism on steroids."[29] While earlier scholars could only speculate about a

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[26] McIlwain, *Black Software,* 66-68.

[27] Of course, the internet did (and does) still act as a metonym for the globalized network of commerce and communication central to late-capitalism—it is simply no longer hyperbole.

[28] Other related terms include the "sharing economy," the "creative economy," the "collaborative economy," or the "New Economy" (see David Murillo, Heloise Buckland, and Esther Val, "When the Sharing Economy Becomes Neoliberalism on Steroids: Unravelling the Controversies," *Technological Forecasting & Social Change* 125 [2017]: 66-76; Annette Henninger and Karin Gottschall, "Freelancers in Germany's Old and New Media Industry: Beyond Standard Patterns of Work and Life?," *Critical Sociology* 33 [2007]: 44; Jim Shorthose and Gerard Strange, "The New Cultural Economy, the Artist, and the Social Configuration of Autonomy," *Capital & Class* 84 [2004]: 47); Tiziana Terranova, *Network Culture: Politics for the Information Age* (London: Pluto Press, 2004): 6; Dyer-Witheford, *Cyber-Marx,* 6.

[29] Jernej Prodnik, "3C: Commodifying Communication in Capitalism," in *Marx in the Age of Digital Capitalism*, ed. Christian Fuchs and Vincent Mosco (Chicago: Haymarket Books, 2017), 233-321; Murillo, Buckland, and Val, "When the Sharing."

truly global computer technology infrastructure, the social characteristics of late-capitalism which computer technology came to represent—hyper-individualism, the commodification of everything (including creativity), the immateriality of capital, labor and cultural products—have become culturally dominant, and a constant in popular discourse and social life.

Video games have long functioned as the emblematic product of late-capitalism. First and foremost, gaming platforms—from single-program peripherals to consoles to home computers—depend upon technologies developed as part of the Cold War military-industrial complex. As Dyer-Witheford explains, increases in "military expenditures provided a superstimulus to the development of high technologies that formed the basis for… [neoliberal] capitalist restructuring," with the same semiconductor and microprocessor innovations yielding industrial automation, advanced weaponry, and microcomputers.[30] Certainly, the home computer software industry benefitted from its own superstimulus: by slashing the capital gains tax rates, both the Revenue Act of 1978 and ERTA (1981) incentivized venture capital to invest in nascent software companies, growing these businesses (often unsustainably) in the interest of subsequent payout down the line.[31] Yet video games as media have never been reducible to the underlying technology. In this sense, they represent the ethereality central to late-capitalism, with its emphasis on financial futures and the circulation of information.[32] The games themselves are computer programs, and

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[30] Dyer-Witheford, *Cyber-Marx*, 7; Ernest Braun and Stuart MacDonald, *Revolution in Miniature: The History and Impact of Semiconductor Electronics, 2nd Ed.* (Cambridge, UK: Cambridge University Press, 1982); Levy, *Hackers*.

[31] Carlston, *Software*, 191-195.

[32] Dyer-Witheford calls these "spectral" or "ethereal goods," in the manner of information (Dyer-Witheford, *Cyber-Marx*, 203; see also Jameson, "Postmodernism," 77-79.

thus, seemingly immaterial, separate from the medium in which they are stored. Increasingly, new games appear to have no physical form at all, acquired by users as a download from an online marketplace (if not simply a software license).[33] Further, games embody the endless repeatability of digital cultural products so prominent under late-capitalism. Presumably building from Walter Benjamin, Jameson suggested that contemporary media technologies of the time (then-novel developments like video cameras, tape recorders, and early home computers) were "machines of reproduction rather than consumption."[34] Perhaps counterintuitively, the fact that gaming platforms no longer enable copying merely proves this assertion, insofar as the game industry has spent the ensuing decades working to circumscribe the inherent reproducibility of its ephemeral products, through proprietary storage media, legal action, and, more recently, commodifying user creativity.[35]

The discourse surrounding video games itself enacts late-capitalist ideologies, particularly concerning consumption and labor. Perhaps the most apparent cultural component of late-capitalism is intense individualism, which posits each person as a rational, decision-making

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[33] By the early 1980's, gaming software development was largely fueled by venture capital, a practice now common across the various sectors of the 21st century economy. Predictably, games suffered from a focus on impressing investors, leading to outrageous promises which never came to fruition: the fittingly-named "vaporware." In an era of digital-only gaming, there is still a physical substrate to gaming: in servers and server-farms, on local hard-drives and SD cards, and all of the waste thereof.

[34] Jameson "Postmodernism," 79.

[35] An illustrative example of proprietary storage media is the NES cartridge, and Nintendo's use of a copy-protection chip: Casey O'Donnell, "The Nintendo Entertainment System and the 10NES Chip: Carving the Video Game Industry in Silicon," *IEEE Annals of the History of Computing* 6, no. 1 (2009): 83-100.

subject. Freedom of choice is posited as a fundamental right, but that choice is extremely limited. As Barbrook and Schultz explain, "under neoliberalism, individuals are only allowed to exercise their own autonomy in deal-making rather than through making things."[36] This is posed as freedom of choice, with individuals said to be "empowered" to voice their preferences as consumers, through the products and services they elect to purchase. Certainly, gaming platforms have a long history of association with personal freedom: just as video game consoles brought games to the suburban family unit, the *personal* computer proffered a one-on-one relationship between the user and the computer. Game studies scholarship, too, has tended to reinforce such a model by approaching games as a ludic experience, the co-creative enactment between player and program.[37] Such a frame has tended to prioritize the representational and immersive aspects of gaming, which, while providing valuable considerations of gender-performance and sexuality in gaming, nevertheless reinforces a view of the game as an experience of individualized interiority, shaped by personal choices.[38]

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[36] Richard Barbrook and Pit Schultz, "'Digital Artisans Manifesto,' European Digital Artisans Network," in *The Craft Reader*, ed. Glenn Adamson (Oxford: Berg Publishers, 2010): 317-20.

[37] Gonzalo Frasca, "Simulation versus Narrative: Introduction to Ludology," in *The Video Game Theory Reader*, ed. Mark J. P. Wolf and Bernard Perron (New York: Routledge, 2003), 221–37; Janet Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (New York: The Free Press, 1997).

[38] For notable, recent considerations of gender and sexuality, see Ruberg, *Queer Games*; Bonnie Ruberg, "Creating an Archive of LGBTQ Video Game Content: An Interview with Adrienne Shaw," *Camera Obscura* 32, no. 2 (2017): 165–173; Alison Harvey and Stephanie Fisher, "Everyone Can Make Games! The Post- Feminist Context of Women in Digital Game Production," *Feminist Media Studies* 15, no. 4 (2015): 576–592.

Further still, the video game industry has been defined by the commodification of creativity that is central to the late-capitalist culture industry. Early on, gaming software production fit easily into a relatively standard model of small-business entrepreneurship.[39] Though 1970's hardware hobbyists had been split over the issue of commercialization, the software industry c. 1977-1983 was rife with companies originally founded by programmers to sell their own wares.[40] So successful were these companies, in fact, that they became a metonym for 1980's entrepreneurship, notably in Reagan's 1985 address on tax reform. Alluding to Jobs and Wozniak, the president suggested, "Why not set out with your friends on the path of adventure and try to start up your own business? Follow in the footsteps of those two college students who launched one of America's great computer firms from the garage behind their house... You, too, can become leaders in this great new era of progress—the age of the entrepreneur."[41]

The attitudes of company founders themselves took on a distinctly neoliberal character, emphasizing the *freedom* of their work while downplaying its nature as labor. Broderbund's Doug Carlston, for example, wrote in his 1985 memoir, "I never imagined that writing software could be profitable!... People were actually paying me to have fun!," and later referred to game creation

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[39] Here, it is important to note that the earliest console games were mostly made in-house, under strict proprietary control of the console manufacturers themselves—notably Atari, though the same was true for its competitors, like Magnavox and Fairchild Semiconductor. Manufacturers exercised varying degrees of control for decades: Nintendo was famously restrictive with its developer kits well into the 2000's.

[40] Petrick, "Imagining, 29-32, 37.

[41] Ronald Reagan, "Address to the Nation on Tax Reform—May 1985," speech, May 28, 1985, https://www.reaganlibrary.gov/archives/speech/address-nation-tax-reform-may-1985.

as "a beautiful loop hole in the rules of life," and "a lot more like play than work."[42] In this, Carlson recalls Mihaly Csikszentmihalyi's theorization of *flow*, which posits that the value of creativity is the pleasure derived from total absorption in the process, so people create "even at great cost, for the sake of doing it."[43] Such an understanding frames creativity only in terms of personal fulfillment and play, not as labor, meaning that programming, in Carlston's terms, is a "loop hole" in the rules of capitalism—in short, it seems to fit *outside* of the relations of commodity production. Such a conception reaffirms the larger neoliberal rhetoric of individualism, marking the commercial value of the work as merely secondary to the inherent satisfaction of creation. In the present, most games are created by development teams, not individual creators; yet this only makes the industry fit better to the logic of late-capitalism. As Bill Ryan observed as early as 1991, contemporary creative industries have transitioned from relying on freelance artists to a "creative management system," wherein professional creatives either "exchange artistic freedom for financial security" or work as freelance contractors.[44] The game industry has transitioned almost entirely to the former, but relied on what Greig de Peuter and Nick Dyer-Witheford call the "work as play ethos" to keep workers content.[45] Indeed, game programmers and engineers continue to echo Carlston's pronouncement that the work doesn't *feel* like work—a fact that development studios use as cover for exploitative practices like extremely long hours, unpaid overtime, and

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[42] Carlston, *Software*, 5-6.

[43] Csikszentmihalyi, *Flow,* xi-22.

[44] Ryan, *Making*.

[45] Nick Dyer-Witheford, and Greig de Peuter, *Digital Play: The Interaction of Technology, Culture, and Marketing* (Montreal, CA: McGill-Queens University Press, 2003): 8.

resultant burnout.[46] Even user creativity is fostered and subsequently co-opted through the practice of modding, with users given the illusion of a freedom to create, only for their products to be reintegrated into the commercial product.[47]

What we are left with is a cultural definition of the game as both a consumer commodity *and* a virtual experience. From this, the game industry has come to embody many of the worst elements of late-capitalism: "flexploitation," casting heightened precarity as freedom, and intense commodification of creativity. But the link between video games and late-capitalism, at least as it exists in the dominant cultural imaginary, has little to do with critique. Games put the technology of late-capitalism to fun-filled and engaging ends, creating immersive, virtual experiences. They allow us to project the self in new and exciting ways. Moreover, they come from an industry that can seem aspirational, apparently separate from the perceived drudgery of so many other workplaces. That games are commodities appears an integral part of the form, the established cost of entry regardless of the wholly-virtual nature of digital-only games. Like our world, even the objects *in games* have been commodified, with in-game purchases offering new ways to customize characters. But again: it doesn't have to be this way. The identification of gaming with late-

[46] Greg de Peuter and Nick Dyer-Witheford, "A Playful Multitude…" 9.

[47] "Mods," or user modifications of existing games, are increasingly built into commercial games. Subsequent creations are monitored, regulated, and manipulated by publishers, who own such products a priori, essentially crowd-sourcing development. Mod creators, as Postigo notes, are often more than open to such a practice, as mods are commonly seen as an "entry-point practice… a testing ground for burgeoning designers, who may have little or no institutional training in design or computer programming but who, through their communities of practice, learn the craft of their possible profession" (Hector Postigo, "Modification," in *Debugging Game History: A Critical Lexicon*, eds. Henry Lowood and Raiford Guins [Cambridge, MA: The MIT Press, 2016], 325).

capitalism is the product of much discursive, legal, and systemic work to continually foreclose or integrate alternative means of creation, sharing, and play into the larger economic field. To resist this, we need to recover an alternative history of the medium—the *noncommercial* history.

2.2 Defining the Noncommercial

As I use it throughout this project, the concept of the "noncommercial" is intentionally broad, existing at the nexus of a series of competing terms and their related spheres of activity. In truth, "noncommercial software" was never the dominant designation in any one period of computing history; the objects and practices to which it refers were part of different (and sometimes competing) movements, from hardware hobbyists to open-source activists, and so were reflected in a variety of terms. By utilizing a broad conception, an umbrella under which to consider the many manifestations of the noncommercial in early home computer software, this project considers both how individual instantiations offer evidence of a similar creative impulse, and how *different* conceptions of noncommercial production and circulation reflect larger sociohistorical developments. At the core of these discussions are key questions about the noncommercial: what does it mean to do (create, share, play, etc.) outside of commercial frameworks? And what does the lived practice of noncommercial activity tell us about the seemingly all-encompassing nature of capitalism, and the possibilities for resistance?

"Noncommercial" does not mean *anti*-capitalist, nor should it imply existence wholly outside of the cultural milieu of capitalism. Of course, there has been an anti-capitalist segment of computing culture, dating back to the countercultural roots of the 1970's hardware hobbyists and their telephone "phreaker" counterparts, and such ideas have continued into the FOSS movement

and digital activism in the present.[48] Yet even these iterations are defined in some way by the dominant logics of market capitalism, which are central to social relations and contemporary epistemology.[49] My definition of "noncommercial" software is dependent upon the possibility for production, in the sense of creative activity, outside of the bounds of the commercial *market*, specifically. The expansive reach of capitalism has long been understood through Marx's assessment that capitalism "gradually transforms all commodity production into capitalist production."[50] This "thrust toward the commodification of everything," as Wallerstein writes, has meant "the widespread commodification of processes—not merely exchange processes, but production processes, distribution processes, and investment processes."[51] Taking this even further, such commodification has been ascribed to everything from the proliferation of western capitalism into global markets, the integration of new cultural products into industrial production, and, especially in late-stage capitalism, to the reach of commodity logics into every aspect of life, erstwhile "leisure time" included.[52]

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[48] Turner, *From Counterculture*; Petrick, "Imagining"; Richard Stallman, *Free Software, Free Society* (Boston: Free Software Foundation, 2002): 3-8; Kelty, *Two Bits*, 1-2, 168, 205-7.

[49] Or the "dominant techno-logics" (Kirlinkus, *Nostalgic*, 32-33).

[50] Karl Marx, *Capital: A Critique of Political Economy, Volume II*, trans. David Fernbach (London: New Left Review, 1978), 120.

[51] Immanuel Wallerstein, *Unthinking Social Sciences*, 2nd ed (Philadelphia: Temple University Press, 2001), 24-25; see also "universal commodification," as in Dyer-Witheford, *Cyber-Marx*, 9.

[52] Including in "gameification" see Michael Hughes and Jeff C. Lacy, "'The Sugar'd Game before Thee': Gameification Revisited," *Libraries and the Academy* 16, no. 2 (2016): 311-326.

The larger problem, however, is that capitalism is distinguished by its hegemonic, totalizing effect, and the prevailing sense that there can be no "outside." J.K. Gibson-Graham explains that this understanding of capitalism as all-encompassing is the product of its discursive appearances, which assert three characteristics: its unity, singularity, and totality. First, capitalism is often cast as a *unified* system which, via metaphorical construction, "becomes not an uncentered aggregate of practices but a structural and systemic unity."[53] Second, the *singularity* of capitalism, that it seems to have "no peer or equivalent, existing in a category by itself," tends to make any opposition seem hopeless, as though it cannot coexist with other modes of production.[54] It is due to these two characteristics that neo-Marxist scholars like Nick Dyer-Witheford suggest that only capitalism "has succeeded in knitting the planet together into an integrated, coordinated system of interdependencies… subsuming every other form of oppression to its logic."[55] Hence, the third characteristic, that capitalism appears to encompass a social *totality*, whereby the economy is able to "colonize the entire social space," saturating us fully and leaving no space outside the logic of the market.[56]

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[53] J.K. Gibson-Graham, *The End of Capitalism (As We Knew It): A Feminist Critique of Political Economy* (Cambridge, MA: Blackwell Publishers, 1996): 255; this occurs historically as well, with the reification of relations applied backward onto previous historical conditions.

[54] Gibson-Graham, *End*, 256-58.

[55] Dyer-Witheford, *Cyber-Marx*, 10.

[56] Gibson-Graham, *End*, 258-59; Habermas deems this "colonization of the lifeworld" (Jürgen Habermas, *The Theory of Communicative Action, Vol. 2: A Critique of Functionalist Reason*, trans. Thomas McCarthy [Boston, MA: Beacon Press, 1987]: 196; see also Timo Jutten, "The Colonization Thesis: Habermas on Reification," *International Journal of Philosophical Studies* 19, no. 5 [2011]: 701-727). This has serious ramifications for creativity and artistic production; per Jameson, "What has happened is that aesthetic production today has become integrated

Nevertheless, much human activity, including creative production, defies the structures and relations of commodity production. The world is full of misfittings, existing between the metaphorical "cracks" within the supposed capitalist totality: there are hobbies and handicrafts, artisan production, "micro-networks of decommodified activity" enabled by computer technologies, and myriad "networks of activity that refuse the measurement of money."[57] To theorize these practices, which appear largely unaccounted for in traditional conceptions of capital, John Holloway turns to Marx's "two-fold nature of labor." In *Economic and Philosophic Manuscripts of 1844*, Marx defines labor in capitalist society through alienation, insofar as, in a commodity system, "the worker is related to the *product of his labor* as to an *alien* object."[58] But, as Holloway notes, the existence of alienated labor implies that a kind of *non*alienated labor is also possible—hence, Marx asserts that "free, conscious activity is man's species character," torn away by estranged (aka alienated) labor.[59] In *Capital Vol. I*, the "two-fold nature of labor" is made more explicit as a distinction between "useful (or concrete) labor," which creates use-value, and "abstract labor," with its exchangeability and alienated, exchangeable commodities.[60] The problem

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into commodity production generally: the frantic economic urgency of producing fresh waves of ever more novel-seeming goods (from clothing to airplanes), at ever greater rates of turnover, now assigns an increasingly essential structural function and position to aesthetic innovation and experimentation" (Jameson, "Postmodernism," 56).

[57] For crafting as resistance, see Kirlinkus, *Nostalgic*, 47-73; for artisan production and other forms of noncapitalist economic modes, see Gibson-Graham, *End*, 259; for decommodified tech activity, see Dyer-Witheford, *Cyber-Marx*, 119; Carlsson, *Nowtopia*, 3.

[58] Karl Marx, *Economic & Philosophic Manuscripts of 1844* (Mineola, NY: Dover, 2007): 69.

[59] Marx, *Economic*, 75-6; Holloway, *Crack*, 89.

[60] See Karl Marx, *Capital Vol. I* (London: Penguin Books, 1990): 132-33, 290.

with this framing, Holloway argues, is that both are situated as *labor*, in its explicitly alienated sense, thereby allowing all activity (including what Holloway calls "concrete doing") to be *subsumed entirely* by abstract labor, merely a component within capitalist commodity production.[61] Rejecting this premise, Holloway asserts "the victory of abstract labor did not extinguish other forms of behaving but merely drove them underground, where they live on, repressed and rebellious."[62] Instead, he articulates a focus on examples of "other-doing," wherein people do, act, and create in ways outside of abstract labor, which reject the edicts of the market. In the mere act of doing, in acts large and small, we are able to articulate alternative ways of being, and the possibility of *noncommercial* activity.

For this project, the task is to recognize the noncommercial *in situ*, identifying where this kind of "other-doing" actually existed in the history of software production. Again, *Capital Vol. I* offers some guidance, as Marx writes that a product "is the result of a special sort of productive activity, the nature of which is determined by its aim, mode of operation, subject, means, and result."[63] Thus, it is necessary to define *production*, in the broad creative sense, of a specifically noncommercial nature. Streamlining Marx's approach, I define the noncommercial via three key

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[61] Holloway, *Crack*, 92, 172. Women's unpaid (often domestic) labor, however, often went unrecognized *as labor*, thereby denying fair compensation (see Silvia Frederici, *Revolution at Point Zero: Housework, Reproduction, and Feminist Struggle*, 2nd Ed. [Oakland, CA: PM Press, 2020]). Computer technology itself saw women performing unpaid productive even in the earliest years of the industry, as when IMSAI turned to the wives and children of its (male) employees in "crunch" time surround the release of the IMSAI 8080 (Jonathan Littman, *Once Upon a Time in ComputerLand* [New York: Simon & Schuster, 1990]: 41).

[62] Holloway *Crack*, 170.

[63] Marx, *Capital Vol. I*, 133.

aspects: intention, circulation, and ethic. First, I find that the intention of the creator is crucial in establishing whether a work is of a commercial nature. Writing of the corporate nature of the late-capitalist culture industry, Bill Ryan explains "the logic of capital enters into the production of cultural commodities as part of the overdetermination which shapes their form and contents."[64] In other words, creating a product for the market, as a commodity, requires one to adapt both the creative process and the product itself to fit the perceived wants and needs of potential consumers.[65] The reverse is true as well. Whether kept private or intended for small-scale sharing, noncommercial creativity—often posed as amateurism or hobbies—is able to take on forms unbounded by market demands, even defying market-dictated classifications.[66] Much work has been devoted to theorizing this kind of intention, the many reasons *why* people create without profit motive. Using the example of amateur musicians, Wayne Booth posits that such practices are simply done "for the love of it," for the pleasure of playing and improvement.[67] Mihaly Csikszentmihalyi concurs, positing that that pleasurable absorption in the activity, what he deems "flow," is a motivating force for everything for amateur piano players to computer coders.[68] Others looks to more complex explanations, like Zboray and Zboray's consideration of the social in amateur writing, Susan Douglas' consideration of class identity and education in amateur radio, or

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[64] Ryan, *Making*, 4.

[65] Holloway, *Crack*, 94.

[66] See Ronald Zboray and Mary Saracino Zboray, "Is It a Diary, Commonplace Book, Scrapbook or Whatchamacallit?: Six Years of Exploration in New England's Manuscript Archives, " *Libraries & the Cultural Record* 44, no. 1 (2009): 101-103.

[67] Booth, *For the Love*, 3-17.

[68] Csikszentmihalyi, *Flow*, xi, 4.

William Kirlinkus' examination of the "craftivism" of women who knit in high-tech workplaces.[69] For the purposes of this study, however, there is no need for a universal theory of the amateur creative impulse, nor the forms such creative products can take. Instead, I look for whether or not the process of creation was *intended* to develop a commercial product. Intention, then, is about the author's understanding of their own activity in the moment, typically a self-conscious awareness of being an amateur, hobbyist, or whatever term of identification they apply.

The second criterion, circulation, is meant to account for the lifespan of products beyond the process of creation, beyond original intention. In his studies of Depression-era hobbies, Steven Gelber writes that some "hobbies preserved and developed job skills and pro-work values outside the private-sector market."[70] A similar development, of hobbies as *proto*-commercial or career-development, is apparent throughout the history of software, from the macrohistorical framing of the 1970's hobbyists as "pre-commercial" to twenty-first-century modders who find careers in the game industry on the strength of their amateur work.[71] As Gelber notes, profit is often a point of division in hobby communities, as "the belief that monetary gain undermined the essence of hobby activity sometimes cause[s] skilled hobbyists…to refuse any compensation for their work. They fear[] that doing so would cause their hobbies to in fact become jobs."[72] In this way, circulation as

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[69] Zboray and Zboray, *Literary*; Douglas, *Inventing*; Kirlinkus, *Nostalgic*, 47-73.

[70] Steven Gelber, "A Job You Can't Lose: Work and Hobbies in the Great Depression," *Journal of Social History* 24, no. 4 (1991): 742; see also Gelber, *Hobbies*.

[71] Petrick, "Imagining"; Olli Sotamaa, "On Modder Labour, Commodification of Play, and Mod Competitors," *First Monday* 12, no. 9 (2007): 8; Hector Postigo, "Of Mods and Modders: Chasing Down the Value of Fan-Based Digital Game Modifications," *Games and Culture* 2, no. 4 (2007): 310.

[72] Gelber, "A Job," 756-57.

a definitional category is about determining noncommerciality *ex post facto*, over a product's lifecycle. This poses a real definitional challenge: *does* monetary exchange, and the capitalist consumer/producer relation it implies, necessarily foreclose a product from being considered noncommercial? After all, many programs in the early home computer period *began* noncommercially, created by amateurs with no expectation of profit. These coders often turned to the nascent market as the best available means to reach an audience, and found that the commercial model allowed them to continue to do their hobby full-time. This slippery slope between the DIY ethic and entrepreneurship is omnipresent in creative spheres under late-capitalism, and this was particularly true of early personal computing. As such, I do not ignore or exclude cases where amateur creatives become commercial actors (see Eamon creator Donald Brown), or noncommercial products that become productized (Zork), or other in-between cases. Accounting for the history of noncommercial software often means attending to its existence when and where it occurs, even when this is short-lived, failed, or appropriated by the market.[73]

Yet my particular interest, as highlighted in the third characteristic, is in creative products and processes embodying a specifically noncommercial *ethic.* What is valuable about Holloway's "cracks" model is that it is open to a broad spectrum of impulses and other-doings, not just "for the love of it" hobbyists or staunch anti-capitalists. The key for Holloway is *"refusal*-and-other-creation," the decision to "refuse to submit our lives to the rule of money," and instead act and create in alternative ways.[74] This same choice, and the beliefs and values that it reveals, has been

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[73] See Carlsson *Nowtopia*, 7-8 for challenge of escaping integration into commodity system.

[74] Holloway, *Crack*, 3-4. Note that this refusal can be *implicit*: thus, Holloway includes "the car worker in Birmingham who goes in the evenings to his garden allotment so that he has some activity that has some meaning and pleasure for him (Holloway, *Crack*, 4)—a seemingly benign, hobbyist pursuit if ever there was one.

central to noncommercial creative movements throughout the history of modern capitalism. Writing of the underground music scene, Peter J. Wood defines the central DIY ("do-it-yourself") ideology through just such a choice, as practitioners purposefully shun commercial modes of production due to "a belief system that values DIY production methods, networks, and practices that exist outside of the traditional corporate or institutional channels as inherently more meaningful and valuable."[75] If, as Stephen Dunscombe suggests, alternative creative communities of all kinds are best "identified less by who they are, then, and more by what they believe," then we might identify a set of common values central to noncommercial production.[76] As a rejection of the values of commercial production, noncommercial creativity—of amateurs, hobbyists, DIY practitioners, etc.—posits a countervailing, community-based value set, including not just self-expression, but "openness, free sharing, and a trust in oneself and each other to solve problems and make good choices."[77]

Correlating examples, whether from before or after the software culture central to this study, are crucial in theorizing the noncommercial, because the impulse to create beyond/outside the bounds of the capitalist market is persistent, recurrent. Indeed, the link between 1990's zines (the objects of Dunscombe's study) and 1970's hobbyist computing is abundantly clear: like most alternative cultural movements of the late twentieth century, their origins owe much to the counterculture of the 1960's. Throughout this project, when I refer to a noncommercial ethic, it

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[75] Woods, "Ethics," 65 (footnote 1).

[76] Dunscombe, *Notes*, 12. Studying 1980's-1990's zine culture, Dunscombe draws an explicit compassion to alternative magazine publishing of the 1940's, but the ethic is in many ways comparable to 19th Century amateur literary culture (Zboray and Zboray, *Literary*), and other, even older communities of literary creation.

[77] Carlsson, *Nowtopia*, 167.

tends to be in relation to the so-called "hacker ethic," as formulated by journalist and author Steven Levy. As Fred Turner explains in the seminal *From Counterculture to Cyberculture*, the hardware hobbyists and computer enthusiasts behind the "hacker ethic" were directly inspired by the New Communalists of the 1960's—including the People's Computer Company's Lee Felsenstein, who was himself a part of the Free Speech Movement.[78] These early hobbyists groups were committed to a set of values which mirror other DIY movements, with a focus on accessibility of technology, information sharing, collaboration and creative potential, a focus on skill-building, and "information technology as something around which to build a community."[79] Although DIY amateurism was displaced as the dominant force in computing culture by commercial entrepreneurship as early as the late 1970's, the values of the hacker ethic remained salient well into the 1980's, shaping the practices, perceptions, and creativity of lay users.[80] As such, while I remain skeptical of the "hacker ethic" as a constitutive force, it provides a useful, tech-specific shorthand for the loose set of noncommercial values at work in early micro-, home-, and personal-computing culture that were more often practiced than clearly articulated.

Finally, I want to be clear that these are not *essential* categories for the objects examined in this dissertation. My analysis has not been limited to only those products and communities which fit perfectly into the ideal conception of noncommercial creative production, but rather

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[78] Turner, *From Counterculture*, 114-138.

[79] Originally articulated in Steven Levy's 1984 *Hackers: Heroes of the Computer Revolution* (Levy, *Hackers*, 28-36); see also Turner, *From Counterculture*, 116, which defines the ethic as "an ethos of information sharing, of peer-to-peer collaboration, and of information technology as something around which to build a community."

[80] In fact, a conference to define the "hacker ethic" as an ideology didn't occur until 1984 (Turner, *From Counterculture*, 132-137)—see 5.1 footnote 38 (page 197) for more detail.

comprises a variety of cases across a broad spectrum. The problem with insisting on purity, as intimated previously, is that technological objects are enduring, having much longer lives than commercial production and structured obsolescence would suggest. For one thing, many programs in the period, especially in the years between 1977 and 1980, were created with a noncommercial intention and ethic, but limited options for circulation saw many programmers start their own companies (with extremely low profit margins) simply to reach an audience. Conversely, what were once commercial programs have become *abandonware*, now free to circulate after their platforms became obsolete, their developers went out of business, or the original programmers simply lost interest in protecting copyright. Further, hybrid models like demoware, shareware, and freeware defy the distinction between commodity and noncommercial product, even when viewed historically. Ultimately, the point of "noncommercial software" as the central category of this study is to capture the breadth of alternative creation and circulation. Rather than excluding misfittings, borderline cases, or short-lived experiments, I have sought to learn from these examples by including them, to make sense of how the structures of commodity capitalism impinge upon and shape other forms of doing.

2.3 The Revolution will be Computerized; or, Are Computers Tools for Liberation?

The revolutionary potential of computer technology has been a polarizing subject for as long as such technologies have existed—perhaps longer, in the pages of speculative science-fiction. The idealism of the 1970's hobbyists, notably articulated in Ted Nelson's 1974 book *Computer Lib* and the newsletters of the PCC and Homebrew Computer Club, was slowly crushed

by the rapid growth of the commercial computing industries.[81] Despite the setback posed by the 1984 shakeout, the 1990's saw the rise of the Internet and, with it, libertarian theories of computers as tools for liberation through "the collective pursuit of enlightened self-interest."[82] This too was answered with disaster, as the burst of the dotcom bubble has been followed by decades of corporate consolidation. Nevertheless, today's tech billionaires in Silicon Valley continue to offer a vision of a "better" future through technological innovation, from Tesla's Elon Musk proposing to reinvent public transit (in privatized form) to Amazon offsetting heightened convenience with unrepentant data collection.[83] But for those seeking a more just and equitable future than what is found under late-capitalism, technology poses a real quandary. Even if we accept that other-doing has the potential to seed an alternative future, what of computer technology? Can computers be tools of liberation, or are they simply doomed to remain tools of the oppressive structures through which they were created?

As Judy Wajcman writes, feminist approaches to new technology "have long oscillated between pessimistic fatalism and utopian optimism. The same technological innovations have been categorically rejected as oppressive to women and uncritically embraced as inherently

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[81] Ted Nelson, *Computer Lib: You Can and Must Understand Computers* (Chicago: self-published, 1974); reprinted as Ted Nelson, *Computer Lib/Dream Machines* (Redmond, WA: Tempus Books, 1987).

[82] Turner, *From Counterculture*, 12-36.

[83] Aarian Marshall, "Elon Musk's Boring Company Inches Closer to Making Hyperloop a Reality," *Wired,* April 4, 2019, https://www.wired.com/story/elon-musks-boring-company-takes-small-step-toward-reality/; Makena Kelly and Nick Statt, "Amazon confirms it holds on to Alexa data even if you delete audio files," *The Verge*, July 3, 2019, https://www.theverge.com/2019/7/3/20681423/amazon-alexa-echo-chris-coons-data-transcripts-recording-privacy.

liberating."[84] Following the ethnographic work of Sherry Turkle, and inspired by Donna Haraway's "cyborg," the utopians seized on the idea of the avatar, that we would experience digital space through a virtual self.[85] Such representation, which did take shape in role-playing games and MMO's, seemed to offer the chance to collapse oppressive binaries—especially by queering the male/female divide. In practice, this optimism has failed in spectacular fashion. A decade of social media has shown that, while we may exist as *versions* of ourselves online, these have only replicated gender (and race-based) discrimination and harassment, exacerbated by the anonymity afforded to so-called "trolls," as in Gamergate and the sexist pushback to the MeToo movement.[86] On the other hand, some feminist scholars have offered a strong case for the absolute rejection of new technologies. Eco-feminist Maria Mies encapsulated this position in 1987, arguing that the development of computer technologies has been inherently intertwined with systems of oppression: they are largely created to appear as market commodities, via a specialized knowledge set that is male-dominated and exclusionary, and promoted via state subsidies and propaganda.[87] Thus, she writes, "technical progress is not neutral… It is *always* based—not just in its

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[84] Judy Wajcman, "The Gender Politics of Technology," in *The Oxford Handbook of Political Analysis*, eds. Robert E. Gooden and Charles Tilly (Oxford: Oxford University Press, 2006): 717.

[85] Sherry Turkle, *The Second Self: Computers and the Human Spirit* (New York: Simon & Schuster, 1984); Donna Haraway, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980's," *Socialist Review* no. 80 (1985): 65-108; Wajcman, "Gender," 714.

[86] Michael Salter, "From Geek Masculinity to Gamergate: The Technological Rationality of Online Abuse," *Crime Media Culture* 14, no. 2 (2017): 247-264.

[87] Maria Mies, "Why Do We Need All This? A Call against Genetic Engineering and Reproductive Technology," in *Made to Order: The Myth of Reproductive and Genetic Progress*, eds. Patricia Spallone and Deborah Lynn Steinberg (New York: Pergamon Press, 1987): 37, 40, 42.

beginnings—on exploitation and domination over nature, exploitation and subjection of women, exploitation and oppression of other peoples."[88] Indeed, though Mies is particularly interested in issues of gender, such thinking may be extended to all of the groups marginalized, excluded, and otherwise oppressed by the systems which produced (and are instantiated within) technologies.[89] Accordingly, it is only by first *rejecting* the new technologies that we can begin to dismantle the larger, underlying systems which brought these objects about, including the late-capitalist alliance between state power and the tech industry.[90]

By interrogating the intersection between computer technologies and social change, we are confronted by a key question: not whether technologies have been produced by oppressive systems (which is largely true), but whether we can use technology *against* these selfsame systems. In the contemporary media environment, outright rejection of technology is not only impossible for most people, it fails to address the lived realities of economic and social life. Nevertheless, it is within the idea of rejection that we can find the seeds for a better future. Articulating her anti-tech stance, even Mies concedes that the non-neutrality of technology "does not mean that there *could* not be technologies friendly to people, women, and nature. To create them, we should have to begin not

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[88] Mies, "Why," 37; See also Dyer-Witheford, *Cyber-Marx*, 213.

[89] Race has long been underappreciated in critiques of computer technology, though recent scholarship has done much to rectify this oversight, including Safiya Noble's work on systemic racism in search engine algorithms (Safiya Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism,* (New York: NYU Press, 2018) and Charlton McIlwain's 2019 study of the history of black software coders and the Internet (McIlwain, *Black Software*).

[90] See also Steven E. Jones, *Against Technology: From the Luddites to Neo-Luddism* (Abingdon, UK: Routledge, 2006).

with technology, however, but with ourselves."[91] In other words, it is not the we can't have a progressive or feminist technology; but putting more women or people of color into STEM fields and tech companies is not sufficient. Rather, development must start with alternative structures. Of this, Mies remains pessimistic, holding that alternative uses of technology require alternative *conditions*, for which there remains little room under capitalism.[92]

Subsequent scholars, however, have seized upon rejection as a first step, an opening salvo in the push for an alternative way of being. Pure refusal, in the sense of choosing not to buy or use technology, can never be enough—it simply reaffirms the fallacious neoliberal tenet equating consumer choice with political agency. What matters, instead, is what we do *after the refusal*. As we have seen, Holloway articulates rejection in terms of "refusal-and-other-creation": not turning away from technology itself, but from the relations, means of use, and production prescribed by capital. In this sense, we can create alternative conditions through our refusal, in the interstitial spaces of capital, in every moment we elect to *do* outside of commodity production. Though some might be skeptical of the radical potential of hobbies and amateurism, the fact is that users are already putting this into practice.[93] We can see this in circulation, as internet technology and digital filesharing have allowed for free and open-source software, and social media platforms have served as resources for organizing social movements and protest events.[94] In terms of creation,

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[91] Mies, "Why," 38.

[92] Mies, "Why," 42.

[93] Mies, for example, dismisses hobbies as solution, writing, "if all this just remains leisure activity and a hobby then the fun has to stop sometime" (Mies, "Why," 39).

[94] For examples of these uses, see Holloway, *Crack*, 251; Carlsson, *Nowtopia*, 3, 30, 190-206; Gibson-Graham, *End*, 259-64; Dyer-Witheford, *Cyber-Marx*, 92-3, 202-213.

modding, game programming, and accessible platforms like Steam have allowed individuals from groups typically excluded from the tech industry to create and share their work—notably the queer gaming community.[95] While computer use may never have been quite as hegemonically straight, white, and male as gatekeepers would have it seem, it is clear that the ubiquity of technology in the present has put creation into the hands of a more diverse group than ever before.[96]

Considering the revolutionary potential of technology requires rethinking the intersection between technology and politics, as it has been understood traditionally. In one sense, this means rejecting the deterministic view, which posits technology as either the cause of, or solution to, contemporary social ills (or perhaps both at once). Repressive ideology might manifest in technology, but it does so because of the design intentions, uses, and assumptions of the people who make and use it. The problem lies within us, and we must be the solution. At the same time, *any* path forward must incorporate the computer technology that has become so ubiquitous. After all, I ask, is it any easier to imagine a low-tech future than to imagine a post-capitalist one? It was once possible to argue that technology was simply a tool of oppression—that the master's tools won't dismantle the master's house, as Mies' position suggests, after Audre Lorde. But today, technology is not just a tool, nor is it reducible to technocracy. Our technology has become so complex, it can no longer be relegated to *one* discrete area of human activity: it is built into the very fabric of our economic, political, and social life. Thus, technology is not just a single site of struggle. There is, rather, a technical component to every social movement or grass-roots organization, from the use of online platforms to organize protest events (as in the Arab Spring, or

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[95] Ruberg, *Queer*. There is also a growing interest in class and labor in gaming, as in Woodcock, *Marx*.

[96] Ruberg, *Queer*, 2.

the 2019 Hong Kong protests) to digital networks allowing for the connection of entire communities of noncommercial doing. Indeed, while technological capabilities and access are differential, based on class and privilege, networked devices have become increasingly ubiquitous, even in developing nations.[97] The challenge for social movements, especially progressive ones, is that repressive states and the technologies of surveillance capitalism have consistently operated to foreclose the revolutionary potential of technology. Organizers have had to adapt, to work in the metaphorical cracks of power, using all of the tools at their disposal—including social media and bespoke apps—to create sites of resistance, and to make these visible to others.[98] Such efforts are exceedingly difficult, and require continual effort. As recent movements have shown, however, any more equitable future will require keeping technological agency in the hands of civil society and ordinary citizens, keeping technology as a tool of resistance in spite of the repressive control of the tech industry and the state.

Such considerations are key to this project, and the role that histories of technology can play in the push for a more equitable future beyond late-capitalism. The value of this particular

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[97] For example, the rapid proliferation of Facebook in Myanmar, and the spread of hate-speech it fostered due to a lack of moderation (Paul Mozur, "A Genocide Incited on Facebook, With Posts From Myanmar's Military," *New York Times*, Oct. 15, 2018, https://www.nytimes.com/2018/10/15/technology/myanmar-facebook-genocide.html; Timothy McLaughlin, "How Facebook's Rise Fueled Chaos and Confusion in Myanmar," *Wired*, July 6, 2018, https://www.wired.com/story/how-facebooks-rise-fueled-chaos-and-confusion-in-myanmar/.

[98] Protestors in Hong Kong famously used apps to connect protestors, in the face of Chinese tech surveillance (Delia Paunescu, "Apple Deleted a Hong Kong Protest App. What Does it Mean for Democracy Around the World?" *Recode*, Vox.com, Oct. 23, 2019, https://www.vox.com/recode/2019/10/23/20927577/apple-hong-kong-protest-app-democracy).

historical study, as I see it, is twofold. First, histories of technology are essential to rethinking the values and assumptions which have been attached to technology as a whole. The narratives that we relate about technologies communicate, and often reshape, sociocultural ways of knowing technology—what William Kurlinkus calls "techno-logics."[99] This is particularly clear in relation to capital. As Espen Aarseth noted as early as 1997, within computer and gaming history "commercial rhetoric [has been largely] accepted uncritically by academics with little concern for the precise definitions or implicit ideologies," such that an implicit commercial bias—the commercialist paradigm—has been conveyed in the very text of our historical narratives.[100] In this way, tech history has often served to reproduce and convey the *dominant* techno-logic, characterized by progress narratives, emphasis on productivity, and a commercialist orientation.[101] Yet counternarratives can also reject these dominant understandings, presenting alternate conceptions of the past which reframe the present technoculture, revealing it not as inevitable or natural, but as the result of decisions made on behalf of a particular value-set. Second, by offering competing visions of the technological *past*, tech histories provide resources for imaging a new array of possible *futures*. Speculative fiction has a long history of imagining alternative futures, especially in relation to capitalism, as the first step in rethinking what could be.[102] Critical histories like this one, which refine or contradict traditional narratives of tech history, operate in much the

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[99] Kirlinkus, *Nostalgic*, 32-33.

[100] Aarseth, *Cybertext*, 48.

[101] See Kurlinkus, *Nostalgic*, 195.

[102] Ursula K. Le Guin, "Speech in Acceptance of the National Book Foundation Medal for Distinguished Contribution to American Letters," speech, National Book Awards, Nov. 19, 2014, New York, NY, https://www.ursulakleguin.com/nbf-medal.

same way. While individual iterations of noncommercial gaming may have "failed," in the sense that they were short-lived or had limited impact on the dominant culture, remembering their very existence offers possibility: if it could be done *before*, we might be able to do the same (or something similar) *now*. In this case, seeing that the history of home computing is rife with noncommercial creativity, of programmers resisting the bounds of capitalist commodity exchange, allows those in the present to envision a future where our every action is not always-already incorporated into the logic of late-capitalism.

Admittedly, the programmers and communities at the heart of this study did not often recognize themselves as radical or revolutionary. Like the larger computer culture of which they were a part, even noncommercial game creators were largely white, middle-class, educated, and male. The social spaces that they built typically replicated, and often *reinforced*, the whiteness, heteronormativity, and (at times) misogyny associated with computing. These were not, as Levy would have it, "heroes" of a dramatic "computer revolution." Nevertheless, as computer technology has become more widespread, via structured obsolescence and affordability, as well as cultural necessity, the noncommercial ethic that these early coders attached to technology can provide a useful counterexample to Silicon Valley entrepreneurialism. As Bonnie Ruberg has noted, "while [earlier] coding was largely done by straight, cisgender creators, its 'do-it-yourself' quality does resonate with the work of queer game makers."[103] For all of their obvious flaws, these early noncommercial communities are worth remembering because they have something to offer to new, progressive, intersectional creators. Breaking down the assumption of computer software as commercial, and showing that the personal computer has always provided the possibility for

[103] Ruberg, *Queer*, 12.

DIY creativity, opens the door for new noncommercial creative products and spaces. Rather than merely valorizing coding as individual artistic expression, this study brings into view a host of alternative practices: collaborative development and copying as *learning*, resistance to copy protection in the name of access, and all of the various socialities involved in program sharing and pre-Internet circulation.[104] The past may have been insufficient to derail the commercialization of computing culture, but it demonstrates the possibility of resistance-and-other-doing *in the tech space*, thereby offering an imaginative resource for those seeking to situate technology with a better, more equitable future.

2.4 Excursus: Why Games, and How Do We Study Them?

Computer gaming did not start commercially, nor were early games the subject of serious consideration. The creators of *Spacewar!* (1962)—arguably the first piece of computer gaming software—made it as a mere demonstration piece, and regarded it as "a combination grade-B movie and $120,000 toy."[105] By the mid-1970's, mainframe games circulating across the ARPANET (*Spacewar!* included) were both widely-played and regarded by system administrators

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[104] Paul Gilroy highlights the inadequacy of a focus on artistic expression as "the means toward booth individual self-fashioning and communal liberation," especially for descendants of slavery (Paul Gilroy, *The Black Atlantic: Modernity and Double Consciousness* [London: Verso, 1993]: 40). The intention here is to articulate a kind of doing outside of the limited scope of prior analyses of labor, which often artificially situate the art outside of abstract labor. See Terranova, *Network*, 74; Tiziana Terranova, "Free Labor: Producing Culture for the Digital Economy," *Social Text* 63, 18, no. 2 (2000): 35; Ryan, *Making*, 13-14, 33-47.

[105] Levy, *Hackers*, 49.

as “the single greatest waste of CPU cycles in history.”[106] It was only when these games became commercial successes, and a vital segment of the booming personal software market of the late 1970’s to early 1980’s, that they gained credibility in both the dominant culture and tech industry discourse. Gaming software was soon subjected to the same market logic as other software, including the “paradox of motivation.” Of course, gaming history *should* have proven this “paradox” fallacious, as game software clearly preceded the commercial market—but it didn’t. Instead, games became the quintessential product of late-capitalism, becoming entangled with neoliberal rhetorics of personal freedom and consumer choice, entrepreneurship and post-industrial digital production. This was the commercialist paradigm at work, bringing all aspects of computing culture into alignment with the capitalist marketplace, and shaping the histories that would be written of the period.

By recovering the noncommercial history of gaming software, and the practices of creativity, collaboration, and exchange at work in these amateur groups, we can decouple gaming from neoliberal capitalism. When considered in this light, it is clear that tech use is rife with activity that does not fit into the production-consumption cycles of the capitalist marketplace—what John Holloway calls “other-doing.” For this reason, I find it incredibly important to keep a broad conception of the noncommercial, one which accounts for the range of designer intentions, product lifecycles, and creative ethics that existed historically. Alternatives like these are essential in imaging better futures, as they reveal previous cracks in the capitalist totality, and the plurality of possibilities that can exist outside of the singular, unified market system. Seeing what has been

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[106] UNIX co-creator Dennis Ritchie referring to the game *Rogue* (Craddock, *Dungeon*, 62); Stewart Brand, “Spacewar: Fanatic Life and Symbolic Death Among the Computer Bums,” *Rolling Stone* 7 December 1972.

possible provides resources for imagination, allowing new kinds of noncommercial creativity and other forms of resistance to take shape. More than perhaps any other sphere, it is critical that these possibilities appear in technology, especially when Big Tech and the state seek to monopolize technological agency. What gaming software, and *noncommercial* software especially, provides is a unique confluence of technology, creativity, and play. What follows in this project is the history of a persistent impulse, the desire to create, collaborate, and share, even when the moments of creativity will be short-lived, or doomed to "fail" (by commercial standards). Like the editors of *Softline* magazine, I "believe entertainment software is a light subject worthy of weighty consideration."[107]

[107] Al Tommervik, Margot Comstock Tommervik, Ken Williams, Andrew Christie, Kurt Wahlner, "A New Policy," *Softline* 2, no. 1 (Sept. 1982): 2.

3.0 "What I Need is a USER's Magazine": The Changing Conception of Amateur Production in Software Magazine Discourse

True to its name, *Hardcore Computing* pulled no punches in its 1981 first issue. Adopting a confrontational tone in his opening editorial, publisher Chuck Haight decried the failings of Apple II user magazines and their increasingly commercial perspective. The problem, he argued, was about more than just ad-supported publishing:

> I became aware of a raging, silent battle between Apple-users and the magazines. The users were accusing the magazines of censorship, of hypocritically announcing their object to be a magazine for Apple-users while encouraging the suppression of information…. The magazines, on the other hand, were obliquely accusing the Apple-users of being pirates and thieves. It was then that I realized that most of the magazines had to take a stance against consumer "piracy" because those magazines were actually software houses themselves, or were financially dependent on other software houses. It would be suicide for them to stand up for the Apple-users.[1]

The tension that Haight identifies here—between a community-oriented approach that foregrounds the user and an industry-centered commercial one—is indicative of the major shift in computer-related publishing between 1977 and 1984. Like the computer industry itself, magazines devoted to new consumer platforms and software expanded rapidly in this period, in diversity, profits, and page count.[2] By 1983, a field once comprised of newsletters and amateurish, subscription-supported publications (like *People's Computer Company* or the *Homebrew Computer Club Newsletter*) was now dominated by glossy, corporate-owned magazines, increasingly stuffed with

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[1] Chuck Haight, "What I Need is a USER's Magazine," *Hardcore Computing* 1, no. 1 (1981): 2.

[2] Including a range of what were then called "microcomputers," "home computers," and/or "personal computers," depending on the platform. See 2.0 footnote 1 (page 17) for more on the distinctions.

hundreds of pages of advertisements. Thus, what Haight observed was the resultant shift in focus as the content of computer magazines grew more commercialized, with less focus on sharing (of information, tips, programs) and more on shaping and refining a consumer audience for the computer industry.

Early home computing was surrounded by a massive print-media-based discursive apparatus throughout the late 1970's and early 1980's, such that computer use during the period is inextricable from this context. Various publications, especially newsletters and magazines, performed a number of essential functions for the nascent computer culture. The magazines act as paratext for specific technological communities, as Mia Consalvo suggests in her own study of gaming magazines in post-Crash videogame culture.[3] Former *BYTE* magazine editor Carl Helmers identifies such a role in 1984's *Fire in the Valley*: "the purposes of the early magazines [are] economic, educational, and social. The magazines defined a market, spread important news, and helped hobbyists meet."[4] In effect, early computer magazines performed the same functions as computer clubs, albeit with the circulation capabilities of print media, so it is perhaps no surprise that the earliest magazines began as club newsletters for hobbyists. These publications tended to emphasize the educational aspect, helping users to understand what micro- and home computers were for, and what they were capable of doing—sometimes going so far as helping new users become programmers.[5] Laine Nooney, Kevin Driscoll, and Kera Allen emphasize both the

[3] Consalvo, *Cheating*, 18-39.

[4] Freiberger and Swaine, *Fire*, 160.

[5] As *Creative Computing* founder David Ahl explained to the Associated Press, "Someone new to the field still has the same need for basic information. They have to learn the rudiments of logically analyzing a problem. They

educational and the social functions of magazines, asserting that, in addition to teaching computer literacy and offering documentation, magazines provided "a sense of socialization, especially for microcomputer owners living far from user groups or retailers."[6] Furthermore, at times the purpose of the writing was not primarily audience-focused, nor related to financial benefit. As Chris Kelty writes, "When they aren't programming, and sometimes when they are, many hackers evince an affinity for proposing explanations—cultural, psychological, and quasi-scientific—for their own behavior," and certainly many programmers contributed to the print discourse of the late 1970's and early 1980's as a means of demonstrating their own technological knowledge.[7] Beyond the simple exchange of information, magazines also served a larger, *cultural* function for the growing base of computer users. In his extensive work on U.K. computer magazines, Graeme Kirkpatrick examines the construction of the "gamer" through Pierre Bourdieu's notion of the field, arguing that magazines function to define, reinforce, and refine specific roles and identities within the culture.[8] Though slightly earlier and on the other side of the Atlantic, American computer

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have to know about the various components of a computer" (Skip Wollenberg, "Small Computer Boom Brings Boom in Computer Magazines," *Associated Press- Business News,* Sept. 24, 1983).

[6] Nooney, Driscoll, and Allen, "From Programming," 109; Publisher David Bunnell asserted precisely this effect in 1984, writing, "More importantly, magazines have helped to create whole communities of personal computer users. By subscribing to *Creative Computing* you automatically identify yourself with thousands of other personal computer users who have a similar orientation to computing" (David Bunnell, "The Role of Magazines in Personal Computing," *Creative Computing* 10, no. 11 [Nov. 1984]: 153).

[7] Kelty, "Culture's," 502.

[8] Graeme Kirkpatrick, "Constitutive Tensions of Gaming's Field: UK Gaming Magazines and the Formation of Gaming Culture 1981-1995," *International Journal of Computer Game Research* 12, no. 1 (2012): 453-68; Kirkpatrick, *Computer Games,* 70-97; Graeme Kirkpatrick, "Making Games Normal: Computer Discourse in the

magazines acted in a similar fashion, shaping home and personal computing alongside the rapidly growing computer industry, effectively entrenching a commercial cultural paradigm.

Despite the massive growth of the computer magazine industry throughout the period, there has been little scholarly consideration of computer magazines between the hobbyist-dominated late 1970's and the software industry "shakeout" of 1984.[9] Certainly, much attention has been devoted to the role of print media in 1970's hobbyist computing. Steven Levy, John Markoff, and Fred Turner have all examined the countercultural roots of the hobbyists, tracing the influence of Brand's *Whole Earth Catalog* and Nelson's *Computer Lib* on groups like the People's Computer Company.[10] Others have examined the historical function of hobbyist newsletters, including Kevin Driscoll on the *PCC*, Elizabeth Petrick on the Homebrew Computer Club, Kevin Gotkin on the Amateur Computer Society, and Joy Lisi Rankin *Dr. Dobbs Journal of Computer Calisthenics and Orthodontia*, all of which served as crucial discursive resources for reconciling conflicts within the community.[11] Although these publications would continue in some form into the 1980's, hardware hobbyists were displaced from the center of computing culture after the turn of the decade, when home computing and software took hold as mass-market, consumer industries, with

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1980s," *New Media & Society* 18, no. 8 (2016): 1439-1454; Graeme Kirkpatrick, "How Gaming Became Sexist: A Study of UK Gaming Magazines 1981-1995," *Media, Culture & Society* 39, no. 4 (2017): 453-468.

[9] Outside of the 2020 Nooney/Driscoll/Allen article, which likewise emphasizes that the role of computer magazines in the 1970's and 1980's "underexplored" (Nooney, Driscoll, and Allen, "From Programming," 110).

[10] Levy, *Hackers*; John Markoff, *What the Dormouse Said: How the 60s Counterculture Shaped the Personal Computer Industry* (New York: Viking Penguin, 2005); Turner, *From Counterculture*.

[11] Driscoll, "Professional," 257-83; Petrick, "Imagining," 27-39; Rankin, *A People's*, 234-238; Gotkin, "When Computers," 4-14.

a much more diverse set of users. Scholars in game studies, including Kirkpatrick and Consalvo, have done well in examining the function of magazines within the consumer gaming industry. Yet this work focuses almost entirely on the moment *after* the videogame "crash" of late 1983 and the software "shakeout" of 1984, which solidified the distinction between videogame consoles and personal computers, between "gamers" and computer users.[12] Perhaps due to this divide, coupled with the lack of a single, comprehensive history of computer publications, the period between 1980 and the 1984 software industry shakeout remains heretofore underappreciated.[13]

Scholars have only recently begun to recognize this historical gap. In their 2020 examination of *Softalk* magazine, Nooney, Driscoll, and Allen pose this as "an understudied period in the history of computing," the prevailing historiography of which uses "outlier individuals and organizations such as Bill Gates and the Homebrew Computer Club [to] stand in for the much more diverse population of [computer owners]."[14] Countering this prevailing trend is crucial to my own project, insofar as the place of noncommercial software and practices in computing culture changed dramatically within the early home computing period. For hobbyist publications, the lack of a defined consumer industry meant that coding and sharing programs were implicitly noncommercial endeavors. Indeed, the very *possibility* of commercializing software was subject

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[12] Kirkpatrick describes the cultural work required to construct "gamer" as a discrete category (Kirkpatrick, *Computer Games*, 70-97. As a rule, there were very few computer game-specific magazines in the period—those that existed include *Computer Gaming World*, *Softline*, and *Electronic Games*, all of which launched at the end of 1981 (Russell Sipe, "The Greatest Story Ever Told," *Computer Gaming World* no. 50 [Aug. 1988]: 6-7). See also Campbell-Kelly, *From Airline*, 279.

[13] "The Shakeout in Software: It's Already Here," *Businessweek*, August 20, 1984, 102–4.

[14] Nooney, Driscoll, and Allen, "From Programming," 124.

to debate in the pages of early publications, as Nicholas A. John, Petrick, and Driscoll have explored at length.[15] The early 1980's acted as a crucial moment of transition. The financial successes of the industry, both real and perceived, were driven by (and in turn fueled) a massive influx of venture capital, which was made all the more attractive by decreases in capital gains taxes (in 1978 and 1981).[16] But the commercial paradigm really took hold *discursively*, in the pages of computer magazines, as the economic function of these publications (articulated by Carl Helmers, above) came to dominate the social functions, to bring them in line with the industry. In many ways, microcomputing became the poster child for Reagan's "age of the entrepreneur," and computer magazines reflected this in their own industry.[17] Noncommercial software creation and dissemination, however, did not *disappear* when the industry took shape; it simply took on new cultural and social meanings, with corporate interests and amateurs alike working to redefine their products and practices in the pages of computer magazines. Print media brought together computer clubs and industry insiders, amateurs and entrepreneurs, computer game programs and business-focused application software, in and across a range of different titles. As such, the changing depictions of noncommercial software in the computer magazines of the late 1970's to early 1980's are essential to understanding the larger shifts in cultural practice, as dictated by commercialization.

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[15] Nicholas A. John, "File Sharing and the History of Computing: Or, Why File Sharing is Called 'File Sharing,'" *Critical Studies in Media Communication* 31, no. 3 (2014): 198-211.

[16] Due to the Revenue Act of 1978 and the Economic Recovery Tax Act of 1981 (ERTA) (Jenkins and Eckert, "Right Turn," 307-338); for the causal link between policy and venture capital in microcomputer tech, see Carlston, *Software*, 191-192.

[17] Reagan, "Address." See 2.1 footnote 41 (page 31) for details.

In this chapter, I trace the changing place of noncommercial creativity within computing culture, as it appeared within the computer magazines of the 1980's. I begin on the macro level, examining how computer magazines developed from amateur newsletters into a distinct segment of the magazine publishing industry. In some ways this was the story of a bubble inflating and then bursting: development may have been nonlinear and uneven, but led nevertheless to the dominance of a corporate-owned, ad-supported system. This transformation poses a conceptual question: when does a newsletter become a magazine, and what does this signify in terms of purpose, composition, and audience? To answer this, I look to the level of content, by analyzing the presence and quantity of noncommercial features—like type-in programs, features on computer clubs, and other legacy components from earlier newsletters. I then turn to the *representation* of noncommercial software itself, both in how it is described (as freeware, shareware, public domain software) and when it was marked as deviant, as in discussions of piracy. In each, there is a clear effort to slowly integrate previously noncommercial practices into the industry's logic of consumers and producers. Finally, as the computer magazine segment changed, alongside the overall commercialization of computing culture, it created a series of tensions between computer industry insiders, magazine staff, and lay computer users. As such, I explicate the moments when these tensions came to the fore in the discourse, as a series of crises. Coverage of the 1983 BYTE-centered crisis of journalistic ethics in computer magazines, like the earlier piracy crisis, only served to reinforce the commercial paradigm. By the time the magazine bubble burst in 1984, leading publications (notably BYTE) had simply doubled-down on their function as marketing, kept alive through copious ad support, with little consideration for the collaborative sociality which had characterized early home computing culture.

My analysis draws upon a wide-ranging archive of computer magazines from throughout the period. To compile this textual archive, I have utilized a number of freely-accessible collections, including the Internet Archive's "Computer Magazine Archive" and the digital collections of the Computer History Museum, through which I have accessed nearly a decade of issues of *BYTE*, *Creative Computing*, *PCC*, *Softalk*, and more. While scans of magazine issues have been made searchable, by the archives and/or my own OCR software, research for this chapter has required a mix of textual analysis and macro-level examination of page layouts, compositions, and front matter. Even this has required prioritization, a consideration of which magazines and stretches of issues would be sufficient in unpacking this history. First and foremost, circulation numbers only tell a part of the story. While these are often used to judge popularity and influence, the fact is that the computer user base generally increased over these years, and with it, readership. Prolonged success and high circulation numbers often indicate fortuitous timing of capital investment and corporate ownership rather than true influence: very few contemporaneous sources speak well of *Personal Computing*, for example, yet its number far outstripped the small yet impactful *Softside*. This study could not be fully comprehensive—there were more than 200 hundred different computer magazines circa 1984, after all. To reconstruct a representative picture of the history of computer magazines, I have analyzed a mixture of publications, attending to the biggest (see: *BYTE*, *PC Magazine*) alongside those with notable trajectories (*Softalk*), important interventions (*Hardcore Computing*), and those which industry histories would mark as "failures" (also the *Softalk* family). Again, because this was a period of rapid expansion and radical transformation, only a strategic, wide breadth of scope can keep this in view.

3.1 Stop the Presses: The Boom and Bust of Computer Magazines

In late 1983, the mainstream press raved about the success of computer magazines as a segment of magazine publishing. The *Associated Press'* business news hailed a "Boom in Computer Magazines" in September of that year, and described "a crowded arena. There are more than 130… personal computer magazines and new ones are born every week."[18] The *New York Times'* own "Boom in Computer Magazines" article, from November of the same year, deemed computer publishing "the fastest-growing end of a magazine industry that has flourished in recent years," citing the "more than 200 computer magazine titles available."[19] By the next September, however, the *New York Times* decried "The Computer Magazine Glut," writing, "the computer magazine industry is in the midst of a shakeout that has already eliminated several publications and is likely to wipe out all out the strongest within a year."[20] Insiders struggled to explain how a market segment seemingly on the upswing had collapsed so dramatically. Writers and publishers posited several explanations in a December 1984 *Infoworld* feature, blaming poor management, a lack of necessary venture capital, and machine-specific publications (notably those focused on the failed IBM PCjr).[21] Others, including the *Infoworld* author himself, highlighted the lack of journalistic standards in the magazines, suggesting that many are guilty of "writing only positive

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[18] Wollenberg, "Small."

[19] "Boom in Computer Magazines," *New York Times*, Nov. 9, 1983, D1, D26.

[20] Eric Berg, "The Computer Magazine Glut," *New York Times*, Sept. 8, 1984, 31.

[21] Jim Bartimo, "Magazines Woo Users: Publications Can Live or Die with the Machines They Cover," *Infoworld*, Dec. 10, 1984, 35-36.

stories or pandering to advertisers with glowing editorials."[22] While all of these are true in part, it is impossible to discern a cause of the crash by focusing only on 1983-1984. Instead, this is merely the bursting of a decade-long bubble, the culmination of a process of rapid expansion, as computer publications evolved from amateurish newsletters to an extremely profitable extension of corporate publishing.

The history of computer magazines begins not with for-profit publications, but with amateur computer clubs and user groups, which formed around the new microcomputers of the 1970's and grew increasingly popular into the next decade. Computer users had developed organizations for sharing knowledge before this period, including SHARE, a collaborative group formed by IBM owners in 1955, and the Amateur Computer Society, which formed in 1966 around experimental minicomputing.[23] But it was the hardware hobbyist clubs in Silicon Valley, notably the PCC and the Homebrew Computer Club, which set the example for clubs devoted to amateurism in computing, by giving users the chance to meet face-to-face, on a regular schedule, to discuss computing topics or problems (as well as exchange software). Despite a common interest in fostering collaboration and the sharing of computing knowledge, subsequent "user groups" and "computer clubs" had taken on slightly different connotations by 1980. As Val Golding of the user group A.P.P.L.E. explained, user groups were "groups where now the primary accent is on software and the exchange of information more closely allied to programming and operation,"

[22] Bartimo, "Magazines," 36.

[23] Akera, "Voluntarism," 710-736; Gotkin, "When Computers," 4-14.

whereas computer clubs often took on "a wider range of interest, i.e., not devoted to a specific brand or type of computer."[24]

Regardless of how they were defined (and certainly each club articulated its mission differently), it is clear that these groups flourished during the early period of home computing. There is no definitive accounting of the number of user groups; *Infoworld*'s Jay Lucas, for example, once asserted "I am not going to try to give a national list of these groups. I doubt that it is possible," in large part due to their fragmentary nature and platform-specificity.[25] Nevertheless, sources indicate that such organizations were plentiful and widespread. The International Apple Core (IAC), an attempt to create an overarching governing body for Apple-specific user groups, estimated that there were 50-100 Apple groups alone at the time of its 1980 founding, most of which were fully independent.[26] By fall of the next year, the IAC had 201 affiliated clubs from 44 states (plus DC and Guam) in the United States, plus another 45 clubs from 23 countries, spanning every continent but Antarctica.[27] While the Apple may have been particularly open to computer clubs, the were also groups devoted to the Commodore (PET, VIC-20, 64), the TRS-80, CP/M,

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[24] A.P.P.L.E. being the Apple PugetSound Program Library Exchange user group. Val Golding, "What is a User Group," *Apple Orchard* 1, no. 1 (March-April 1980): 7.

[25] Jay Lucas, "Freeware Lifeline: Honing in on User Group Meetings," *Infoworld* 4, no. 48 (Dec. 6, 1982): 92-93.

[26] Golding, "What is," 7.

[27] "International Apple Core Member Club Roster," *Apple Orchard* 2, no. 3 (Fall 1981): 72-81.

the IBM-PC, and more, which continued well into the mid-1980's.[28] These groups, it should be noted, were largely male-dominated, especially in their leadership: of the 201 clubs listed in the 1980 roster, only five club presidents had apparently female names, though two others listed club secretaries with female-coded names. As will be shown, the gendered makeup of clubs was evident in their printed communications, and would continue in subsequent magazine publishing.

From the outset, computer clubs were aware of the limitations of face-to-face communication and in-person meetings, which limited both their scope and longevity. A common solution was to create print newsletters, many of which were short and visually simplistic, little more than organ of communication, run by the organization and filled with contributions from club members.[29] Yet the term "newsletter" fails to capture the complex history of these publications, and is surprisingly difficult to historicize within 1970's computing culture. During the period, for example, *People's Computer Company* was remembered as "the first and only computing magazine when it started in 1972," and it has maintained outsized presence in histories of computing since.[30] Though not a total mischaracterization, the term "magazine" recalls the glossy, monthly periodicals which had become prominent in the early to mid-1980's, whereas *PCC* bore

[28] The IAC's guide for starting a user group provides a glimpse of the standard features of user groups were clear organization (with bylaws), some publicity, a software library, as well as a newsletter (Ken Silverman, "President's Message," *Apple Orchard* 2, no. 3 [Fall 1981]: 11).

[29] As in John McMillian, "'Our Founder the Mimeograph': Participatory Democracy in Students for Democratic Society's Print Culture," *Journal for the Study of Radicalism* 2, no. 2 (2009): 85-110; see 5.0 "Noncommercial Distribution Welcomed" for more on a specific computing newsletter, the *Eamon Adventurer's Log*.

[30] "Recreational Computing Back Issues," *Compute!* no. 28 (Sept. 1982): 97.

far more in common with a newsletter, having in fact begun *as a club newsletter*.[31] Still other "newsletters" were actually published by early commercial ventures, like MITS' *Computer Notes* or DEC's *EDU*, a means by which commercial interests could communicate with consumers.[32]

Even this differentiation between company and amateur newsletters fails to hold up to scrutiny when one considers these publications' role as forerunners to commercial magazines. Nowhere is the link to amateur newsletters more explicit than *BYTE* magazine, which was founded in 1975 by longtime ham radio enthusiast Wayne Green.[33] Green had been publishing his own radio publications for years, including *Amateur Radio Frontiers* (1951) and *73 Amateur Radio* (1960), and his efforts to computerize *73*'s circulation led him to computer club newsletters, whose

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[31] Perhaps for this reason, there is no real consensus term for *PCC*. *Compute!* marks it (retrospectively) as a magazine, and certainly it became one by the *Recreational Computing* days; yet other historical sources from the mid-1980's, like Freiberger and Swaine's *Fire in the Valley*, and Levy's *Hackers*, alternately use the term "tabloid" or "newsletter," effectively marking its informal composition and tone. In this same sense, former *BYTE* editor Carl Helmers and *Personal Computing* founder David Bunnell suggest that *Creative Computing* was the *first* computer magazine (with *BYTE* second), which likewise positions *PCC* as a newsletter (Carl Helmers, "Ah, Progress," *Creative Computing* 10, no. 11 [Nov. 1984]: 156; Bunnell, "The Role," 146).

[32] One of the earliest amateur newsletters was from the Amateur Computer Society (ACS), though much of its run (1966-1976) came before the *PCC*/hobbyist microcomputing era. See Stephen Gray, "The Early Days of Personal Computers," *Creative Computing* 10, no. 11 (Nov. 1984): 6-14; Sol Libes, "The First Ten Years of Personal Computing," *BYTE* 3, no.7 (July 1978): 64-71; Gotkin, "When Computers," 4-14.

[33] Green famously put the magazine stock in his (ex-)wife's name, and so lost control of it almost immediately. He would go on to found a number of subsequent magazines, including *Kilobaud, Desktop Computing, 80 Micro,* and more (Michael Tomczyk, *The Home Computer Wars: An Insider's Account of Commodore and Jack Tramiel* [Greensboro, NC: Compute! Publications Inc, 1984], 219).

accessibility inspired his beginner-focused mission for *BYTE*.[34] For an editor, he turned to Carl Helmers, an enthusiast who self-published *Experimenter's Computer Systems*, a 20-25 page newsletter detailing his own hobbyist tinkering to an audience of about three hundred.[35] Seeking a readership for the new magazine, they turned to both amateur newsletters *and* commercial mailing lists, with companies like MITS providing contact information that accounted for an estimated 20-25 percent of early subscribers.[36]

Other magazine founders began by writing for company newsletters, before transitioning to their own publications. *Creative Computing*'s David Ahl had started the education-focused *EDU* for Digital Equipment Corporation (DEC) in spring of 1971. As he recounts, "*EDU* flourished and grew into a 48-plus page magazine," reaching a circulation of 20,000 within eighteen months, before the company cancelled it in 1973.[37] Around the same time, David Bunnell, who would later found *Personal Computing* (as well as *PC Magazine* and *PC World*), served as editor for MITS' *Computer Notes*, a company newsletter devoted to the Altair, the ur-platform of 1970's hobbyist computing.[38] When starting their own magazines—Ahl in 1974 and Bunnell in 1976—each took a rather different approach. On the one hand, Bunnell's *Personal Computing* was a slick, ad-

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[34] Tomczyk, *Home*, 95, 219; Freiberger and Swaine, *Fire*, 159.

[35] For which he placed classified ads in *Popular Electronics* (Helmers, "Ah, Progress" 156); Wayne Green, "How BYTE Started," *BYTE* 1, no. 1 (Sept. 1975): 9; Freiberger and Swaine, *Fire*, 159.

[36] Freiberger and Swaine, *Fire*, 159.

[37] David Ahl, "Birth of A Magazine," in *The Best of Creative Computing Vol. I*, ed. David Ahl (Morristown, NJ: Creative Computing Press, 1976): 2-3; John J. Anderson, "David Tells Ahl—The History of *Creative Computing*," *Creative Computing* 10, no. 11 (Nov. 1984): 70-72.

[38] Bunnell, "Role," 146-153; Freiberger and Swaine, *Fire*, 33, 53, 178.

supported magazine intended for mass appeal, in line with the commercial model.[39] Ahl, on the other hand, attempted to build his new, education-focused computer magazine as a *nonprofit*. Writing in the introduction to *The Best of Creative Computing*, he describes seeking out funding from the National Science Foundation and thirty-six other foundations, with the endorsement of Senator Edward Brooke (R- MA) and dozens of educators. In the end, he writes, "I decided to gut it alone on a shoestring budget out of my own pocket."[40] Though Ahl's attempt at nonprofit funding failed, his noncommercial orientation nevertheless manifested in his magazine, which placed its focus on amateur users. Considered together, these examples suggest that there was a *general* influence of newsletters, both company-based and amateur, on computer magazines. But experience with a specific type of newsletter was not deterministic—work with company newsletters did not necessitate a commercial approach to a magazine, any more than previous work in hobbyist newsletters determined an amateur-focused outcome.

In terms of form and content, the earliest home computer magazines were more or less indistinguishable from newsletters. Again, *PCC* provides a telling example. Industry insiders in mid-1980's struggled to name the *first* computer magazine in part because they were unsure how to categorize *PCC*. *Compute!*, for example, marks *PCC* as the first magazine in no uncertain terms, but this was motivated by a desire to sell back issues (after having acquired *PCC* in 1981).[41] Former *BYTE* editor Carl Helmers and *Personal Computing* founder David Bunnell describe

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[39] Freiberger and Swaine, *Fire*, 33, 53, 178; David Bunnell, "Memo from the Publisher," *Personal Computing* 1, no. 1 (Jan./Feb. 1977): 6-7.

[40] Ahl, "Birth," 2.

[41] Robert C. Lock, "Editor's Notes," *Compute!* no. 18 (Nov. 1981): 4; "Recreational Computing Back Issues," 97.

Creative Computing as the first computer magazine (with *BYTE* second), thereby positioning the older *PCC* as mere newsletter.[42] Even historical sources from the period struggled to define the publication—Freiberger and Swaine's *Fire in the Valley*, for example, alternately uses the terms "tabloid" and "newsletter."[43] Such confusion stems from the fact that, for much of its existence, *PCC* did not *look* like a glossy magazine. It was printed on newsprint until the May-June 1977 issue, and included a mix of different typefaces and font sizes, many hand-drawn illustration, and handwritten text (figure 3.1, left).[44] With the low-quality paper, photocopied look, and irreverent tone, these early issues feel like an amateur newsletter, a fact underscored by the naming convention, which posited it as the communication organ for the larger *PCC* organization.[45] If these formal characteristics were disqualifying of being called a magazine, then neither *Dr. Dobbs* nor *Creative Computing* could be considered as such. All of these early publications were of a similar quality, and remembered for eclectic appearance and tonal idiosyncrasies.

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[42] Helmers, "Ah, Progress," 156; Bunnell, "The Role," 146.

[43] Freiberger and Swaine, *Fire*, 101, 158; Levy uses the term "tabloid" as well (Levy, *Hackers*, 169).

[44] Which coincided with the publication's first name change, to *People's Computers* ("Artifact Details: People's Computer Company; People's Computers; Recreational Computing," Computer History Museum, https://www.computerhistory.org/collections/catalog/102661095); *People's Computer Company* 1, no. 1 (Oct. 1972); *People's Computers* 5, no. 6 (May-June 1977).

[45] Freiberger and Swaine, *Fire*, 101.

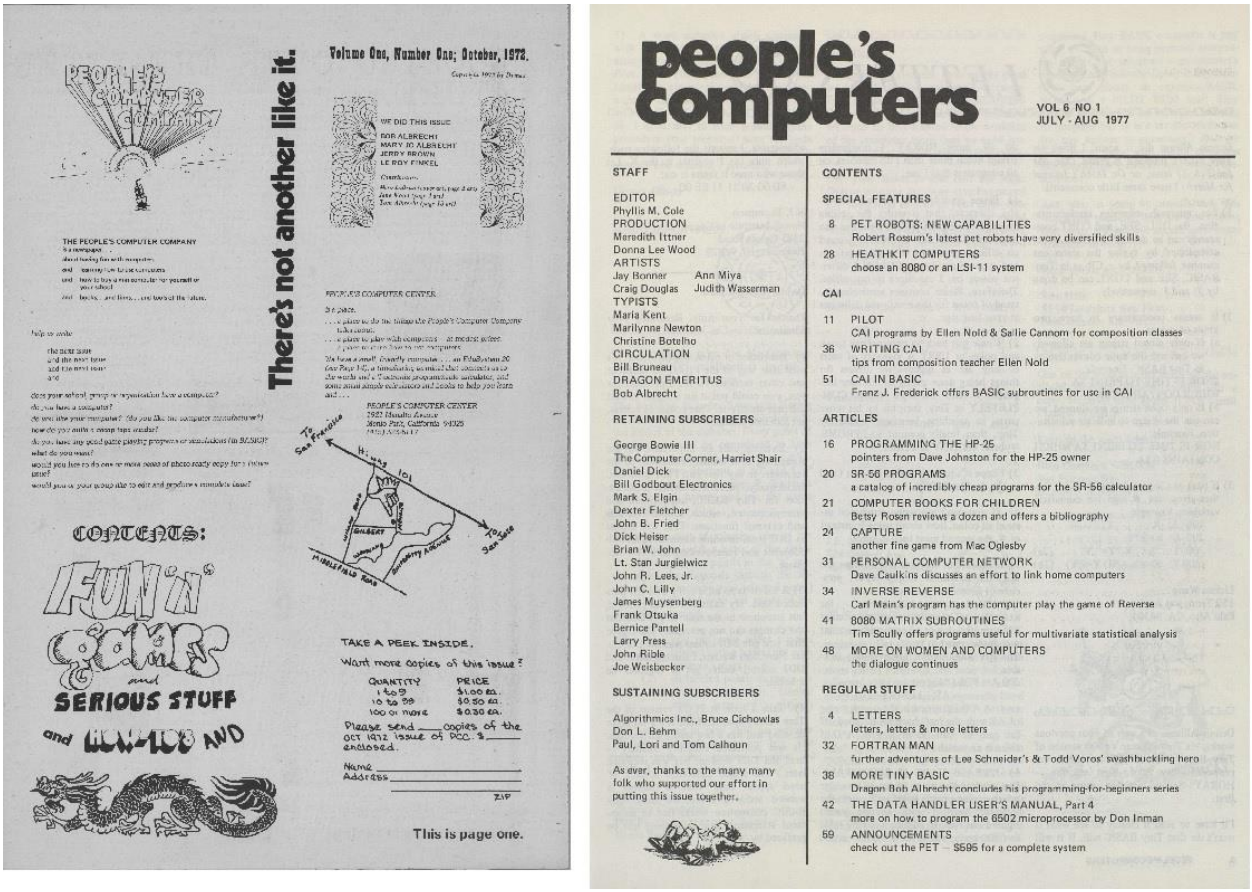

Figure 3.1: People's Computer Company 1, no. 1 (Oct. 1972) vs. People's Computers 6, no. 1 (July-Aug. 1977)

PCC's gradual transformation throughout the decade is further indicative of the increasing professionalization of computer magazines. Only in its fifth volume (1976-1977) did *PCC* begin to run a simple table of contents and staff listing, and it took a year of experimenting with layouts and headers before a standard format took hold. The May-June 1977 rebrand to *People's Computers* established the use of a graphic cover, magazine-style front matter (including publishing/copyright information), and table of contents, as well as a uniform font and better printing quality (figure 3.1, right).[46] Most of the same features remained—user letters, essays, type-in programs, and reviews—but these were increasingly solidified into distinct sections. Such

[46] *People's Computers* 5, no. 6 (May-June 1977).

a trend was not unique to *PCC*. Although *Creative Computing* had used graphic covers and a publishing information/table of contents since its inception, the layouts and fonts became less eclectic in its third volume (1977).[47] By the September-October 1977 issue, the table of contents was refined further, with the features clearly segmented into types (instead of listed chronologically), divided by bold, blue subheadings and matching divider bars.[48] Even *BYTE* shows a similar trajectory. Its initial style was less eclectic and more consciously technical, with text-heavy covers, a crisp, three-sectioned table of contents (with a tiny block of publishing info), and tight columns of relatively uniform text (figure 3.2).[49] The magazine grew increasingly more colorful throughout the first volume (1975-1976), with fully-illustrated covers and a table of contents featuring divider bars and colored subheadings.[50] By later volumes, it carried these features over into a professional aesthetic more in keeping with mass-market magazines of the period, even including the McGraw-Hill logo in its table of contents header following its eventual corporate acquisition (figure 3.3). In each case, these magazines retained largely the same types of content, thus defining things like user letters and reviews as essential features of the computer magazine form, despite their newsletter origins. But the visual grammar began to distinguish computer magazines *as magazines*, with the clean uniformity commonly associated with glossy, mainstream publications.

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[47] *Creative Computing* 3, no. 1 (Jan.-Feb. 1977).

[48] *Creative Computing* 3, no. 5 (Sept.-Oct. 1977): 3.

[49] *BYTE* 1, no. 1 (Sept. 1975).

[50] For a time, the divider bars were arrows, arranged to look like the axes of a coordinate system (added in *BYTE* 1, no. 9 [May 1976]; color added in *BYTE* 1, no. 13 [Sept. 1976]).

Figure 3.2: BYTE 1, no. 1 (Sept. 1975)

Figure 3.3: BYTE 5, no. 12 (Dec. 1980)

As the visual style of magazines took shape, so too did the distinctly gendered character of their composition. Feminists, as Judy Wajcman writes, have long understood "technology as a culture that expresses and consolidates relations among men… [that] men's affinity with technology is integral to the constitution of subjectivity for both sexes."[51] Like computer clubs before them, magazines were not explicitly foreclosed to participation by women, but they nevertheless operated as a homosocial discursive space, shaping the culture around new computer platforms as a "boy's club."[52] Of course, the most commonly noted sexist element of computer magazines is in the advertisements, which were beginning to appear in magazines in the late 1970's. As early as Mary Catherine Ware and Mary Frances Stuck's 1985 study, media scholars have observed that men were depicted twice as often in ads, and, when women did appear, they regularly did so in passive roles, non-user roles, and as sex objects.[53] Further, as in the preceding

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[51] Wajcman, "Gender Politics," 710; this gendered understand has been largely true of computing culture as a whole, and magazines largely served to reinforce such a perspective.

[52] Scott Fabius Kiesling, "Homosocial Desire in Men's Talk: Balancing and Re-creating Cultural Discourses of Masculinity," *Language in Society* 34 (2005): 695.

[53] Stuck and Ware note that these "findings are very similar to more generalized results regarding media portrayals of women" during the period (Mary Catherine Ware and Mary Frances Stuck, "Sex-Role Messages vis-a-vis Microcomputer Use: A Look at the Pictures," *Sex Roles* 13, no. 3/4 [1985]: 205-214). Subsequent scholarship has shown sexist portrayals as a consistent feature in computer advertisements, specifically, in decades since: Zoë Sofia, "The Mythic Machine: Gendered Irrationalities and Computer Culture," in *Education/Technology/Power: Educational Computing As a Social Practice*, eds. Michael W. Apple and Hank Bromley (Albany: State University of New York Press, 1998): 30-53; Matthew Weinstein, "Computer Advertising and the Construction of Gender," in *Education/Technology/Power: Educational Computing As a Social Practice*, eds. Michael W. Apple and Hank Bromley (Albany: State University of New York Press, 1998): 86-101; Eva Turner and Fiona Hovenden, "How Are

computer clubs newsletters, men tended to be overrepresented in magazine leadership and contributor bylines throughout the pre-shakeout period.[54] In nearly every magazine, women appeared on staff, typically in production, as assistant editors, and in ad sales and subscription services. But even magazines with lots of women on staff ran features almost entirely from authors with apparently male names—in a representative example, just one of the thirty-five articles in the November 1981 issue of *Compute!* was from a female author, whereas in September 1982 it was one in forty-six (both featured one article co-authored by Louis and Helen Makoya).[55] As such, the official, often *technical* discourse of magazines was figured as a male space, even as woman

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We Seen? Images of Women in Computing Advertisements," in *Women in Computing*, eds. Rachel Lander and Alison Adam (Wiltshire, UK: Cromwell Press, 1997): 60–71; Nicola F. Johnson, Leonie Rowan, Julianne Lynch, "Constructions of Gender in Computer Magazine Advertisements: Confronting the Literature," *SIMILE: Studies in Media and Information Literacy Education* 6, no. 1 (2006): 1-10; Kirkpatrick, "How Gaming," 453-468.

[54] For example, the October 1980 issue of Washington Apple Pi's journal features a 9:2 ratio of men to women in the masthead, with the women filling the lower-level positions of Secretary (Dana Schwartz) and Associate Editor (Genevie Urban, who is said to have "womaned" the club's booth at the Mid-Atlantic Computer Show)("Officers," *Washington Apple Pi* 2, no. 10 [Oct. 1980]: 1). The same was true of the IAC itself, for which only 2 of the 35 officers in the Fall 1981 issue of its newsletter (*Apple Orchard*) bore female names—Publisher Patricia Miller and Ad Representative Marla Knauss (one, Production Manager Tymera Coen, was ambiguous). Notably, all of the technology and leadership roles, including SIGs and regional directorships, were male ("Apple Orchard," *Apple Orchard* 2, no. 3 [Fall 1981]: 4).

[55] "Table of Contents," *Compute!* no. 18 (Nov. 1981): 3; "Table of Contents," *Compute!* no. 28 (Sept. 1982): 5. For more examples, see *SoftSide* 2, no. 9 (June 1980), wherein women comprised the majority of the staff but *all* articles were from seemingly male authors; *Softline* 1, no. 1 (Sept. 1981), with no contributions from female writers despite a strong editorial presence.

put in much labor to make the publications a reality.[56] Beyond staff and contributors, reader letters also reveal a heavily gendered character. In their study of *Softalk*'s Open Discussion section, Nooney, Driscoll and Allen found that published letters "were overwhelmingly written by men. We classified approximately 85 percent of the letter writers as male, 7 percent as female, and 7 percent ambiguous. In an average issue of *Softalk*, just one or two letters would be from writers with female names. Ten issues featured none at all."[57] While not every magazine has received such granular analysis, all included some reader letter section, and the trend holds true across the field. Reader letters, like magazine articles themselves, appear to have been overwhelmingly written by men.

Perhaps *the* distinguishing feature of commercial magazines was the prevalence of advertisements, though advertising only gradually took hold in the legacy hobbyist publications. Predictably, *PCC* did not have ad space in its earliest volumes, outside of promotion for the People's Computer Company itself. It was only with the January 1979 rebrand to *Recreational Computing*, well after ad-supported publications (like *BYTE*) came to prominence, that *PCC* began to serve an ad-like function, with an "Announcements" section culling business news from press releases.[58] Two issues later, in May-June of 1979, the magazine finally started publishing

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[56] It should be noted that the *Softalk* family was somewhat better than its peers in this regard. It is no coincidence that the magazine was a passion project for Margot Comstock Tommervik, a writer by trade who started *Softalk* (with her then-husband Al Tommervik) using her own gameshow winnings, and remained Editor for the family of magazines until they folded in 1984 (Carlston, *Software*, 168-170).

[57] Nooney, Driscoll, and Allen, "From Programming," 113.

[58] LeRoy Finkel, "Announcements," *Recreational Computing* 7, no. 4 (Jan.-Feb. 1979): 59-63; note: this does not mean *fully* ad-supported, as most magazines drew both subscription fees and ad revenue.

advertisements, and in July-August listed contact information for its new Advertising Manager in a section of its masthead.[59] Having unequivocally began as a magazine, *Creative Computing* did run advertisements in its 1974 first issue—or rather, *an* advertisement, for the Wang System 2200 computer.[60] For its initial two volumes, *Creative* continued to run between one and three advertisements per issue, typically in the same position as the Wang ad, opposite the table of contents. The quality and limited number of these ads speaks to balance David Ahl had to strike: having been forced to self-fund *Creative*'s launch, capital was necessary, but not so much so that ads could be wholly unrelated to the magazine's educational mission.

Nevertheless, the quantity of ads in these publications cannot be attributed solely to editorial decision-making. Reflecting on the early years of *Creative Computing* in 1984, Adventure International's Scott Adams recalls, "In the Sept-Oct '76 issue, there were 98 pages; there were so few companies to advertise back then that there is not even an Advertiser's Index in that issue (the first Index appears in the Jan-Feb 1977 issue). There were fewer than 15 pages of ads, most of which were for *Creative Computing* itself."[61] As Adams suggests, there was a problem of availability, insofar as the microcomputer industry was still relatively small in 1977. The companies that existed were primarily focused on hardware, outside of a few consumer software successes like Micro-soft, and had only a limited user base.[62] In a retrospective editorial at the end

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[59] "Advertising," *Recreational Computing* 8, no. 1 (July-Aug. 1979): 2.

[60] "For 'Hands-on' Teaching, the Wang System 2200 is a Big Computer for a Small Price," advertisement, *Creative Computing* 1, no. 1 (Nov.-Dec. 1974): 6.

[61] Scott Adams, "Adventures in Personal Computing," *Creative Computing* 10, no. 11 (Nov. 1984): 114.

[62] The platforms which would launch the computer boom in earnest were released in 1977, including the Apple II, but uptake was gradual. Micro-soft (hyphenated here per original styling) had released Altair BASIC in

of 1977, Ahl explained the economic calculus behind *Creative*'s advertising policy, which had prevented a move from a bimonthly to a monthly schedule. He writes, "If we had become a monthly magazine, we would have had to put considerably more resources into soliciting advertising, since very few magazines can survive on subscription revenue alone…. [A]ll of our excess capital for at least the next nine to twelve months would have had to go into catering to, and soliciting, advertising."[63] In other words, advertising offered a monetary lifeline, but tracking down advertisers within the limited field of possibilities was, contradictorily, capital- and labor-intensive. So instead, Ahl determined to devote the same resources to improving the editorial quality of the magazine, in part by bringing on more full-time editorial staff than competing computer magazines. And this, he reasons, would lead to advertiser interest in its own right—"My belief is that, eventually, advertisers will discover that *Creative Computing* readers like the magazine for its editorial quality and therefore will advertise with us and one will follow the other."[64]

Ahl's gamble would pay off, though this success was less about advertisers recognizing superior content than historical coincidence, as the computer industry's dependence upon mail-order meant a need for ad space. Microcomputers themselves were sold via mail-order well before the development of computer magazines, as both MITS Altair 8800 and IMS' IMSAI 8080 were advertised for sale in *Popular Electronics* in 1975.[65] This early mail-order, however, functioned

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1975—it is remembered as an early commercial success, though relatively small compared to the 1980's software market.

[63] Ahl, "Editorial," 8.

[64] Ahl, "Editorial," 8.

[65] Littman, *Once*, 34; Levy, *Hackers*, 189.

like a "mirage," insofar as often only a prototype existed before advertising, and advance sales were used to finance production.[66] As Freiberger and Swaine note, "Buying by mail was like buying blind. People were sending checks in to companies they had never heard of to get products they could not be sure existed…. Products were commonly announced before they were even designed, let alone manufactured."[67] By 1977, microcomputer manufacturers had moved from selling kits (like the IMSAI or Altair) to selling complete, prepackaged systems, and so mail-order shifted from a speculative model to one of direct sales.[68] As the user base grew, so too did demand for software for new home computers. Yet there were only a handful of retail locations nationwide—even ComputerLand, whose franchise-model would dominate the computer retail landscape of the early 1980's, only opened its first franchise in February 1977.[69] Software creators were left with mail-order distribution, using computer magazines as a means to reach potential consumers. Programmers of gaming software in particular typically started in this way between 1977 and1980, selling via mail-order from back-bedrooms or garages, including nearly all of the

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[66] For problems with this model, especially for IMS, see Littman, *Once*, 40-43.

[67] Freiberger and Swaine, *Fire*, 157; in this way, such hardware recalls the later concept of "vaporware," developed in the 1980's too describe "software that disappears like mist before your eyes as its delivery date approaches," usually despite having received extensive funding (Carlston, *Software*, 228-29). These practices allowed for scams as well, such as those perpetrated by Norman Hunt (aka David Winthrop), who used computer ads for speculative machines to take customer money and never deliver a product (David Ahl, "The First Decade of Personal Computing," *Creative Computing* 10, no. 11 [Nov. 1984]: 40).

[68] Ahl, "First," 38.

[69] Slater, *Portraits,* 337.

leading publishers of the period: Broderbund, Adventure International, and On-Line Systems.[70] Thus, magazines and the software industry were mutually supportive. Computer magazines were a crucial resource for marketing, allowing nascent software publishers to thrive by connecting them to the user base (and vice versa).[71] At the same time, this satisfied the monetary needs of magazines like *Creative Computing*, which came to thrive during the period.

By the dawn of the 1980's, however, retail had caught up to computers and software as mass commodities, with ComputerLand alone grossing over $61 million (from over 100 stores) in 1981.[72] As retail grew more widespread, supported by a new and growing system of software publishers and commercial distributors, it displaced mail-order as the norm. Publishers and hardware manufacturers alike found themselves increasingly pushed toward traditional mass-marketing.[73] Products from storage media to game programs were marketed like any other commodity—as I.T.C. product manager Rodney Crisp told the *New York Times* in late 1978, "the ads are just like for soap suds or automobiles…. [W]e're advertising right to the consumer to

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[70] Carlston, *Software*, 160; Roe Adams III, "Exec: Adventure International: The Saga of Scott and Alexis Adams," *Softalk*, 3, no. 7 (March 1983): 59; Allan Tommervik, "Exec: On-Line Systems: Adventures in Programming," *Softalk* 1, no. 6 (Feb. 1981): 5; Levy, *Hackers*, 308-10.

[71] Having this power, some magazines even ran their own software libraries, including *Call-A.P.P.L.E.* and *SoftSide*, which, per former editor Mark Pelczarski, was viewed by its founder "as a promotional tool for his real business of selling software." Jimmy Maher, "The Magnificent Penguin," *The Digital Antiquarian*, Sept. 28, 2012, https://www.filfre.net/2012/09/the-magnificent-penguin/; Clardy, *Cyber*, 27.

[72] Littman, *Once*, 13; Slater, *Portraits*, 337.

[73] Levy quotes as prescription for success in software from 1982: "I can summarize what it takes in three words: marketing, marketing, marketing" (Levy, *Hackers*, 366); Carlston, *Software*, 130.

create a demand on retailers for our product."[74] As gaming software programmer Lance Micklus would write in 1981, it was all but impossible to succeed without advertising. He explains, "the microcomputer lends itself to basement operations. All too often, these produce great products from technical minds, but without the marketing to support these products, they will not be profitable."[75] Ads, therefore, were no longer about *selling* directly to customers, but they were all the more necessary, for differentiating from competitors, creating brand identity, and driving interested audiences to retailers.[76]

Computer magazines themselves were becoming big business as well. Into the first few years of the 1980's, computer magazine circulation continued to grow, and a wave of new publications came to prominence, including *Call A.P.P.L.E.* (1978), *Compute!* (1980), and *Softalk*

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[74] Note: ITC would become Verbatim shortly thereafter (William Bates, "The Floppy Disk Comes of Age," *New York Times* 10 December 1978). Levy uses a similar metaphor: "When computers are sold like toasters, programs will be sold like toothpaste" (Levy, *Hackers,* 366); as did then-Apple President Mike Markkula, who likens the personal computer industry to "grommet manufacturers and garment industry firms," differentiated only by the greater need for after-purchase service and support" (Allan Tommervik, "Exec Apple: New President Mike Markkula," *Softalk* 1, no. 10 (June 1981): 4-6, 62) and game programmer Lance Micklus, who suggests the primary difference between McDonald's hamburgers is that "the hungry customer comes in ready to order, in fact, he can't wait to order," whereas potential software customers must be *convinced* to buy (Lance Micklus, "My Side of the Page: Getting a Bit Serious – Part 2," *SoftSide* 30 [March 1981]: 30).

[75] Lance Micklus, "My Side of the Page: Getting A Bit Serious - Part 1," *SoftSide* 28 (Jan. 1981): 12-14.

[76] Software became a true "'commodity' market, where products have functions, where quality is comparable and forms the basis of competition" (Kelty, *Two Bits,* 151). On-Line Systems' Ken Williams took this a step further, likening game production to another industry: "Its now closest to making a movie. This is show biz. You've got to hype it" (Scott Mace, "Q&A: Ken Williams," *Infoworld* 4, no. 45 [Nov. 7 1983]: 109).

(1980).[77] Corporate publishers soon took interest, and purchased the leading computer magazines, starting with McGraw-Hill's acquisition of *BYTE* in 1979.[78] *Creative Computing* was likewise acquired by magazine conglomerate Ziff-Davis in 1981; as David Ahl explained, "there was no way we were going to be able to compete with the million-dollar circulation and advertising budgets of CBS, ABC, Hearst, and others…. [H]ence, it made sense to merge with Ziff."[79] The problem, this suggests, was that computer magazines were no longer an insular, niche industry, but a segment of mass-market magazine publishing. Independent operations struggled to compete and, indeed, by late 1983, of the top ten circulating computer magazines, only *Softalk* was independently owned, and it would fold in 1984.[80] Writing in 1984, publisher David Bunnell posited corporate acquisition as part of the natural lifecycle of a magazine: "once a start-up magazine has reached a certain point it needs financial backing and expertise to continue to grow and prosper."[81] Bunnell himself was an expert in courting acquisition, having founded four

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[77] For example, *BYTE*'s circulation tripled, from 50,000 in 1977 to 156,000 in 1979 (Freiberger and Swaine, *Fire*, 160; Helmers, "More," 14).

[78] Carl Helmers, "The More Things Change," *BYTE* 4, no. 7 (April 1979): 14; note that *PCC* was the outlier here, subject to a process of consolidation, as it was bought by *Compute!* in 1981 (Lock, "Editor's Notes," 4). Other small magazines were similarly bought out—see *Creative Computing*'s acquisition of *ROM* in 1978 (Anderson, "David," 74)—but this was less a seismic shift than the rise in corporate ownership. And *Compute!* itself would be bought by ABC in 1983 for $18 million in stock (Phillip Dougherty, "ABC Seeks Additional Magazines," *New York Times*, Nov. 6, 1983, D21).

[79] Anderson, "David," 74.

[80] "Boom," *New York Times*, D1.

[81] Bunnell, "Role," 148.

separate magazines, all of which were sold to corporate publishers.[82] The first year of his *PC Magazine* is demonstrative of the "start-up" model.[83] In the eight issues published in 1982, *PC Mag* had three different editors, changed subscription pricing repeatedly, switched from a bi-monthly to a monthly schedule, *and* ballooned from 96 to a massive 404 pages.[84] Such tinkering was apparently quite effective, as *PC Mag* reached a circulation of 75,000 and was bought out by Ziff-Davis by year's end.[85]

Which brings us to 1984, and the bursting of the computer magazine bubble. Accounts of this "shakeout" period—including the *New York Times*' 1984 "The Computer Magazine Glut,"—tend to emphasize two points: the closing of many magazines, and the swelling page lengths of those that remained. Many magazines did fold in 1984, notably Al and Margot Tommervik's *Softalk*, ABC's *PC*, and a whole range of IBM PCjr.-focused publications.[86] Experts took a grim

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[82] After working on MITS *Computer Notes* newsletter, Bunnell founded *Personal Computing*, *PC Magazine*, *PC World*, and *Macworld* (see also Freiberger and Swaine, *Fire*, 53, 178).

[83] As University of Pittsburgh computer science professor Tom Dwyer wrote in 1984, "Computer magazines are now big business, and the rash of instant imitators flooding the newsstands is to be expected, especially when the dollar stakes involved are considered" (Tom Dwyer, "They Don't Make Computer Mags Like They Used To," *Creative Computing* 10, no. 11 (Nov. 1984): 140).

[84] *PC* 1, no. 1 (Feb. 1982); *PC* 1, no. 3 (June 1982); *PC* 1, no. 7 (Nov. 1982).

[85] Ziff ownership started with *PC* 1, no. 8 (Dec. 1982). Apparently, the sale to Ziff was contentious for the *PC Mag* team, as Bunnell (among others) wanted to sell ComputerWorld and InfoWorld parent CW Communications instead. Ziff would face litigation over certain verbal agreements, while Bunnell and team started *PC World* at CW ("Ziff Buys A Magazine," *MIN: Media Industry Newsletter* 35, no. 46 [Dec. 1982]: np.)

[86] Though it began as an Apple-specific magazine, *Softalk* had split into three publications (*Softalk*, *Softalk for the IBM Personal Computer*, and *St. Mac*), all of which folded at once (Bartimo, "Magazines," 35).

view of the future, with one magazine industry researcher suggesting, "whereas now we are seeing one computer magazine fold each month, the rate could go to two or three times that."[87] At the same time, many of the leading magazines had grown huge, and "choked with ads."[88] *BYTE*, for example, averaged over 500 pages at this time, with about 300 hundred pages of ads, while *PC Magazine* reached nearly 800 pages in a single issue.[89] "Advertiser's indexes" became a common feature, as users expected, even *required*, a full listing of advertisers to know where to find them in the magazine.[90]

While primary sources in the period struggled to articulate the point, it is clear that these two conditions were related. The *Times* posited the problem as a glut, that "there are far too many computer magazines… [and] not enough advertising revenue to support such a vast supply."[91] Insiders, like *List* magazine editor Ted Leonsis, agreed, blaming their failures on a lack of solvent

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[87] *BYTE* publisher Gene Simpson likewise predicted "I would expect to see 15 more fold by year-end" (*New York Times*, "Computer Magazine Glut," 31).

[88] *New York Times*, "Computer Magazine Glut," 31.

[89] Selma Richardson, *Magazines for Young Adults: Selections for School and Public Libraries* (Chicago: American Library Association, 1984), 51; *New York Times*, "Computer Magazine Glut," 31; *New York Times*, "Boom," D26.

[90] Hence Scott Adams' shock that this was missing from early *Creative Computing* (Adams, "Adventures," 114). Such features conditioned a new way of reading magazines, to the extent that consumers were reported to "[buy] computer magazines more for ads than articles" (see *New York Times*, "Computer Magazine Glut," 31).

[91] *New York Times*, "Computer Magazine Glut," 31.

advertisers.[92] But it wasn't as though there was a lack of advertising—magazine advertising revenue on the whole actually increased dramatically within the period, from $16 million in the first half of 1982 to $85 million in the first half of 1984.[93] Instead, what resulted was a kind of inflation at the top of the computer magazine industry, with the mass-market, corporate-backed leaders cramming in as many ads as possible, and charging exorbitant rates for doing so.[94] This became a self-sustaining system, with industry leaders hogging the available advertising and thereby squeezing out smaller competitors.

With primarily bloated, ad-heavy, corporate-owned magazines left to dominate the field, the commercialization of computer magazine discourse was completed. Once magazines had balanced economic, educational, and social functions; by 1984, the marketing needs of the industry had mostly surpassed the noncommercial goals of community-building or educating users. Industry leaders, especially *BYTE*, may have continued publishing, but they did so as zombies, shambling along as vessels for ads and industry discourse. The user, the erstwhile "hobbyist," had been repackaged as an audience to be sold to advertisers, while often coming to see themselves as

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[92] Bartimo, "Magazines," 36. In the same source, *Softalk* founder Al Tommervik disagreed, blaming his magazine's failure on "poor management, not the market." Yet, as the only independent publisher competing with major corporate operations, he was clearly at a market disadvantage beyond his control.

[93] *New York Times*, "Computer Magazine Glut," 31.

[94] Per a 1983 *Infoworld* column: "Check out the prices for full-page ads in computer magazines. *Creative Computing* gets $4000-$5000 a page… and *BYTE* is in five figures" (Doug Clapp, "Clapp-Trapp," *Infoworld* 5, no. 47 [Nov. 21, 1983]: 14).

budding entrepreneurs rather than countercultural true believers.[95] This development left little doubt of the corporate-focused orientation of computing culture as it headed into the second half of the 1980's, entrenching a commercial paradigm of commodity production and marketing which would continue into the Internet era.[96]

3.2 What's in a Name? Depictions of Public Domain Software, Freeware, and/or Shareware in Computer Magazines

Between July of 1982 and August of 1983, Jay Lucas offered one of the few in-depth considerations of noncommercial software in his recurring column for the computing newsweekly, *Infoworld*. From the outset, Lucas was faced with a problem of terminology, of what to call this specific segment of software. He begins the first column by introducing the subject somewhat

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[95] As Jenkins and Eckert note, the late 1970's and early 1980's, were relatively unique: "At least after 1975, social protest was relatively minimal and, although the middle-class environmental and women's movements challenged some corporate prerogatives, they did not resort to unruly protest as much as the civil rights and poor people's movements of the 1960s" (Jenkins and Eckert, "Right Turn," 333). The erstwhile radicals in hobbyist computing reflected this, turning instead to entrepreneurship.

[96] As Fred Turner has described, the Internet, while seemingly opening up the countercultural possibilities of the hardware hobbyists, actually served to reinforce commercialist ideologies of entrepreneurship and the neoliberal, corporatist ethic of the so-called New Economy. Thus, as he writes, "As they turned away from agonistic politics and toward technology, consciousness, and entrepreneurship as the principles of a new society, the communards of the 1960's developed a utopian vision that was in many ways quite congenial to the insurgent Republicans of the 1990's" (Turner, *From Counterculture,* 8).

repetitively, as "software, free software, available for the taking (or at nominal charge) to everyone."[97] For much of the run, he used the name "freeware," a neologism he coined and which gave the column its name, then "shareware" when he learned "freeware" was already in use.[98] Yet, as early as the first column, Lucas uses "public-domain" as a synonym, a way to understand what makes "freeware" *free*.[99] In so doing, Lucas highlights the perceptual challenge posed by noncommercial software in the early 1980's. Before there was a consumer market for software, noncommercial programs of all types, from games to applications, were just "programs," the norm. As the commercial paradigm took hold, and such production was normalized, the wide range of noncommercial forms of creation and circulation were marked as *alternative*, requiring new labels. Computer magazines provided a crucial site for this redefinition to play out, as both sources of noncommercial programs and communication, and venues for commentary, opinion pieces, and editorials. As will be shown in this section, computer magazines were not neutral sites of discourse. Indeed, the depiction of noncommercial software in computer magazines more accurately reflected *the magazines' own commercialization*, casting the public-domain as other or lesser, reducing it to the margins, or erasing it entirely.

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[97] Jay Lucas, "Freeware Provides Financial Aid to Closet Hobbyists," *Infoworld* 4, no. 26 (July 5, 1982): 78.

[98] By Andrew Fluegelman, associate editor of *PC Magazine* (Lawrence Magid, "PC-Talk," *PC Magazine* 1, no. 4 [Aug. 1982]: 143); see Jay Lucas, "Shareware: What's in a Name? A Rose by Any Other Name…," *Infoworld* 5, no. 22 (May 30, 1983): 48-52.

[99] Includes Lucas, "Freeware Provides;" Jay Lucas, "Cheap Commercial Software and Apple Freeware," *Infoworld* 4, no. 38 (Sept. 27, 1982): 60-61; Lucas, "Freeware Lifeline," 92-93; Lucas, "Shareware: What's;" Jay Lucas, "Shareware: Generous Users Share Public-Domain-Software Sources," *Infoworld* 5, no. 33 (Aug. 15, 1983): 64-66.

The oldest term for noncommercial software was "public domain," which came to the fore in computing discourse in 1976, due to two developments: Bill Gates' "Open Letter to Computer Hobbyists" and the Copyright Act of 1976. Of course, as Christopher Kern notes in a 1981 issue of *BYTE*, the "software [ownership rights] problem actually existed *before* the advent of the microcomputer," with the first request to copyright software in the U.S. submitted in 1964, and an estimated 1,205 programs registered with the Copyright Office over the next 14 years, primarily from mainframe manufacturers.[100] Across roughly the same period, there existed an explicitly noncommercial subculture around early gaming software like 1962's *Spacewar!*, which was created by MIT-based "hackers" and spread across the ARPANET, gaining a cult following.[101] The hobbyists who comprised the early user base of microcomputers fit largely within the latter tradition and the "hacker ethic" it inspired, as famously described by Steven Levy.[102] By 1976, entrepreneurship had become a part of hobbyist computing culture, to the point that, as Elizabeth Petrick writes, "there was no hard divide between those who wanted to make computers accessible to the public and those who wanted to sell them."[103] But the consumer model implied by the

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[100] As Joseph Root III explains, this number likely increased after IBM was forced to "unbundle" software in 1970 (for more, see Campbell-Kelly, *From Airline,* 6, 109), after which point software producers and OEMs would design systems and software for specific customers. This model was predominant until micro-, home and personal computers provided the grounds for a *consumer* software market (Joseph Root III, "Protecting Computer Software in the 1980's: Practical Guidelines for Evolving Needs," *Rutgers Computer & Technology Law Journal* 8, no. 2 (1981): 209-10, 213-14; Christopher Kern, "Washington Tackles the Software Problem" *BYTE* 6, no. 5 (1981): 128).

[101] Brand, "Spacewar."

[102] Turner, *From Counterculture,* 116, 132-137. Levy, *Hackers,* 28-36.

[103] Petrick, "Imagining," 37

entrepreneur perspective meant that microcomputer software had to be conceived of as a market commodity, which was a relatively new phenomenon.

Early 1976 saw the hobbyist community confront this growing divide, in the conversation started by Bill Gates' "Open Letter to Computer Hobbyists." The 1975 release of the MITS' Altair microcomputer is remembered as a watershed moment, opening the possibility of truly *personal* computing; but it was also extremely tedious to use—its user-interface being a bank of switches and a row of red LEDs. [104] Bill Gates and Paul Allen's Altair BASIC was a crucial resource for Altair users, as it provided a higher-level, human-friendly coding language, effectively streamlining use. As Kevin Driscoll explains in his comprehensive analysis of the letter and its response, Altair BASIC was *not* a free resource for hobbyists. Rather, "the sale of Microsoft's Altair BASIC by MITS represented an early attempt to create a commercial marketplace for microcomputer software."[105] When software sales grew slower than those of Altair hardware, MITS blamed noncommercial copying, and Gates penned an angry letter directed at hobbyists, first published in the January 1976 *Homebrew Computer Club* newsletter.[106] The "Open Letter" is renowned as the opening salvo in the fight over software piracy, especially Gates' accusation that

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[104] Levy, *Hackers*, 179-196; Driscoll, "Something," 258.

[105] It was also extremely expensive if purchased stand-alone—at $500, it cost more than a simple Altair kit itself ($439), though it cost only $75 when purchased along with the computer itself (Driscoll, "Something," 258, 262).

[106] And subsequently across a wide range of early computer magazines and newsletters, including *Micro-8*, MIT's own *Computer Notes*, and *PCC*.

"most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?"[107]

The conversation soon spilled over into the pages of computer magazines, as lay users and magazine editors alike weighed in on the issue, in letters, editorials, and submitted essays.[108] *SCCS Interface* editor Art Childs offered one such response in his opening editorial in the May 1976 issue, wherein he frames the issue not as one of illicit copying, but of "PROPRIETARY SOFTWARE."[109] The problem, Childs suggested, is that questions of monetary compensation and exchange for software are complicated by the *intangibility* of software itself. Likening programs to ideas, he writes, "Our culture has taken certain steps in the past to rectify problems in this area by instituting patent and copyright laws, and put considerable effort into enforcing those laws. But, the success of enforcing the intent of such impediments has been limited."[110] Catching *all* software thieves, he argued, would be impossible, a waste of time and effort that could be put into programming. Instead, Childs concludes that we should "put the results of our creativity, ideas and concepts where they naturally belong—in the public domain."[111] This last point is crucial, and one of the earliest references to microcomputer software as being in the public domain. That he does

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[107] Gates, "Open Letter," 2.

[108] See Mike Hayes, "Regarding Your Letter of February 3," *Homebrew Computer Club* 2, no. 2 (Feb. 1976): 2; Robert Wada, "An Opinion on Software Marketing," *BYTE* 1, no. 11 (July 1976): 90, 91; Jim Warren, "Correspondence," *SIGPLAN Notices* (July 1976).

[109] Art Childs, "Interfacial," *SCCS Interface* 1, no. 6 (May 1976): 2-4. Note: this was the national newsletter of the Southern California Computer Society.

[110] Childs, "Interfacial," 2.

[111] Childs, "Interfacial," 4.

so in a column focused on "proprietary software" is no coincidence: without an understanding of software as privately-held IP, there is no need for a label like "public domain." Ownership, in this sense, actively *produces its own opposite,* and forces programs and users to choose a side.

The Homebrew Computer Club, at least, had little trouble taking a side. As Elizabeth Petrick has shown, the HCC response to Gates' letter was defensive and indignant, featuring critiques of Gates' profit motive and anger at being labelled thieves.[112] But the club had *already* articulated its stance in its "Articles of Incorporation." Shaped by discussions in club meetings, the club's articles were published in the January 1976 issue, and expressed the views and mission of the HCC. Notably, Article VII, section A asserts "The use of equipment owned by the Homebrew Computer Club in the development of any software shall be conclusive evidence that such software is in the public domain."[113] As this section suggests, the HCC was considering the commercialization of software well before the fallout of Gates' letter. Countercultural from its inception, the HCC was committed to the open-sharing of information, a DIY ethic, and collaboration—in short, what would be branded the "hacker ethic."[114] But now, with the growing possibility of software as a market commodity, the club had to double-down on its mission as a noncommercial alternative. It would not be a resource for some future entrepreneur to garner profit, but a development ground for *public domain* software, which could benefit hobbyists and spread computing to anyone who was interested.

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[112] Petrick, "Imagining," 33-35.

[113] "Articles of Incorporation of Home Brew Computer Club," *Homebrew Computer Club* 2, no. 1 (Jan. 1976): 6.

[114] Petrick, "Imagining," 32.

Later that same year, Congress began the gradual process of codifying this *cultural* distinction between proprietary and public domain software into a *legal* one, with the passage the Copyright Act of 1976.[115] The Act, an update to the U.S. Code from 1909, was motivated in part by the inadequacy of existing copyright law to account for the nuances of software, though actually addressing the problem was left to the recommendations of a specially created committee, the National Commission on New Technological Uses of Copyrighted Works (CONTU).[116] CONTU would not complete its study until 1978, its findings not written into law until the Software Copyright Amendment of 1980. But while the 1976 did not provide any *new* protections—"section 117 expressly provided that the Act continued the same protection of software as had existed under the 1909 Act"—it nevertheless clarified that software was subject to copyright, as this had been somewhat in question since 1964.[117] Indeed, such a step was essential to establishing the legal

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[115] Act of October 19, 1976, Pub. L. No. 94-553,90 Stat. 2541 (codified as 17 U.S.C.§§ 101-810); Jan L. Nussbaum, "Apple Computer, Inc. v. Franklin Computer Corporation Puts the Byte Back into Copyright Protection for Computer Programs," *Golden Gate University Law Review* 14, no. 2 (Jan. 1984): 287.

[116] Some of these issues, to name a few, are: the ephemerality of code, the lack of fixity of RAM (vs. ROM), the translation from human-readable "source code" to machine-readable "object code," and the lack of copyright applicability to algorithms and ideas (programs being protected by virtue of being considered "literary works"). See Nussbaum, "Apple," 287-290; Root, "Protecting," 213-17; Frow, "Repetition," 12-20; Kern, "Washington," 128-31; Stephen A. Becker, "Legal Protection for Computer Hardware and Software," *BYTE* 6, no. 12 (May 1981): 140-46.

[117] There is some debate over the effectiveness of the Copyright Act of 1976. As Nussbaum notes, "computer programs were not *explicitly* defined as copyrightable under the 1976 Act; but, as Root suggests, because "the 'doubtful questions' presented by the Copyright Office in 1964 were treated as settled," there was clarification on a rudimentary level (Nussbaum, "Apple," 287-88; Root, "Protecting," 215, 218). Section 117, the pertinent section of

basis for program to be protected as a "fixed work" (when on storage media), with the protections of "literary works" applied to source code.[118] As such, 1976 established a legal basis for software to be "public domain" in the legal sense, as that which is intentionally left outside of copyright protections.

Debates over intellectual properties protections and software would continue throughout the late 1970's and into the next decade. Personal and home computer software came to be the driving force in such lawsuits, with game programs posing major questions about coded expressions and audiovisual display copyability.[119] Nevertheless, the 1976 Copyright Act had few *immediate* effects on the hobbyist user base; it was, after all, primarily large manufacturers of mainframe (and by extension minicomputer) software who had pushed for new legal protections,

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the code, would be repealed entirely in the 1980 Act, and replaced with a clear definition of "software," and protections for users seeking to make copies for their own use (see Root, "Protecting," 217).

[118] Nussbaum, "Apple," 290-92; Frow, "Repetition," 12-15.

[119] Notable cases include copying the ROM of a chess program (Data Cash Systems, Inc. v. JS&A Group, Inc., 480 F. Supp. 1063, [N.D. **11.** 1979], *afJ'd on other grounds,* 628 F.2d 1038 [7th Cir. 1980]), ROM copying generally (Tandy Corp. v. Personal Micro Computers, Inc., 524 F. Supp. 171 [N.D. Cal. 1981]); copyrightability of audiovisual effects (Williams Electronics, Inc. v. Artic International, Inc., 1981 WL 1287 [D.N.J. June 24, 1981], *aff'd and remanded,* 685 F.2d 870 [3d Cir. 1982]), (Stern Electronics, Inc. v. Kaufman, 669 F.2d 852 [2d Cir. 1982]); and copyrightability of object code (Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 [3d Cir. 1983]). See also Theodore J. Grabowski Jr., "Copyright Protection for Video Game Programs and Audiovisual Displays; and—Substantial Similarity and the Scope of Audiovisual Copyrights for Video Games," *Loyola of Los Angeles Entertainment Law Journal* no. 3 (1983): 139-162; Pamela K. McKenna, "Copyrightability of Video Games: *Stern* and *Atari*," *Loyola University of Chicago Law Journal* 14, no. 2 (1982-1983): 391-414.

while the micro- and home computing industry was still inchoate.[120] In fact, 1976-1980 was also the high-water mark for type-in programs, with many pages of computer magazines devoted to describing and listing source code for software (see figure 3.4 for example).[121] Games were common in this format, especially in magazines like *Creative Computing*, *Recreational Computing* (formerly *PCC*), and the later *Softside* and *Softline.* Whereas David Ahl had to rely on direct user submission and his own knowledge of hobbyist games in order to find programs for his 1973 book *101 BASIC Computer Games*, which sold more than one million copies, he was able to collect 84 *more* program listings for his 1979 second volume (*More BASIC Computer Games*) mostly from type-in programs previously published in his own magazine, *Creative Computing* .[122]

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[120] These same companies, like IBM and other members of the American Electronics Association, would also lobby for the 1978 tax code changes which set the stage for the venture capital boom in microcomputing (Zack Wasserman, "How Silicon Valley Hacked the Economy," *The Nation*, Oct. 15, 2018, https://www.thenation.com/article/archive/how-silicon-valley-hacked-the-economy/).

[121] William Edmunds, "Computer Space," *SoftSide* 28 (Jan. 1981): 40-41.

[122] *101 Basic Computer* games would sell more than one million copies by 1979, making it "the first million-selling computer book ever" (Anderson, "David," 72). See David Ahl, "Chronology," *Creative Computing* 10, no. 2 (Aug. 1984): 81; David Ahl, "Computer Games: The Story Behind the Two Best Selling Computer Games Books in the World," *Infoworld* 3, no. 9 (May 11, 1981): 44; David Ahl, *More BASIC Computer Games* (Morristown, NJ: Creative Computing Press, 1979). *Creative Computing* would also begin publishing a small number of games commercially, giving it the kind of conflict-of-interest decried in *Hardcore* ("The Best Games are from Creative Computing Software," advertisement, *Apple Orchard* 2, no. 3 [Fall 1981]: 15).

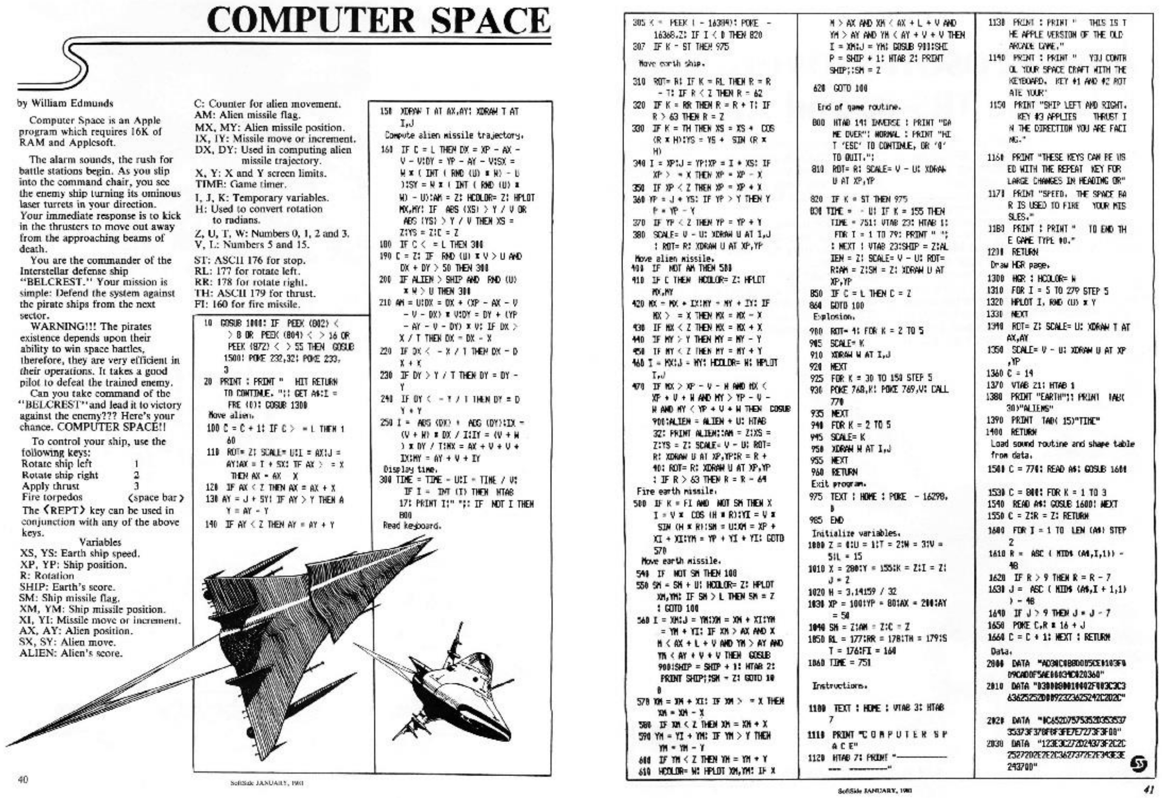

Figure 3.4: Sample type-in program

Of course, Ahl wasn't just seeking out unprotected programs to republish and claim as his own—reproducing and spreading this code was the whole reason original programmers submitted their work to magazines.[123] Describing type-in programs, a 1984 guide from the American Library Association explained, "most of the pieces seem to have been submitted by individuals who have created the programs… following brief introductory paragraphs, the computer program is listed."[124] By providing their source code for magazines to publish, did these programmers necessary place their work in the public domain, in a legal sense? Responding to such a question

[123] Original programmers who, it must be said, Ahl consistently credited by name whenever possible.

[124] Richardson, *Magazines*, 71. This section describes *Compute!* specifically, but is more widely applicable to the genre.

in 1982, *Softside* editor-in-chief Randall Kottwitz wrote "*all* the material published in *Softside* is copyrighted, by *Softside* and its authors. We are able to provide the software… but it does not become public domain when we put it in print, just as the material published in a book doesn't become public domain when it is published."[125]

Legally, Kottwitz is correct, a creator would not lose ownership rights by listing the code in a magazine (though legal action against infringement would be harder). But the challenge posed by type-in programs highlights the inadequacy of "public domain" as a colloquial catchall term for noncommercial software. "Public domain" suggests that the author has chosen to *waive* their copyright, whether by not taking the steps to ensure these rights or by declining to defend them when infringed upon, both of which suggest a lack of interest or care.[126] This clearly does not apply

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[125] Randall Kottwitz, "Output," *Softside* 6, no. 3 (December 1982): 8.

[126] The actual means of ensuring copyright protection for software was still unclear into the 1980's, with magazine discourse offering conflicting advice. As Kelty notes, since at least the 1980 amendment, "software is automatically copyrighted as it is written" (Kelty, *Two Bits*, 183). But magazine columns (Becker, "Legal," 141-42; Kern, "Washington," 128-30) and contemporaneous legal writings (Root, "Protecting, 230-32) stress that such protection required specific steps: 1.) notice of copyright at the start of every code listing, copy, and on physical media; and 2.) registration with the copyright office, including Form TX, $10 registration fee, and two copies of source code. Sources, however, were conflicted as to whether registration should occur first, or if one should "postpone registration of the copyright until a lawsuit for copyright infringement is contemplated" (Becker, "Legal," 144; Harvey Gilbert and Jonathan Joseph, "Software Piracy," *Computerworld* 16, no. 19 [May 10, 1982]: ID 1-9). The later term "abandonware" has been used to refer to software made public domain by obsolescence and, often, rights-holder apathy—obsolescence as a justification for circumventing copyright was a specific consideration surrounding the DMCA (Library of Congress Copyright Office, "Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies," *Federal Register* 71, no. 227 [Nov. 27, 2006]: 68472–68480).

to amateur programmers, who created programs specifically because they enjoyed the process, and were passionate about their creative products. Consider this, instead, through the underlying methodology behind the copyright system. As Frow writes, "the basic purpose of copyright law is at once to restrict the completely free circulation of intellectual products, and to ensure the free accessibility of any idea."[127] Such law is therefore a balance, typically emphasizing restrictions over absolute freedom-of-use in order to preserve the monetary basis behind creativity. By publishing their code, noncommercial programmers flipped this balance, prioritizing *accessibility* with little consideration for commercially-defined ownership rights. Carrying on the hobbyist ethic, the goal was to build the community, to foster the creation of new and better software. With their code available as type-in programs, games like Lance Micklus' *Dog Star Adventure*, Yob's *Hunt the Wumpus*, and Donald Brown's *Wonderful World of Eamon* spawned new genres and generations of games. Users began writing into magazines, asking for and sharing bug fixes, describing solutions to problems, and even asking for sources of new software. By placing free access *first*, these authors (and the magazines which published their work) were not showing a lack of care, but rather showing a communitarian ethic, which rejected the central wisdom of copyright: that without legal protection and financial incentive, no quality software would ever be developed.

To say that noncommercial programs were commonly called "public domain software" at the end of the 1970's is somewhat misleading, insofar as type-ins or programs copied within computer clubs were usually just called "programs." By the early 1980's, however, the increasing ubiquity of commercial software, and the imprecision of the public domain label, created a need for modifying terms, and the computer press helped meet that need. Again, Jay Lucas' series for

[127] Frow, "Repetition," 7.

the newsweekly *Infoworld* provides the highest-profile example. From the outset, Lucas was hesitant to use "public domain" as a catchall, doing so in the first column only in a vaguely legal sense.[128] As mentioned previously, Lucas preferred "freeware," which captured both the typical price-point and the freedom from restrictions on use or copying. Contemporaneously, however, other programmers were using "freeware" in a much different sense, in a marketing scheme. Describing his model as "an experiment in economics," *PC-Magazine* editor Andrew Fluegelman distributed his *PC-Talk* program (1982) for free to anyone who sent him a disk, while encouraging a donation.[129] Because Fluegelman had actually trademarked "freeware," Lucas deferred in May of 1983, coining the new term "shareware."[130] "It probably fits better than the old 'freeware,'" Lucas wrote, "As I have tried to point out in the past, nothing is really free, even with public-domain software."[131] After all, noncommercial software typically required some media costs, if not postage, and the new "shareware" placed emphasis on communal exchange.

By the end of that same year, "shareware" had likewise been co-opted to in marketing schemes, exploiting the same technicality as Fluegelman's "freeware." In a July 1983 user's column for *BYTE*, science-fiction author Jerry Pournelle described "free software" as taking two forms. He writes, "Plenty of it is available, both in the public domain and an increasingly popular variant that *has no name*, but works thus: 'If you like this, send me (the author) some money. I

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[128] Asking users to "please be certain that [software submitted] is truly in the public domain" (Lucas, "Freeware Provides," 79).

[129] Magid, "PC-Talk," 143.

[130] Jay Lucas, "See Some Skin, Learn the Alphabet with AAA's Disks," *Infoworld* 5, no. 10 (March 7, 1983): 65.

[131] Lucas, "Shareware: What's," 48.

prefer cash.'"[132] It did not take long for this version of semi-commercial software to find a name. In September 1983, former Microsoft employee Bob Wallace announced that he would distribute his *PC-Write* program as "commission shareware." The program would still be copyrighted, but users could get it for free (though "voluntary contributions" were encouraged), and copy and share it as much as they wanted.[133] The goal, however, was to get users to register their software for $75, which earned warranty support and printed documentation, and users would receive a $25 commission if they got other friends to register.[134] With the advent of the Internet, such products would come to bear the pejorative label "demoware," acting as "a product that gets you hooked."[135] Ultimately, shareware has been defined as inherently a marketing scheme, a "try-before-you-buy" model bearing the moral imperative for a donation.[136] Lucas' vision of freeware, meanwhile, would be somewhat reclaimed in the following decade, as "free software:" "a set of practices for

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[132] Jerry Pournelle, "Interstellar Drives, Osborne Accessories, DEDICATE/32, and Death Valley," *BYTE* 8, no. 7 (July 1983): 334. Emphasis mine.

[133] John Markoff, "Word-Processing Package Costs Under $10 Under New Marketing Scheme," *Infoworld* 5, no. 35 (Sept. 19, 1983): 3.

[134] Wallace intended to run "commission shareware" as six-month experiment; it lasted more than a decade, reaching approximate 50,000 registered users and 450,000 unregistered "prospects" (Bob Metcalfe, "Shareware Should Not be Shunned At All," *Infoworld* 15, no. 11 (March 1993): 58.

[135] Metcalfe, "Shareware," 58; Terranova, *Network,* 93 (citing John Horvath, "Freeware Capitalism," *Nettime,* Feb. 6, 1998, https://nettime.org/Lists-Archive/nettime-l-9802/msg00026.html).

[136] Cristina Cifuentes and Anne Fitzgerald, "Copyright in Shareware Software Distributed on the Internet—The Trumpet Winsock Case," *ICSE* 97 (1997): 456. Terranova takes a rather charitable view of freeware, emphasizing its value in letting small producers compete in a crowded market (Terranova, *Network,* 92-93).

the distributed collaborative creation of software code that is then made openly freely available."[137] And so, while the terms might change, the conflict stays the same, as entrepreneurs and staunchly anticommercial amateurs pushing very different understandings of what a free product should be.

The new models of freeware offer a fitting bookend to the pre-shakeout mode of noncommercial software. The early 1980's had seen the peak and decline of type-in programs, a flourishing of public-domain distribution, and degrees of free circulation in computer clubs. The co-occurring commercialization of software and establishment of copy-protections were not isolated events but mutually-reinforcing, a part of the larger cultural process of commodification. In chronicling these events, computer magazine discourse was not neutral, but served to translate magazines' new commercial ownership structures into a pro-commercial perspective. Covering computing culture in this way, including noncommercial programs, meant gradually equating software with industry-produced, copy-protected products, and thereby offering less space for any alternatives. With such a norm, it is little surprise that "free" software was so easily co-opted. Amateur works did not so much disappear as they were strategically erased in discourse, with "freeware" much less free to share and manipulate, and "public domain" used to suggest a lack of quality or care. Commodification of creative production was thus complemented by the entrenchment of commercial perspectives in lay computing culture, effectively normalizing capitalistic relations at the expense of amateurism.

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[137] By the Free Software Foundation, notably Richard Stallman. See Kelty, *Two Bits,* 1-2, 168, 205-7; Kelty, "Culture's," 499; Stallman, *Free Software,* 3-8.

3.3 Crises and Capitalism: Commercial Tensions in the Piracy and Journalist Ethics Debates

Like the formation of the industry itself, the commercial paradigm in computer magazine discourse coalesced gradually into the early 1980's. The informal, newsletter-like nature of early magazines was a major part of their appeal, a replication and reinforcement of the blurred distinctions between amateur and professional, creators and users, which were characteristic of the micro- and home computing culture of the moment. These contradictions, however, were residual, carried over from 1970's hobbyism and its central, uneasy alliance between budding entrepreneurs and radical "hackers." In the face of the rapidly-growing industry, this balance could not last. When *Hardcore Computing*'s Chuck Haight described the "raging, silent battle between users… and magazines," what he identified was the clash between two irreconcilable positions as the culture realigned.[138] This ideological battle was at the core of two larger, overarching controversies in the first half of the decade: the piracy scare, and the scandal over magazine journalistic ethics. In the former, computer magazines became a rhetorical tool for the industry, allowing insiders to speak on the subject while minimizing (or excluding) oppositional voices. The latter forced the computer magazine editors and writers to consider their own evolution, as the intended openness and community-sourcing of their early years had set the stage for commercial co-optation, of magazine content being used for PR and marketing purposes. Playing out in public discourse, these conflicts revealed the inherent tensions of the very project of computer magazines, and marked the

[138] See first paragraph for full quote; for more on nibble-copiers, see 4.2 "A Rhetoric of 'Don't.'"

regression of home computers from an amateur pursuit to merely another component of late-capitalist cultural production.

3.3.1 Piracy Scare

The discourse surrounding software piracy in the 1980's was far from unique. In fact, several waves of anti-piracy campaigns occurred throughout the last few decades of the twentieth century. Just as the easily-rewritable cassette tape had sparked music industry backlash in the 1980's, the mp3 format and the DVD (coupled with the booming internet) led to widespread filesharing and, ultimately, the DMCA.[139] Software piracy, too, has been a concern in the current century: with programs no longer rooted to storage media but instead sold via licensing models and updated via online connectivity, major corporate publishers (see: Microsoft) have been increasingly litigious, taking a hardline on piracy. But, unlike these contemporary antipiracy efforts, the campaign against software piracy in the early home and microcomputer industry was not widely dispersed on a mass-cultural scale. Instead, computer magazines provided a powerful,

[139] John, "File Sharing;" Majid Yar, "The Rhetorics and Myths of Antipiracy Campaigns: Criminalization, Moral Pedagogy, and Capitalist Property Relations in the Classroom," *New Media & Society* 10, no. 4 (2008): 605-23; Suzannah Mirghani, "The War on Piracy: Analyzing the Discursive Battles of Corporate and Government-Sponsored Anti-Piracy Media Campaigns," *Critical Studies in Media Communication* 28, no. 2 (2011): 117; Adrian Johns, *Piracy: The Intellectual Property Wars from Gutenberg to Gates* (Chicago: University of Chicago Press, 2010); Andrew J. Bottomley, "'Home Taping is Killing Music': the Recording Industries' 1980s Anti-Home Taping Campaigns and Struggles over Production, Labor and Creativity," *Creative Industries Journal* 8, no. 2 (2015): 123-145. See 4.3 "Gaming the System" for discussion of the media-specific components of software piracy.

centralized site for anti-piracy discourse, being an entire print apparatus disseminated to and consumed by the computer user base.

Although computer magazines were disparate and largely independent from one another, they nevertheless took a remarkably consistent stance against piracy in the early 1980's. As publisher (and *Softalk* founder) Al Tommervik wrote in a 1982 column for *Softline*, "there's a never-ending tirade in publications against pirate activities."[140] "Never-ending" might be hyperbolic, but the anti-piracy sentiment must have seemed constant to magazine readers in 1982. The 1976 Copyright Act (and the 1980 Amendment) received relatively little response in the microcomputer community when passed, but interest in such protections was only delayed. Between 1981 and 1982, just about every computer magazine ran a special issue devoted to piracy. *Softalk* was the earliest, its October 1980 issue bearing the campy photograph of a man dressed like a seventeenth-century privateer and the tagline "Pirate, Thief: Who Dares to Catch Him?" (figure 3.5).[141] It was followed in turn by special issues in *BYTE* in May 1981 and *Softline* in January 1982 (cover: "Shoplifting is a Crime"), as well as a wide assortment of articles, which spurred a broader conversation across letters, responses, and editorials throughout these years.[142]

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[140] Al Tommervik, "What Price Software?: Part 2 of The Great Arcade/Computer Controversy," *Softline* 1, no. 4 (March 1982): 12.

[141] Yuen, "Pirate," 14-17.

[142] Some examples: *BYTE* 6, no. 5 (May 1981); Gilbert and Joseph, "Software Piracy," In Depth 1-9; David Thornburg, "On Piracy…," *Compute!* 21 (Feb. 1982): 16-18; David Thornburg, "Piracy Revisited," *Compute!* 25 (June 1982): 14-16; Allan Tommervik, "The Great Arcade/Computer Controversy Part 1: The Publishers and the Pirates," *Softline* 1, no. 3 (Jan. 1982): 18-22; Tommervik, "What Price?," 12; Scott Adams, "Say YOHO," *SoftSide* 29 (Feb. 1981): 12; Phil Case, "Outgoing Mail," *SoftSide* 28 (Jan. 1981): 6; Robert Lock, "Software Copying

The pervasive reach of the piracy discussion is particularly clear in *Softalk*'s Exec series interviews, wherein the subject appears in some form in the majority of its forty-eight interviews with corporate executives in the software industry.[143] The message across this body of literature was consistent: unauthorized copying is wrong, it hurts the industry, and it should not be tolerated.[144] Many took this fearmongering even further, positing piracy as an existential threat, that software as a whole would get worse. As Ken Williams of On-Line Systems told *Softalk*, "the most adverse effect of piracy is… the lower quality of new programs. If their programs are pirated, companies like On-Line Systems and [VisiCalc publisher] Personal Software will no longer be able to spend months and dollars perfecting and protecting their products."[145] For readers, the

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Revisited, or Who's Paying the Bills?," *Compute!* 10 (March 1981): 4-9;. The conversation made its way into the popular press as well: Lee Gomes, "Secrets of the Software Pirates," *Esquire* (January 1982): 58-65; "Roaming Hi-Tech Pirates," *TIME* 119, no. 6 (Feb. 8, 1982): 83.

[143] Richard Knudsen, "Exec California Pacific: Innovative Marketing Budges Retailers," *Softalk* 1, no. 5 (Jan. 1981): 32-34; Allan Tommervik, "Exec Southwestern Data Systems: Assembling Useful Utilities," *Softalk* 1, no. 12 (Aug. 1981): 30-32; Allan Tommervik, "Exec Lotus: A New Chapter for Mitch Kapor," *Softalk* 2, no. 5 (Jan. 1982): 46-50; Craig Stinson, "Exec: Muse: From Castles and Robots to High-Voltage Business," *Softalk* 2, no. 6 (Feb. 1982): 30-33; David Hunter, "Exec: Sirius: Reaching for the Stars," *Softalk,* 2, no. 11 (July 1982): 32-38, 165; Roe R. Adams III, "Exec Infocom: Adventures in Excellence," *Softalk* 3, no. 2 (Oct. 1982): 56-62; David Hunter, "Exec Penguin Software: Graphically Freezing," *Softalk* 3, no. 6 (Feb. 1983): 48-54; Matt Yuen, "Heads Up!: Exec Beagle Bros. Micro Software," *Softalk* 4, no. 2 (Oct. 1983): 65-74; David Hunter, "Exec Human System Dynamics: A Quieter Revolution," *Softalk* 4, no. 6 (Feb. 1984): 56-60.

[144] *Softside* editorial staffer Phil Case encapsulates this, asserting "the piracy of software hurts authors more than any other facet of the industry" (Case, "Outgoing," 6.)

[145] In Yuen, "Pirate," 15.

volume of such warnings could be overwhelming. As one user wrote to *SoftSide* in May of 1981, "I have been following the letters, editorials and articles in the last few months, not only in *SoftSide*, but in most of the computer magazines to which I subscribe. Needless to say I have grown weary of this piracy talk…. Please, enough is enough!!"[146]

[146] Paul Schmid, letter, *SoftSide* 32 (May 1981): 6.

Figure 3.5: Cover, *Softalk* 1, no. 2 (Oct. 1980); original photo by Kurt Wahlner

Why such a glut between 1981-1982? The answer, at least in part, is that the cultural changes resulting from the growth of the home computing industry were now so prominent that magazines *had* to interrogate them. In so doing, many writers began to tell the same story, crafting a progress narrative under which computing culture was improving, rendering the free-for-all of the hobbyist era obsolete. Whereas hardliners might have held that noncommercial copying and sharing of software was *always* wrong, dating back to the 1976 Gates letter, most magazine writers took a different approach. In the first part of his piracy series for *Softline*, publisher Al Tommervik described unauthorized copying and sharing as an attempt to "return to the 'good old days' of bartering for software."[147] Rather than casting the earlier era of hobbyist computing as amoral, and risking alienating his audience as Gates had done, Tommervik argued that the ethical situation had changed. As he explained, "Some activities, seemingly inappropriate at one stage of development, cease to be appropriate at more mature stages of market development."[148] Such reasoning is indicative of a larger effort to cast the rise of the industry as a *maturation* of computing, a linear narrative of progressive improvement. Those who continue to "pirate" software, then, are anachronisms, having "become pirates… unthinkingly," by clinging to the earlier barter economy instead of adapting to the times. At the same time, this language reflected the aging of the 1970's generation of computer hobbyists, who had matured both physically and socially, into stable, middle-class lives and, often, careers in technology.[149] Thus, piracy could be understood as a

[147] Tommervik, "The Great… Part 1," 22.

[148] Tommervik, "The Great… Part 1," 22.

[149] As Nooney, Driscoll, and Allen note, many prior hobbyists were drawn to careers in "microcomputing because it was seen as a way of gaining a strategic edge in a swiftly changing, increasingly digitized American economy" (Nooney, Driscoll, and Allen, "From Programming," 110).

personal failing—a "lack of self-discipline in the personal computer market," a sophomoric residual practice carried over from a cruder era. Accordingly, responsibility for correcting themselves was put into the hands of lay users, who were encouraged to align with the contemporary, ostensibly *refined* exchange practices of the industry.

Reader responses to this rhetorical approach were somewhat mixed. Some members of the community were very much onboard with the hardline antipiracy perspective. David Thornburg's relatively even-handed stance in his February 1982 piece "On Piracy…" was met with a letter of outright rejection, which asserted, "ethics in no place for sloppy logic. Think it through again—carefully."[150] Other readers took their antipirate sentiment even further. *SoftSide*'s Phillip Case characterized the magazine's reader responses to a pro-piracy letter as follows: "In the matter of the Software Pirate letter, many of our readers wrote to attack the practices, attitudes, and even the intelligence of the pirate—citing the improper use of grammar as a sign of low intelligence."[151] Indeed, one such letter called for public shaming, urging the magazine to "let us know who he is. If he can stand for his beliefs anonymously, then why shouldn't he be able to stand for them otherwise? I don't wish to publicize the 'pirate's' view, but I think that readers have the right to know his name."[152] Of course, many readers likely either worked as software programmers themselves, as was the case of Chris Crawford, who wrote the response to Thornburg, or were

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[150] The response letter, printed in the text of Thornburg's follow-up, came from Chris Crawford, a freelance game-programmer famous for his work with Atari, notably *Eastern Front (1941)* (Thornburg, "On Piracy…"; Thornburg, "Piracy Revisited," 14; see also Chris Crawford, *The Art of Computer Game Design* [Berkeley, CA: Osborne/McGraw-Hill, 1984].)

[151] Case, "Outgoing," 6.

[152] Ed Ting, letter, *SoftSide* 3, no. 4 (Jan. 1981): 7.

aspiring commercial authors themselves.[153] Yet many other readers were more conflicted, offering qualifications or justifications for certain noncommercial practices while accepting others as dubious. Adventure International's Scott Adams described a conversation with a man who freely shared software with his friends, with the justification that he had spent thousands of dollars on *other* software, previously.[154] Two adolescent readers, writing to *Softline* in early 1983, admitted to copying software frequently, but also describe being conflicted about the ethics.[155] One of these, John Woo, claimed to copy programs frequently, but explains "my opinion of copy protection is that it is 50 percent stupid. Half of it is okay, since I know that programmers need to make money… [but] copy protection is a waste of time and money."[156] George Eliade describes similar ambivalence, writing, "I am only twelve years old and I can't afford $35 to $50 for a game. I can afford $2.50 for a cheap disk and a copy, though…. If the price of software goes down about 50 percent I will stop pirating."[157]

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[153] Among other games, Crawford programmed *Eastern Front (1941)*, published by Atari in 1981. Some of the outrage, like the letter from Ting, was likely performative as well, as a kind of finger-pointing or scapegoating, with readers responding to the rhetoric of blame in antipiracy discourse by showing solidarity against those who professed such practices.

[154] Adams, "Say YOHO," 12.

[155] Their ages—both authors identify as being twelve years old—actually play into a common tactic in antipiracy discourse, of blaming piracy on younger users (see Gomes, "Secrets," 58-65). While this likely wasn't substantiated, it served to characterize noncommercial activities as *immature* or *childish*, making the proper, commercial approach to software acquisition seem more desirable.

[156] John Woo, "Pirate's Progress," *Softline* 2, no. 4 (March 1983): 4-5.

[157] George Eliades, "Starting Young," *Softline* 2, no. 3 (Jan. 1983): 7.

Nevertheless, such letters fail to capture the full range of user sentiments. With magazines taking such a clear editorial stance, and other users willing to pile on in the letters column, what could an adamantly noncommercial contribution hope to achieve in the pages of a computer magazine?[158] Though their point of view may have been expressed only minimally in these publications, opponents to copy protection were present at computer clubs, computer stores, and conventions like Applefest—and, as *Infoworld*'s Kathy Chin found, were sometimes willing to talk.[159] The clearest distillation of the pro-copying perspective came in the form of a magazine devoted to the topic, *Hardcore Computing*.[160] As Lee Gomes would write in *Esquire*, *Hardcore* "came to play the role of iconoclastic underground magazine battling the industry's stodgy straight press."[161] Founded by siblings Chuck and Bev Haight in their attic in Tacoma, Washington, *Hardcore* was founded as a response to the decision by other magazines not to run ads for a nibble-

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[158] Jim Wright of the Miami Apple User's Group did try to resist magazine efforts to define copying and sharing software as "piracy" in *Softalk*'s 1980 feature on the subject, explaining, "What our group was doing did not involve members selling software; rather, all the members paid dues and received library packs." Despite this being a common user group practices during the hobbyist era, *Softalk* nevertheless used the Miami group as an example of user group piracy (Yuen, "Pirate," 16).

[159] Adams, "Say YOHO," 12; Kathy Chin, "Have Backup-copy Firms Lowered the Pirate Flag?," *Infoworld* 5, no. 47 (Nov. 21, 1983): 60-61; Gomes, "Secrets," 58-65.

[160] The magazine ran as *Hardcore Computing* from its 1981 inception until 1983, when it split into *Hardcore Computist*, which maintained the same focus on breaking copy-protections, and the graphics-focused *Core*. While the latter would only last four issues, *Hardcore Computist* continued, becoming just *Computist* in 1986, until the magazine's end in 1993 ("*Another* Premiere Issue?," *Hardcore Computist* no. 1 [1983]: 3; "This Isn't Hardcore," *Core* no. 1 [1983]: 6).

[161] Gomes, "Secrets," 63.

copier program, Locksmith, which would allow computer users to copy even protected software.[162] Unlike most magazines of the period, *Hardcore* would parlay this resistant streak into its business practices as well, remaining independent, and primarily subscription-based rather than ad-supported, for a run of nearly twelve years.

While it was the "censorship" of Locksmith which revealed the battle between magazines and users, as Chuck Haight described, *Hardcore* took a broader stance against copy-protections. The first issue articulated a mission statement, in Haight's characteristically passionate (if overwrought) prose:

> **We support the consumer, the user**… while other editors practice a form of censorship for the 'good' of their readers (who, they feel, yield too easily to the temptation to trade copies, we at HARDCORE COMPUTING proclaim that it is our duty to fight this plague of suppression and secrecy being spread by software marketers and the magazine they advertise in.[163]

As demonstrated here, *Hardcore* consistently sought to align a "user-oriented approach" with the right to copy, thereby making those who were anti-copying also anti-*user*.[164] In so doing, the magazine rejected the prevailing move to brand all unauthorized copying, sharing, and breaking of copy-protections as unethical, as *piracy*. Indeed, rejecting the "pirate" label was central to both the publication's mantra—"We're not Pirates, but we're not fools, either"—and its editorial policy, which stated in every issue "we do NOT condone software policy, but we do believe that

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[162] For more on nibble copiers and the Locksmith controversy, see 4.3 "Gaming the System."

[163] "How to Copy the Uncopyables!," *Hardcore Computing* 1, no. 1 (1981): 6.

[164] The issue ending promotional copy puts this simply: "Copy-Protection is: anti-backup (it does not let you back up the disk), anti-listing (it prevents you from viewing the listing), anti-customizing (you cannot alter it to fit your needs.) In other words… it is: ANTI-USER!" (ad, *Hardcore Computing* 1, no. 1 [1981]: 37).

honest users are entitled to backup commercial disks they have purchased."[165] Instead of ceding the ethical ground, *Hardcore* framed the issue around the user's rights, in vaguely libertarian fashion. Because making backup copies was explicitly protected in the 1980 Amendment, *Hardcore* argued that copy-protection and anti-piracy campaigns were "the maker's attempt to stop us from having legal copies. Don't let them stop you from protecting your own rights."[166] The magazine, then, was intended as a space for users to learn how to exercise these rights. It provided space for discussing pro-sharing/copying ideas, in both the letters column and in a running feature, the "Readers Softkey & Copy Exchange." Likewise, the magazine published "softkeys," schemes for breaking commercial copy protections, and ran ads for copy programs, many of which were excluded from other magazines.[167]

The influence of *Hardcore* easily surpassed its relatively limited circulation. While it is comparatively more difficult to assess the circulation numbers of the magazine, this was by design,

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[165] For example, see "We are NOT Pirates," advertisement, *Computist* no. 28 (1986): 1-2.

[166] "Computist 5th Anniversary Editorial," Softkey Publishing (1986), https://archive.org/details/computist-scan-editorial/mode/2up . This was often accompanied by a vaguely-libertarian idea of "freedom," as readers with expiring subscriptions were implored to "renew your freedom" (ad, *Computist* no. 28 [1986]: 2), though there is some slippage between definitions of freedom, especially *personal* freedom vs. freedom of information.

[167] This definition of "softkey" is novel, coined by the magazine, seemingly as a means to avoid the negative connotations of "breaking" or "hacking" commercial software. *Hardcore* would publish its collection of softkeys, most of which were focused on game programs, in three separate volumes: *Hardcore Computist's Book of Softkeys Volume I* (Tacoma, WA: Softkey Publishing, 1985); *The Book of Softkeys Volume II* (Tacoma, WA: Softkey Publishing, 1986), which included in its introduction the text of the US Code protecting backup copies; and *The Book of Softkeys Volume III* (Tacoma, WA: Softkey Publishing, 1987), which included, at the top of its cover, "WARNING: This book must NOT be used for software piracy."

as *Hardcore* was oppositional in both its editorial stance *and* its publishing practices. Unlike nearly every other magazine in the early 1980's, *Hardcore* remained both independently-owned (it was styled "Softkey Publishing") and primarily subscription-supported.[168] Indeed, the subscription cost *never* changed, remaining $20/year for six issues.[169] While advertisements *were* included, these were more intentionally selected, at first for nibble-copier programs otherwise excluded from the pages of other magazines, and later those which fundamentally aligned with the editorial mission. As a result, *Hardcore* never attained the massive circulation numbers of corporate publishing and newsstand sales.[170] But it was also able to remain slim, averaging 32 pages at time when publications like *BYTE* were 400 plus, with the majority of space devoted to softkeys and other content.[171] As such, as the magazine would brag in 1986, a reader survey "showed that 91.2% of them keep every issue of *Computist* and add it to their reference material library. How many other magazines can you say that about?"[172]

Nevertheless, *Hardcore* did not simply fly under the radar, unnoticed by the industry and commercial press. By the (delayed) release of the second issue, several magazine editors responded to *Hardcore*'s critical treatment of the industry. One such response came from Val Golding of the user group A.P.P.L.E., who voiced support for backup copying even as he rejected *Hardcore*'s

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[168] "Hardcore Alert," *Hardcore Computing* 1, no. 1 (1981): 7.

[169] "Computist 5th Anniversary."

[170] Indeed, it never broke into the top ten of computer magazine sales (see "Boom," *New York Times,* D1). Of course, without an ad-supported publishing model, *Hardcore* didn't *need* to publicize its circulation data, either.

[171] Francis Amato, *Guide to Computer Magazines: 1985 Edition* (Dallas, TX: Steve Davis Publishing, 1985): 32.

[172] "Computist 5th Anniversary."

larger ethic.[173] That Golding saw the first issue is perhaps unsurprising, as Tacoma was squarely within the Puget Sound metro area, of which A.P.P.L.E. was the largest user group.[174] Yet another, more scathing response came in a letter from *Creative Computing*'s George Blank, who not only rejected the justification for nibble-copiers ("it is casual copying, not professional pirates, that hurts profits most") but excoriated the entire *Hardcore* project. Per Blank:

> I invite you to practice what you preach. If software prices are extortionate, how do you justify $20 a year for your few miserable pages of hard-to-read mimeographed text? For the same price, your readers could buy over 2500 pages of Apple material printed in *Creative Computing*- or even over 400 pages of Apple material if you want to throw away all our ads, general articles, and material on other computers![175]

Here, Blank sought to brand the new magazine as hypocritical, suggesting that the subscription fee meant that *Hardcore* was not sufficiently anti-capitalist to back up their noncommercial ethos. As in many such rebuttals to critiques of capitalism, Blank suggested that participating in any monetary exchange invalidated the revolutionary message.[176] But readers likely understood that the subscription model was better suited to such a purpose than the uber-capitalism of ad-supported publishing, and so the new magazine maintained its position as the standard-bearer for the fight against copy-protection. The very next year, features in *TIME* and *Esquire* cast *Hardcore* as the

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[173] Val Golding, "Rebuttal: A Letter From: Val Golding," *Hardcore Computing* 1, no. 2 (1981): 12.

[174] *Hardcore* was published in Tacoma, WA, and A.P.P.L.E. (the Apple PugetSound Program Library Exchange user group) had its first meeting at the ComputerLand store in neighboring Federal Way, WA ("About," *CallAPPLE.org*, accessed Apr. 14, 2020, https://www.callapple.org/about/history/ .)

[175] George Blank, letter, *Hardcore Computing* 1, no. 2 (1981): 37.

[176] Though *Hardcore* did advertise for itself—see "Hardcore Computing for Apple Users Worldwide," advertisement, *Apple Orchard* 2, no. 3 (Fall 1981): 81.

most prominent publication on this side of the debate, and in so doing, entrenched piracy *as debate*, rather than consensus.[177]

By engaging in the ethical debate, *Hardcore* and likeminded users set the stage for ongoing, pro-sharing activism. Richard Stallman's 1984 GNU operating system would flip the structure of copyright on its head with a new "copyleft" public license, which dictated, in legal terms, ownership rights and a commitment to continued free circulation.[178] It wasn't until the 1990's and the advent of the internet that this ethic gave rise to a larger social movement, the Free and Open Source Software movement (FOSS), which emphasized the value of "free software."[179] In his full-length study of the concept, Chris Kelty suggests that "Freeware emerged in tandem with the internet," effectively overlooking Jay Lucas' discussions of the subject nearly a decade earlier. At the same time, he admits that, while free software came to prominence in 1998, it "emerged from a happily and obscure existence stretching back roughly 20 years"—to the copy-protection-hacking hobbyists of the early 1980's.[180] Thus, while this first piracy scare has been overshadowed in the popular consciousness by the Napster-derived scandal of the turn of the millennium and the resultant DMCA, it actually set the ethical terms of the latter debate, being the first major volley in the continued fight against the corporate monopoly on circulation.

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[177] Gomes, "Secrets," 58-65; "Roaming," *TIME*, 83.

[178] Richard Stallman, "The GNU Manifesto," *Dr. Dobb's Journal* 10, no. 5 (March 1985): 30-35; Kelty, *Two Bits,* 205-7; Kelty, "Culture's," 499. Note: copy*left* asserts that an original work is open to modification only if the new product is made available on the same condition (see Olli Sotamaa, "When the Game is Not Enough: Motivations and Practices Among Computer Game Modding Culture," *Games and Culture* 5, no. 3 [2010]: 250.)

[179] Stallman, *Free Software,* 3-8.

[180] Kelty, *Two Bits,* ix, 1-2.

3.3.2 Journalism Ethics

By 1984, the increasingly close ties between computer magazines and the industry posed serious questions regarding the ethics magazine publishing. Shortly after taking over for Lawrence Curran as *BYTE* editor, Phil Lemmons penned a series of columns meant to "clear up some confusion" regarding the publication's editorial policies. The first, in March 1984, was a rather limited *mea culpa*, offering some accountability for previous shortcomings in the guise of explaining the differences between types of content.[181] The follow-up, however, entitled "A Call for Ethical Standards for Personal Computer Magazines," took a more proactive turn, articulating a set of new ethical policies. Moreover, as Lemmons wrote, *BYTE* "Pledge[d] to do our best to safeguard our editorial integrity… and call upon other magazines to do so as well."[182] The column, and the subsequent debate that it sparked, questioned the very project of the computer magazine: who it was for, where the content came from, and what ideological function it could (and should) serve.

The problem, first and foremost, was that computer magazines were not journalistic endeavors. While there *were* newsweeklies devoted to computing, first *Computerworld* and later the micro-oriented *Infoworld* (1978), computer magazines of the late 1970's and early 1980's were not comprised of large, in-house writing staffs. Instead, many computer magazines used a freelance, submission-based publishing model, curated by a small editorial staff. This was, in some sense, an extension of the voluntary labor at work in hobbyist newsletters. Synergistic Software's

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[181] Phil Lemmons, "Editorial: Where BYTE is Going," *BYTE* 9, no. 3 (March 1984): 4-6.

[182] Phil Lemmons, "Editorial: A Call for Ethical Standards for Personal Computer Magazines," *BYTE* 9, no. 4 (April 1984): 4-6.

Bob Clardy, a member of the computer club A.P.P.L.E. since 1979, was one of the many members who helped organize (and contributed to) its magazine, *Call-A.P.P.L.E.* As Clardy writes in his 2017 memoir, such contributions were merely the printed form of user group discussions: "many of us wrote articles as we figured something out how something worked and tried to explain it to everyone else."[183] This kind of voluntary labor was essential in creating many amateur-oriented publications, including club newsletters, *Hardcore Computing* and, earlier, *Creative Computing*.[184]

The practice of soliciting outside submissions of written content—notably reviews, instructional guides, and type-in programs—was a common feature of computer magazines as a whole. Open contributor policies have characterized the start-up era of new magazine genres dating to at least the early nineteenth century, as Ronald and Mary Saracino Zboray have shown at length.[185] Robert Lock, the founder and editor of *Compute!* magazine, typified just such an amateur-focused editorial approach. As he explained c. 1979, "I have a policy. When someone complains because something isn't in my magazine, I tell them its not there because nobody submitted an article on it yet. Then I ask if they'd like to do the story themselves."[186] In effect, there was little barrier to entry for those seeking to write in magazines. Like newsletters before them, these nascent publications were open to amateur contributions, in need of content and willing

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[183] Clardy, *Cyber,* 26.

[184] In *Best of Creative Computing Vol. I,* David Ahl describes a wide range of volunteers who helped make the magazine possible, including those who wrote or edited content, creating art and design, and "junior high school kids" recruited for more manual tasks (including stamping, addressing, mailing, etc.) See Ahl, "Birth," 2-3.

[185] Zboray and Zboray, *Literary,* 1-20, 190-197.

[186] Tomczyk, *Home,* 7.

to include contributions from lay users, not just journalists. Dave Albert, editor of *Softside* magazine, emphasized the importance of such submissions, and drew a direct link to computer clubs. He wrote in 1981, "*SoftSide* depends on submissions from its readers for its content. In a sense we are a large software club, culling out the best from what we receive and then publishing it."[187] Here, Albert might emphasize editorial selectivity, but it is clear that the magazine needed freelance content. This was especially true for magazines like *Softside*, which necessarily contained many type-in programs, since no writing staff could hope to create the sheer volume of programs as could genuine grassroots creativity.

Such freelance submissions posed a question of compensation. At first, the major publications were run as nonprofits, notably *Creative Computing* and *PCC*. Though open to outside submissions, neither of these magazines offered monetary compensation. Rather, they emphasized *other*, less tangible benefits, as in the education-focused *Creative Computing*'s first issue, which designated publishing space to "provide students with the opportunity to express themselves, to share their good ideas…."[188] Others, like *Personal Computing*, discussed submissions as a benefit to the community, that printed programs would function as *sharing*, to help fellow users.[189] *PCC*, meanwhile, resisted discussing payment for submissions for its entire

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[187] Dave Albert, "Outgoing Mail," *Softside* 32 (May 1981): 10.

[188] "What's Happening?" *Creative Computing* 1, no. 1 (Nov.-Dec. 1974): 4.

[189] Don Wood, "Share Your Home Programs," *Personal Computing* 4, no. 11 (Nov. 1980): 4. Note: this was immediately before the magazine was acquired by its new corporate owners, Hayden Publishing.

run, instead merely including the same submission formatting guidelines it started in 1977.[190] Again, the rationale offered by these magazines was not unique to computer publications, but replicates many of the foundational motivations Zboray and Zboray attribute to amateur writing for print, including "propagating ideas" and "assisting others."[191]

Not all publications had qualms about compensation. In a multipage column entitled "Wryte for BYTE," published in *BYTE*'s 1977 first issue, author Chris Ryland encouraged submissions. As he wrote, readers need not worry about writing quality— "no one expects you to win the Pulitzer Prize. Even if you don't write like a pro, think of BYTE as a device for getting good, if rough, ideas into print"—as the editorial staff could polish writing.[192] Instead, potential contributors were implored to consider the personal benefits of publishing, including serving the needs of other hobbyists, enhancing a resume and professional reputation, and "not least importantly, the money from published articles."[193] By 1981, the practice of enticing submissions via payment had become standard, especially for new and/or smaller publications. For example, in its frontmatter throughout 1980, *SoftSide* called for articles and programs, detailing acceptance criteria and noting "payment varies wi[th] length, suitability, ease of editing and quality."[194] The next year, it made this incentive more explicit, claiming "This is your chance to make some extra

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[190] Submission guidelines started in "Submitting Items for Publication," *People's Computers* 5, no. 6 (May-June 1977): 2, and consistently ran in the front matter. The magazine likewise continued to assert its nonprofit status, as in *Recreational Computing* 10, no. 1 (July/Aug. 1981): 5.

[191] Zboray and Zboray, *Literary*, 1-20.

[192] Chris Ryland, "Wryte for BYTE," *BYTE* 1, no. 1 (Sept. 1975): 44. [sic]

[193] Ryland, "Wryte," 44.

[194] *SoftSide* 2, no. 9 (June 1980): 5.

cash and become famous in the process!"[195] *MICRO*, a magazine similar in size and scope, ran a concurrent advertisement, which asserted "WANTED! Good Articles and Good Photos. *MICRO Pays Very Well!"*[196] Even *Creative Computing* came around to this approach in 1981, with an ad for program submissions arguing "We do pay in advance on accepted programs. Most other companies don't. We also pay a generous royalty."[197] In short, magazines had begun to compete with one another for user creativity, by offering (seemingly) competitive compensation to keep up with the rest of the market.

Such a system, though short-lived, would prove to be deeply flawed. Calling for submissions in its own first issue in 1981, *Hardcore Computing* also offered monetary compensation. Yet, in characteristic, oppositional style, *Hardcore* not only named its prices directly ("$20 to $100 for articles, columns, or programs") but zeroed in on the competition, claiming, "We also publish the $$$ received by the author of each article we print… a policy not practiced by other magazines in general."[198] This kind of transparency never did occur on a large scale; rather, as corporate ownership and ad-based revenue structures took hold between 1981 and 1984, the open-submission model was largely replaced by staff writers and invited columns. Once a leader in freelance contributions, *BYTE* had grown so profitable and to such a large circulation that it surpassed even a highly-selective model of open-submission, with amateur contributions running counter to the corporate sheen to which it aspired. New, high-profile magazines began to

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[195] "Attention Authors!" *SoftSide* 3, no. 4 (Jan. 1981): 6.

[196] "WANTED! Good Articles and Good Photos. *MICRO Pays Very Well!"* advertisement, *MICRO: The 6502 Journal* no. 32 (Jan. 1981): 77.

[197] "Attention: Programmers," advertisement, *Creative Computing* 7, no. 8 (Aug. 1981): 5.

[198] "Are You a Hardcore Writer?" *Hardcore Computing* 1, no. 1 (1981): 36.

adopt this professionalized approach. *Softalk*, founded in 1980, never solicited user submissions for articles, instead utilizing a consistent writing staff (which would come to be shared across its family of publications, including game-focused *Softline*). Rather, the magazine was committed to publishing a large number of reader letters, making the letters section *"*a lively, dedicated space for readers to circulate concerns, questions, and opinions about their computers and their emergent sense of shared culture."[199] While the editorial commitment to reader perspectives was laudable, it nevertheless served to separate the *official* voices (of staff-writers, as well as industry insiders, who might be interviewed for a staff-written feature or asked to write a column, feature, or review) from the *amateurs*, the lay users who wrote in to ask or answer questions.[200] Another new publication, 1982's *PC Magazine*, was even more obvious in its corporate aspirations, and the publications it sought to emulate.[201] As editor David Bunnell wrote in his introductory editorial,

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[199] Nooney, Driscoll, and Allen, "From Programming," 110. As these authors note, the page-count of the letters section grew along with the magazine's overall page count, including a massive 57 letters in October, "between three and four times as many letters as higher-profile magazines such as *BYTE* and *Creative Computing*" (Nooney, Driscoll, and Allen, "From Programming," 113).

[200] Examples of the prioritization of industry insiders includes *Softalk*'s long-running "Exec" interview series, as well as the recurring feature, "If Then Maybe," wherein the so-called "Softalk Sages" (aka the "Softalk Applewise Guild and Expert's Syndicate") would answer user questions. These consisted of luminaries like Broderbund's Doug Carlston, Penguin's Mark Pelczarski, and Synergistic's Bob Clardy, among others (for example, "If Then Maybe," *Softalk* 4, no. 8 [April 1984]: 67-68).

[201] *PC Magazine* was founded shortly after the August 1981 release of the IBM-PC, that platform on which it focused. The first issue came just over a year after Bunnell's previous magazine, *Personal Computing*, sold to corporate publisher Hayden ("Personal Computing Sold to Hayden Publishing," *Personal Computing* 4, no. 12 [Dec. 1980]: 11), and *PC*'s creative and editorial decisions in its first year—its glossy sheen, rapid expansion (from 92 pages

"We unabashedly aspire to that elite set of magazines – *Rolling Stone, Playboy,* and ***BYTE***—that seem to magically combine concept and timing in a brew which results in a dizzy success cycle."[202] These lofty aspirations left little room for the rough, unpolished ideas *BYTE* had called for only five years earlier. Placing this development within the field of mass-market magazine publishing, as Bunnell did in *PC Magazine,* made sense when publications were increasingly owned by print media conglomerates. The transition, then, would seem like progress, with the assumption that professional writing staffs would provide better quality content than hobbyists, whose products were often *amateurish* (in the pejorative sense). Likewise, when content was needed beyond what staff writers could accommodate, like reviews of specific machines, these could be farmed out to supposed experts rather than depending on whatever submissions might occur.

What resulted, however, was a highly exploitable situation, with a perverse incentive structure. In his *Infoworld* expose on magazine publishing ethics, Jim Bartimo details "the practice, which is common in many publications, of publishing an article about a product or product category that was written by somebody who works for a company that sells that product or similar products."[203] The rationale for running such content was complex, and often contradictory. *BYTE* initially denied the existence of such a practice, claiming it was either an aberration or merely the fault of users' "confusion about different kinds of articles… that have sometimes been mistaken

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in issue #1 to 400 pages by issue #8), and constantly changing editors, subscription rates, and publishing schedule—suggest an intention to attract a buyer as quickly as possible. Which it did: Ziff-Davis purchased *PC Magazine* by December of its first year (*PC* 1, no. 8 [Dec. 1982], 6.)

[202] David Bunnell, "Flying Upside Down," *PC: The Independent Guide to IBM Personal Computers* 1, no. 1 (Feb.-March 1982): 10.

[203] Bartimo, "Computer Magazines," 54.

for one another," but a follow-up the very next month acknowledged the larger problem.[204] This "confusion" over content types, however, speaks to the magazine's internal differentiation between staff writers and outside content—indeed, having in-house writing staffs was seen as a way to *avoid* advertorials and conflicts of interest.[205] David Bunnell, founding editor of *Personal Computing*, *PC Magazine,* and *PC World*, blamed unethical content on magazines being miserly: "Universally, computer magazines are way too cheap… It's the fault of the magazines for not paying very well."[206] Though overstated, Bunnell's comments reflect publishers' need to balance content with cost-effectiveness, as even the highest end of freelance payments (up to $1000-$1200 per article, in some cases) was cheaper than giving a staff writer salary and benefits.[207] The relatively blind nature of freelance contributions opened magazines up to various conflicts of interest, from those with undisclosed connections to companies to PR firms ghostwriting pieces

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[204] Lemmons, "Where," 4; Lemmons, "A Call," 4; Bartimo notes that *BYTE*'s editorials were the result of an editorial change, as new editor Phil Lemmon sought to make amends for the practices of his predecessor, Lawrence Curran, who "looked at *BYTE* as a type of trade publication that served insiders instead of consumers" (Bartimo, "Computer Magazines," 54).

[205] Though it was far from perfect: both *BYTE* and *Infoworld* felt the need to explicitly ban staff writers from taking benefits from manufacturers, including expense-paid trips and stock ownership (Lemmons, "A Call," 4-6; Stewart Alsop II, "Magazine Ethics," *Infoworld,* Dec. 10, 1984, 5).

[206] Bartimo, "Computer Magazines," 55.

[207] By 1984, some publications still paid $100-$250, including *Infoworld*, but the major, corporate-owned magazines (all of Bunnell's former publications, *BYTE*) had begun to pay larger fees, in line with their massive publishing footprints.

for industry executives to submit.[208] While such insiders had the requisite knowledge to evaluate new products, the reviews they wrote were typically positive. For magazines beholden to advertisers, there was little reason to look into these arrangements, as such positivity also meant preserving profitable relationships. Hayden's *Personal Software*'s policy of only running positive reviews may have been the most egregious example, but readers were nevertheless suspicious of magazines providing pro-advertiser fluff.[209]

The best available solution was professionalization, to formally refashion the computer press as *journalism*. By publishing their new ethical codes in detail, *BYTE* and *Infoworld* set a new standard for computer publishing, forcing competitors to address their own practices or lose face. Likewise, computer magazine writers defined themselves as a distinct segment of the press, forming a professional organization, the Computer Press Association (CPA), in 1983.[210] The

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[208] Consultant John Xenakis told Bartimo, some consultants would write content which depicted clients in a positive light (for a fee), while *PC Magazine* editor Lawrence Magid claimed to have "seen public-relations firms ghostwrite articles for industry executives and charge as much as $2,000 to put the executive's name on it as author. In this case, the publication believes it is receiving the executive's viewpoint and may never know a public-relations firm was involved" (Bartimo, "Computer Magazines," 55).

[209] *Personal Software* claimed to review many software products, and only publish reviews for the best. Readers and journalists easily saw through this rationale, and by 1984 Hayden's Charles Martin vowed "We'll be writing about the good and bad points of products" (Bartimo, "Computer Magazines," 56).

[210] Period sources differ as to the exact date of establishment, citing either the 8th West Coast Computer Faire (San Francisco, March 18-20, 1983) or the National Computer Convention (Anaheim, May 1983). Regardless, organizing a professional organization for computer writers was not an immediate process, and so by 1984 it was still considered relatively new. See "Grapevine," *Infoworld* 6, no. 19 (May 7, 1983): 33; Martin Porter, "The Softening of Publisher's Row," *PC Magazine* 2, no. 4 (Sept. 1983): 200; "A Good Idea Taken to the Limit," *Infoworld* 6, no. 19

group, as described by organizer Barbara Elman of *Word Processing News*, was meant to "monitor the computer publishing business" and provide resources to writers, and was open to anyone writing about the computer industry or writing for a manufacturer or publisher.[211] As such, when *Softalk* writer and CPA membership chairman Roe Adams III told Bartimo that "the computer press is monitoring itself" against ethical transgressions, he meant that writers had taken professional responsibility to police their own work.[212] In both cases, editorial staffs and writers alike were forced to consider the ethical obligations of computer magazines becoming a major publishing sector. Less than a decade after the newsletter-derived early years, magazines now held tremendous economic power. These publications were no longer comprised of communication between hobbyists, but became the site of engagement between producers and prospective consumers. Accordingly, they could not remain open to any and all submissions, thereby risking covert (or explicit) PR campaigns, nor allow writers to occupy a hazy middle-ground between hobbyists and commercial interests. In a sense, computer magazines had surpassed the scale on which amateurism was a viable model, and so were wholly incorporated in the web of commercial production.

Ultimately, this professionalization marked the end of magazines as amateur endeavors. Both the piracy scare and the publishing ethics scandal contributed to the same effect, of entrenching the commercial production model for software. The hardline against so-called piracy may have been effective in marking any copying and sharing outside of commercial channels as

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(May 7, 1984): 33; David Ahl, "The 8th West Coast Computer Faire, San Francisco, March 18-20, 1983: Perceptions and Reflections," *Creative Computing* 9, no. 6 (June 1983): 180-191.

[211] Porter, "Softening," 200; "Good Idea," 33.

[212] Bartimo, "Computer Press," 56.

deviant, but it was magazine's alignment with the industry and the professionalization of writing which made commercial production the norm. The relative disappearance of type-in programs may be seen as both a sign of this process, and its result. Whatever space wasn't taken up by advertisements was designated for professionalized content, for writers (now *journalists*) to cover various topics, especially the industry. Amateur programs, like amateur writing, were cast as inferior, second-class products unworthy of a commercial release. Moreover, noncommercial creativity was marked as the alternative to a commercial *norm*, a perception which carried over into internet culture of the 1990's and the game-modding scene into the 2000's.[213] In essence, the slippage which had characterized computer magazines from the outset, between newsletters and magazines, hobbyists and industry insiders, was brought to an end. Once magazines commercialized and magazine writers professionalized, most computer magazines ceased to be channels of communication for amateurs and hobbyist culture. Instead, the discourse contained therein continually reasserted the producer-consumer relationship, with journalists as intermediaries, and modelled, in editorial practice, a system largely closed off to alternative models of creativity.

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[213] For more on modding, see David Nieborg and Shenja van der Graf, "The Mod Industries?: The Industrial Logic of Non-market Game Production." *European Journal of Cultural Studies* 11, no. 2 (2008): 177-195; Cindy Poremba, "Remaking Each Other's Dreams," *New Forms Festival* 1 (2003): 1-8; Sotamaa, "When"; Alexander Unger, "Modding as Part of Game Culture," in *Computer Games and New Media Cultures: A Handbook of Digital Games Studies*, eds. Johannes Fromme and Alexander Unger (New York: Springer, 2012), 515-16; Postigo, "Modification," 325; Postigo, "Of Mods," 300-313.

3.4 Conclusion: Something Like A Totality; or, Are We All Pirates?[214]

When Chuck Haight wrote of a conflict between Apple users and computer magazines in 1981, he failed to see the metaphorical forest for the trees. Situated as he was in the midst of a historical shift, Haight understandably confused the sides of the struggle. Magazines, as a discursive apparatus, were not neutral, but they also weren't the countervailing force to users. What he observed, rather, was a conflict between computer users, who continued the noncommercial practices and often ethic of the 1970's hobbyists, and the booming micro-/home-computer industry, which sought to commercialize and commodify computing culture. Doing so required reshaping users into consumers, a market, thereby aligning computing with the producer/consumer divide central to capitalist mass-consumption. Computer magazines provided an ideal resource for this ideological project. As has been shown throughout this chapter, the years between 1975 and 1984 witnessed the process of co-optation, as computer publications moved from grass-roots, user-driven newsletters to glossy, corporate-published magazines. Thus, magazines became the enemy, in Haight's formulation, when they came to embody the rhetoric of the industry, working to control unruly users in the text while bombarding readers with advertisements and PR spin.

Of course, computer magazines did not comprise the totality of computing culture. Far from it. But by establishing the commercialist paradigm as the norm, and branding other creative and exchange practices as *piracy*, those who did not fit were pushed underground. Staunchly

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[214] Bev Haight, "Editorial: They Don't Want Their Readers to Back Up 'Protected' Disks! Censorship in Computer Magazines," *Hardcore Computing* 1, no. 1 (1981): 4.

noncommercial groups became *alternative*, an oppositional force. For those who sought to resist, like *Hardcore Computing* or copy-protection-breaking hackers, this was all the better—it made the fight explicit. Many others, however, didn't want to be deviant, let alone break the law. Thus, magazine discourse did succeed, not in ending noncommercial practices, but in severing large-scale communal ties built around such practices, which early magazines had fostered and enabled. Without this resource, users would have to remain on the margins of magazines, or create their own channels of communication once again. The battle between users and the industry may have been "won" by commercial interests, but, like commodification itself, the totality was never complete. From the cracks would arise new forms of creativity, as users imagined new possibilities beyond the limited scope of routinized, industrial production.

4.0 Circulation Media: Imagining Noncommercial Affordances and Software Practices through the 5 ¼" Floppy Disk

The May 1981 issue of *BYTE* magazine featured a cover story on software piracy. In its characteristic fashion, the magazine announced its subject via a dynamic, painted cover image: a Viking longship crashes through a rough sea, its dragon-faced prow projecting into the stormy sky. Above it all is a massive floppy disk, rigged in place of a sail, bending outward from the force of the wind, with a portion of sky and mast visible through the hole in its center. At the bottom of the page, its dark ink somewhat obscured by the deep blue of the ocean, is the phrase "Software Piracy." Read alongside an accompanying caption in the "In This Issue" section, the cover offers a distinct visual argument through its representation of piracy. As the caption asks, "Did you know that the Vikings were notorious pirates? In Robert Tinney's striking cover painting, executed from an original design by Jonathan Graves, the floppy disk is the 'sail' that powers the underhanded business of software piracy."[1]

[1] "In This Issue," *BYTE* 6, no. 5 (May 1981): 4.

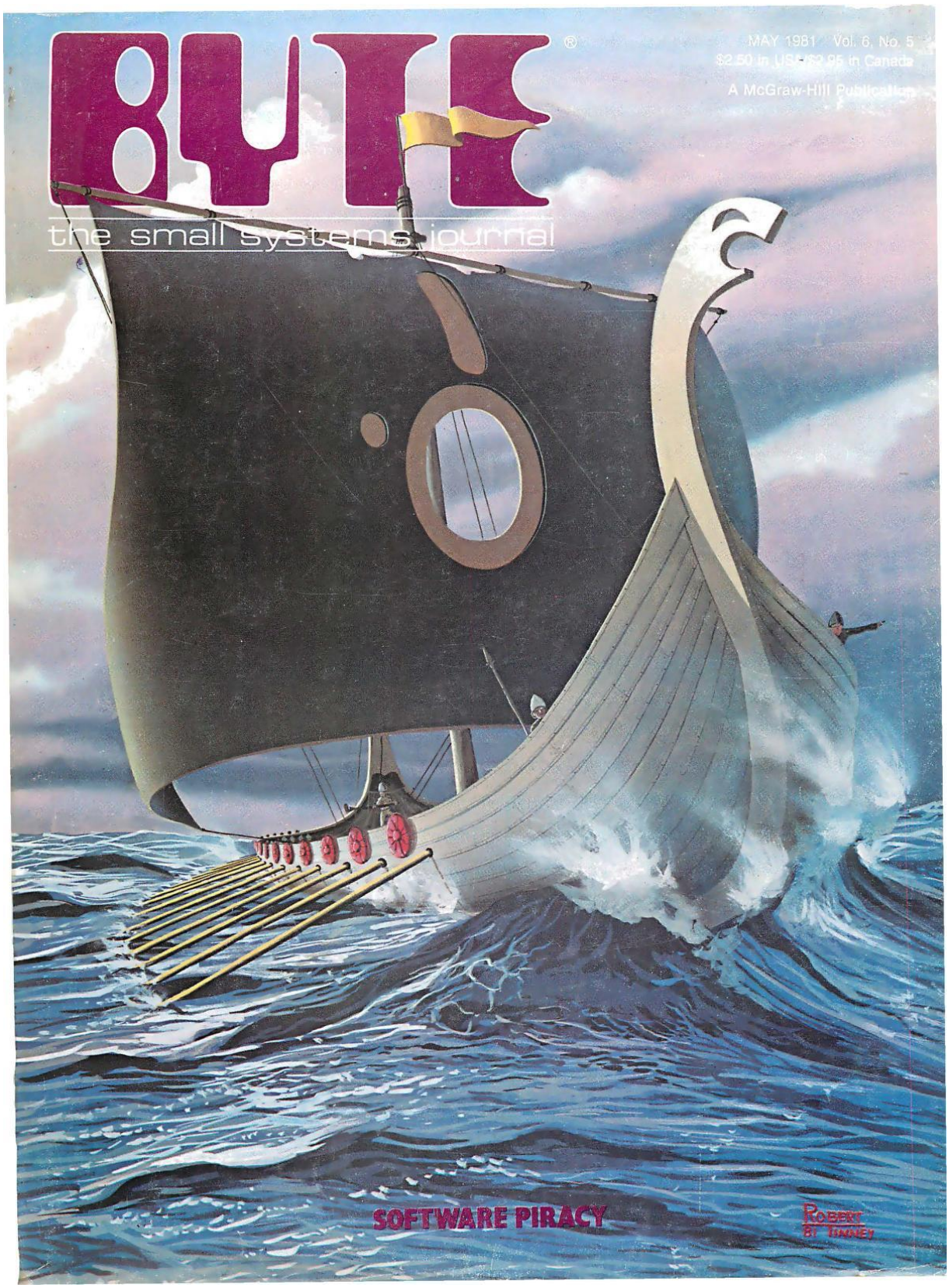

Figure 4.1: Cover, BYTE 6, no. 5 (May 1981); painted by Robert Tinney, design by Jonathan Graves

BYTE was not alone in its piracy concerns. The subject of piracy was increasingly common in home and personal computing magazines of the early 1980's, with no real distinction between gaming and application software piracy.[2] *Softalk* had published its own piracy issue in the previous October, and features on the subject could be found in the pages of *Compute!*, *Computerworld*, and the myriad other publications devoted to personal computing.[3] Most visual representations of piracy tended to represent the practice through an (often campy) approximation of the eighteenth-century privateer, with images of people in period costumes, with eye-patches and parrots (as in figure 3.5, in the previous chapter).[4] Such a move was strategic; as open-source advocate Richard Stallman writes, commercial publishers sought to create mental association between piracy and copyright infringement, in order to "imply that [software piracy] is ethically equivalent to attacking ships on the high seas, kidnapping and murdering people on them."[5]

Why *BYTE* chose to use Vikings instead of Caribbean-style pirates isn't immediately clear—perhaps they were simply seeking a unique spin on the typical imagery, or sought to avoid the inherent camp of eyepatches and peg-legs. Whatever the reason, the magazine seems to have felt little need to justify the decision, with the textual description simply offering Vikings as a

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[2] Indeed, there were *no* computer gaming-specific magazines until the end of 1981, when *Computer Gaming World* and *Electronic Games* both launched (Sipe, "The Greatest," 6).

[3] As in Yuen, "Pirate," 14-17; Harvey Gilbert and Jonathan Joseph, "Computer Piracy," *Computerworld* (May 10, 1982): In Depth 1-9; Thornburg, "On Piracy…," 14-16; Tommervik, "The Great… Part 1," 18-22.

[4] See Gilbert and Joseph, "Software Piracy," ID 1; cover, *Softalk* 1, no. 2 (1980).

[5] Richard Stallman, "Words to Avoid (or Use with Care) Because They are Loaded or Confusing," in *Free Software, Free Society: Selected Essays of Richard M. Stallman* (Boston: Free Software Foundation, 2002); Mirghani, "The War," 117; for the history of copyright-infringement-as-piracy, see Johns, *Piracy*.

figural stand-in for pirates thanks to a shared history of pillaging. But what makes the *BYTE* cover uniquely effective is that the human figures are minimized, largely obscured and out of focus. Instead, the cover image foregrounds the *medium* rather than the unruly user—it is the 5 ¼" floppy disk in the role of the "sail," responsible for powering the ship. In so doing, the image posits the floppy disk as a necessary condition of possibility for unauthorized circulation and exchange of content. The disk is not simply a pirate's tool, but actually encourages the re-creation and recirculation of content outside of the commercial frame—in short, what the industry would deem "piracy." By aligning the floppy with noncommercial practices, the image complicates the role of the medium in shaping use practices. Is it a resource for those *already* seeking to resist the narrow bounds of commercially-prescribed use? Or does it motivate new resistance, effectively creating "pirates" with its inherent capabilities?

At its root, this juxtaposition of the 5 ¼" floppy disk with software piracy poses a question of *affordances*, of the relationship between the (media) object and its use. The concept of affordances arose in the field of ecological psychology, with James J. Gibson's effort to explain the connection between the organism and its environment. As he writes, "the *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill… it implies the complementarity of the animal and the environment."[6] While Gibson was particularly interested in the issue of perception, the concept was soon adopted by design studies (see Norman 1988), and has since been more broadly applied in communication and technology studies, as Sofie

[6] James J. Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton Mifflin, 1979), 127; originally posited in James J. Gibson, *The Senses Considered as Perceptual Systems* (Boston: Houghton Mifflin, 1966), 285.

Pedersen and Jyette Bang have explicated at length.[7] Such applications, however, have struggled to balance human agency and the materiality of technology, as the approach risks either "granting artifacts too much efficacy… [or] arguing that artifacts only afford what subjects perceive them to afford."[8] The recent tendency has been to emphasize the social rather than risk technological determinism; focusing on the social, and thereby agencies of users, however, neglects the material components of the technology and the intentions of designers and producers, all of which *combine* in the process of use. As Peter Neff and Gina Nagy suggest, what results is a need for "a kind of middle ground between technological determinism and social construction."[9] To do so, those authors propose a concept of *imagined affordances*, whereby uses "emerge between users' perceptions, attitudes, and expectations; between the materiality and functionality of technologies; and between the intentions and perceptions of designers."[10] Actual use practices, then, arise from

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[7] Sofie Pedersen and Jyette Bang, "Historicizing Affordance Theory: A Rendezvous between Ecological Psychology and Cultural-Historical Activity Theory," *Theory and Psychology* 26, no. 6 (2016): 731-50; Don Norman, *The Design of Everyday Things* (New York: Basic Books, 1988).

[8] Jenny Davis and James Chouinard, "Theorizing Affordances: From Request to Refuse," *Bulletin of Science, Technology & Society* 36, no. 4 (2017): 242; see also Adrienne Shaw, "Encoding and Decoding Affordances: Stuart Hall and Interactive Media Technologies," *Media, Culture & Society* 39, no. 4 (2017): 594-5; the social sciences have likewise struggled with this "determinist-constructivist impasse," as detailed in Gale Parchoma, "The Contested Ontology of Affordances: Implications for Researching Technological Affordances for Collaborative Knowledge Production," *Computers in Human Behavior* no. 37 (2014): 363.

[9] Peter Neff and Gina Nagy, "Imagined Affordance: Reconstructing a Keyword for Communication Theory," *Social Media + Society* 1, no. 2 (2015): 2.

[10] Neff and Nagy, "Imagined," 5.

the interaction between not only the material (what the medium/technology can do) and the user (what uses are perceived or imagined), but also from design (the *intended* uses).[11]

Storage media like the floppy disk pose a particularly acute challenge in defining affordances. Unlike online platforms or gaming environments, which are so prevalent in literature on affordances, storage media are neither clearly interpersonal nor interactive. Rather, storage media are defined by a single function: their *memory*, the ability to store data and programs until called up by a human user. This has been the case since at least the punch cards and paper tapes of earlier mainframe computing interfaces, including those which were designed to hold initial "boot" programs.[12] While the development of the microprocessor made computer technologies cheaper and more compact, effectively bringing computing out of institutional centers and into the hands of individual users, the prevailing lack of significant internal memory in disk-based systems meant that early home and micro computer platforms were still inherently rooted in storage media.[13] These took on a variety of different, often overlapping, forms, from paper tapes to new and

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[11] Unlike social construction of technology (as in Ronald Kline and Trevor Pinch, "Users as Agents of Technological Change: The Social Construction of the Automobile in the Rural United States," *Technology and Culture*, 37, no. 4 [1996]) or reception studies (Pertti Alasuutari, "Introduction: Three Phases of Reception Studies," in *Rethinking the Media Audience: The New Agenda*, ed. Pertti Alasuutari [Thousand Oaks, CA: Sage, 1999]: 1-21), the affordance-based approach places the focus squarely on *use* rather than meaning-making, thus better accounting for the agentive potential of the object itself.

[12] As in, initialization programs used in starting up a computer, usually an operating system. Kirschenbaum offers a useful description this process (Kirschenbaum, *Track*, 61; Ceruzzi, *History*, 132).

[13] For more on the role of the microprocessor, see Robert Noyce and Mercian Hoff, "A History of Microprocessor Development at Intel," *IEEE Micro* 1, no. 1 (1985): 8-21; Campbell-Kelly, *From Airline*, 201-202; Freiberger and Swaine, *Fire*, 12-13.

innovative magnetic forms (cassettes, floppy disks of varying size, and early hard disks). A 1988 design guide offers a succinct description of the appeal of storage media, specifically floppy disks, to the home computer user: "a disk drive is useful… because it gives the system large amounts of easily accessible, nonvolatile storage capacity in a compact package."[14] The fact is, however, that such subjective judgments were merely relative, as *none* of the storage formats of the late 1970's and early 1980's were particularly well suited to long-term storage. As Bruce Sterling writes in *Permanence Through Change*, "Bits have no archival medium. We haven't invented one yet… we have no way to archive bits that we know will be readable in even 50 years. Tape demagnetizes. CDs delaminate. Networks go down."[15] Certainly, all of the early forms of home computer storage media were remarkably fragile: paper tape tears and folds, cassettes break, and disks were subject to friction, contamination, and interference.[16] They get otherwise corrupted, and are subject to decay. So, while storage may have been the *preferred* use of these technologies, as designated by their design and naming conventions, they were far from optimal for the task.

Yet the very same attributes that made storage media, and the 5 ¼" floppy disk in particular, so ill-suited for archival storage allowed them to better serve a secondary function: as media for circulation. In an era before widespread digital file-sharing was possible for home computer users, the exchange of digital objects (like programs) required physical storage media. While storage

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[14] Edward Teja, *The Designer's Guide to Disk Drives* (Reston, VA: Reston Publishing, 1988), 55.

[15] Bruce Sterling, "Digital Decay," in *Permanence Through Change: The Variable Media Approach*, eds. Alain Depocas, Jon Ippolito, and Caitlin Jones (New York and Montreal: The Solomon R. Guggenheim Foundation/The Daniel Langlois Foundation for Art, Science, and Technology, 2003), 20.

[16] Teja, *Designer's*, 41-46 goes in depth on disk problems: friction from particles and head wear, dropout, magnetic interference, warping (coefficients of expansion), low tensile strength, etc.

capacity was no doubt important for holding content, storage alone was insufficient. Users needed media that was standard enough that others could access its content, that was cheap enough ($2-$4 per disk) to experiment with or make extra copies in case of failure, and that could be easily transported to reach distant users.[17] All of these characteristics were important to the nascent consumer software industry of the period, which drew upon the floppy disk's accessibility and transportability to tap into a large (and growing) potential audience. At the same time, the floppy disk's capabilities made it a crucial resource for noncommercial, amateur game creation and circulation. The medium's relatively open writability meant users could not only create new game programs, but manipulate and learn from those created by others, as well as share these with friends (sometimes in spite of intellectual properties restrictions). The portability of the disks meant that this sharing could operate on a large scale, allowing exchange in a way that would otherwise have been limited by a high barrier to entry and lack of available audience. Thus, while storage media like the 5 ¼" disk may not have been *designed* to optimize circulation and redundancy, users

[17] Shugart's original "minifloppies" (one-sided, single-density) retailed at 10 for $45 ("Shugart Adds Minifloppy Drive," *Computerworld* [Sept. 13, 1976]: 51), but grew increasingly cheaper with competition and technological development. By the early 1980's, consumers had a range of choices at different price points, dictated by manufacturer, density (single or double), sidedness (single or double), and sectoring (hard or soft) (Teja, *Designer's*, x). For example, "One Floppy Disk Rises Above All Others. Maxell. The Gold Standard.," Catalog, Maxell Corporation, Document CP83102, 1983, https://www.apple.asimov.net/documentation/advertisements/misc/Maxell%20Catalog%201983.pdf. The $2-3 average derived from: Bates, "Floppy Disk," which cites ITC selling minifloppies for $1.50 each at quantity; Tommervik, "The Great… Part 2," 11, which estimates $2.20; and dealer listings, such as "Big Savings on Atari & PET!" advertisement, Computer Mail Order, *MICRO* 34 (March 1981): 25; "Write for Catalog," advertisement, AB Computers, *MICRO* no. 32 (Jan. 1981): 22.

nevertheless identified these capabilities within the media, and built use practices accordingly. When these practices did not adhere to those preferred by the industry, which sought to restrict the medium to fit into the commodity model, a conflict took hold between users and the industry over what constituted "piracy."

With this chapter, I explicate the imagined affordances of the 5 ¼" floppy disk, and the central role the medium played in shaping noncommercial software culture in the late 1970's and early 1980's, particularly by allowing the circulation of gaming programs. To do so, I begin with design history of the floppy disk from the 8" to the 5 ¼" form, tracing how designers (first at IBM, then Memorex and Shugart Associates) expected the medium to be used. Attending to patents, engineer-authored publications, and *ex post facto* interviews, I reconstruct not just what disks were supposed to do, but what uses the creators imagined they could do. Then, I consider how, as the products were moved to the consumer market, design intentions calcified into a prohibitive rhetoric meant to limit use practices to better fit the commercial frame. But users could see more capabilities, imagining affordances that took disks beyond these "official" uses, and so developed resistant practices—including unauthorized copying and disk notching—which allowed new methods of creation and circulation. Finally, I examine the ways in which new disk-based use practices drove the industry to *produce* "software piracy," reframing noncommercial practices as illicit in order to restrain users. When the user base pushed back, notably in the pages of *Hardcore Computing/Computist*, the distinction between games and other software was brought to the fore, with the former deliberately marked as commodity. As this history suggests, it was the shareability and writability of the form which made the 5 ¼" floppy disk so essential: it not only met an existing need for the amateur user base, but reinforced a creative impulse outside of the narrow parameters of production allowed by the commercial paradigm of the consumer industry.

4.1 Origins of the 5 ¼" Floppy: Design, Intentions, Competition

At the end of 1978, the *New York Times*' William Bates declared that floppy disks, "once the ugly ducklings among computer technologies, have suddenly come into their own."[18] Although the floppy disk, in its original 8" iteration, had been marketed as early as 1971, disk storage did not become prevalent until that last few years of the decade. The boom in disk technology came shortly after Shugart Associates introduced the 5 ¼" floppy in late 1976, which soon supplanted both its 8" forebear and competing magnetic forms (like the cassette) to become the industry standard.[19] Analysts were quick to note the source of this growth; as a 1978 report for the IEEE explains, "computer hobbyists responded immediately to the availability of the 5.25 inch drives with immediate volume purchases."[20] But few realized that it would be these "hobbyists"—the users of the new micro and home computer platforms—rather than small business interests which would determine the future of the medium (and computing as a whole). Reconstructing the development process surrounding the floppy disk, in both its original 8" and the subsequent 5 ¼" form, brings into view the role of imagined affordances in *design*. After creating the medium for an intended purpose, engineers began to imagine other uses—mailing, backing up data, etc. As

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[18] Bates, "Floppy Disk."

[19] The first 5 ¼" drive was the Shugart Associates SA400 "minifloppy" disk drive. See Warren Dalziel, Don Massaro, and George Sollman, "Oral History Panel on 5.25 and 3.5 inch Floppy Drives," Jim Porter, Computer History Museum, January 3, 2005, 12. http://archive.computerhistory.org/resources/text/Oral_History/5.25_3.5_Floppy_Drive/5.25_and_3.5_Floppy_Panel.oral_history.2005.102657925.pdf .

[20] James Porter, "The Disk Drive Industry," *IEEE Transactions on Magnetics* 14, no. 5 (July 1978): 152.

this original work was built upon, particularly in the development of the 5 ¼" minifloppy, certain uses were emphasized and encouraged. Yet, while many of the anticipated capabilities were ignored or discouraged, they did not disappear; they simply became latent, to be tapped into by new users with new exigencies.

Despite operating mostly in the mainframe environment, the 8" floppy disk was crucial in establishing the design parameters and technological processes of its 5 ¼" descendant, as there was a relatively direct line of development between the two. The origins of the floppy disk technology as a whole can be traced to the variety of magnetic storage forms that existed throughout the 1950's and 1960's, including rudimentary flexible-disk technology. While punch cards were the most popular input medium during the period, these were relatively fragile and with limited capacity. As such, researchers sought to develop new media which would be comparatively fast, durable, and capacious, and so suited for boot programs.[21] In their discussion of this history, Seiichi Yaskawa and John Heath identify a 1960 experiment by the Boston-based Laboratory for Electronics, Inc. as perhaps the first flexible-disk drive.[22] As co-inventor R.T. Pearson described in *Proceedings of the IRE* the following year, the medium was little more than magnetic tape technology arranged differently, as "a thin disk of mylar recording tape (2 mils in

[21] See 4.0 footnote 12 (page 135) for definition.

[22] As opposed to hard-disks, more the predecessor of hard-drives (internal memory) than the floppy disk (external storage medium).Seiichi Yaskawa, John Heath, "Chapter 3: Data Storage on Flexible Disks," in *Magnetic Recording, Volume II: Computer Data Storage*, edited by C. Denis Mee and Eric D. Daniel (New York: McGraw Hill, 1988), 130-169.

thickness)" affixed to a backplate.[23] While this research never yielded a commercial product, and was more akin to a hard-drive in its application, insofar as it was not intended for removal and handling, such research on flexible magnetic media made possible the commercial release of the first 8" floppy disk drives in 1971.

The 8" drive, in the conventional sense, began with IBM's Initial Control Program Load (ICPL) Program in 1967.[24] As the name of the program suggests, the intended purpose was to develop a device to load an initial or diagnostic program into a mainframe computer.[25] The early disk was read-only, just like the punch cards it was to replace, albeit with much greater efficiency. Shortly after the final product, affectionately nicknamed the "Minnow," was released, it was clear that the floppy disk was open to more applications. Former IBM and Memorex engineer James Adkisson recalls, "it wasn't simply [thought of] as a program load device… it was very clear that this was going to end up being the primary IO device… for various diverse equipment."[26] This understanding of the floppy disk as a multi-platform medium is crucial, as other manufacturers soon challenged IBM's monopoly on disk drive technology, leading to a need for standardization and compatibility. Memorex would release its own disk drive, the Memorex 650, in 1972, followed

[23] R.T. Pearson, "The Development of the Flexible-Disk Magnetic Recorder," *Proceedings of the IRE* 49, no. 1 (1961): 164-74.

[24] James Adkisson, Warren Dalziel, and Herbert Thompson, "Oral History Panel on 8 inch Floppy Disk Drives," Jim Porter, Computer History Museum, May 17, 2005, 3.

[25] Yaskawa and Heath, "Data Storage," 132.

[26] Adkisson et al., "Oral History Panel on 8 inch Floppy," 5.

shortly by Shugart Associates.[27] But whereas the IBM product had been read-only, making it well-suited to initial program load, Memorex offered read-write capabilities, promising interchangeability—that disks could be read or written unit-to-unit.[28] Memorex's OEM Manual for the 650 was explicit about the value of such functionality, arguing that this would "simplify the distribution, processing, and storage of information."[29] As such, whereas IBM may have set the *de facto* standards for the medium, other manufacturers (including Memorex and Shugart Associates) soon pushed the disk drive in new directions. Disk technology progressed rapidly, primarily through increases in density, and therefore storage capacity. As it did so, the competition between manufacturers forced considerations of interchangeability and backward compatibility, preventing the floppy from being a proprietary medium—a fact which would prove crucial to its viability as a medium for computer gaming.[30]

Whereas Memorex and Shugart shaped the floppy disk into an IO medium, suited to written programs and sharing data, IBM's designers also seem to have anticipated potential (though then-undeveloped) capabilities of the form. In their original patent for the disk cover, filed in late 1969,

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[27] Adkisson et al., "Oral History Panel on 8 inch Floppy," 7-9; See also Memorex Corporation, "650 Flexible Disk File OEM Manual," Document #2944.010, 1972.

[28] Yaskawa and Heath, "Data Storage," 133.

[29] Memorex, "650," 1; OEM meaning "original equipment manufacturers"—in other words, hardware manufacturers who would incorporate another company's products into their own (see Kidder, *Soul*, 17, 24). For Memorex and other drive manufacturers, this meant they would sell their drive technology to be built into computers; Shugart itself provided the drives which Apple built into the Apple II, though Steve Wozniak famously simplified the control circuit (Greg Williams and Rob Moore, "The Apple Story Pt. II: An Interview with Steve Wozniak," *BYTE* 10, no. 1 (1985): 167-68; Ceruzzi, *History*, 236; Freiberger and Swaine, *Fire*, 225-28).

[30] See note 88 for longer discussion of proprietary storage media in console gaming.

IBM's Robert Flores and Herbert Thompson were meticulous in describing the affordances they perceived in the floppy (figure 4.2).[31] Again, the document stresses read-only functionality, and specifies the intended utility for "loading an initial control program" and as "diagnostic microprogram storage." But the authors then added yet *another* possible use—"as a microprogram storage backup"—which hinted at both the form's reproducibility and the precarity of magnetic storage in general.[32] Most notable in the patent, however, is the discussion of the physical character of the floppy disk, and the capabilities that this entailed. The authors begin with three simple adjectives to describe the covered disk, each of which are useful in understanding the larger perception of the medium: it "is rugged, inexpensive, and mailable."[33] In the first sense, the patent continued by suggesting that the disk "is lightweight… yet rugged enough to withstand rough handling."[34] While such a subjective reading perhaps overstates the durability of the disk, it is true that material was much stronger than paper or magnetic tape, and certainly sturdier than punch cards, but still transportable. Second, the product was said to be "relatively inexpensive to manufacture," a fact which would be of greater concern to the (as-yet nonexistent) consumer market. Yet this would matter for scale, for if the floppy were to become the standard means of

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[31] The patent itself is listed for the "Magnetic Record Disk *Cover*," as the magnetic recording disk was made of standard magnetic recording materials. However, likely because the floppy disk as a *medium* is comprised of the disk, the cover, and the liner, the patent itself is useful in its discussion of the form as a whole. Ralph Flores and Herbert E. Thompson, Magnetic Record Disk Cover, U.S. Patent 3,668,658, filed Dec. 22, 1969, and issued June 6, 1972.

[32] Flores and Thompson, "Magnetic," lines 1.36-41.

[33] Flores and Thompson, "Magnetic," lines 1.51-52.

[34] Flores and Thompson, "Magnetic," lines 4.73-75.

loading boot programs, it would have to be able to compete economically with paper, in a way that early hard disks could not. Finally, the patent suggests one last capability: "In view of these qualities the [floppy disk] may be enclosed in an envelope and transmitted via ordinary postal routes."[35] Strikingly, IBM appears to have considered physical circulation of media as early as 1969, at a time when there was little impetus for such exchange. Before the forced "unbundling" of hardware and software in 1969-1970, mainframe users would have either received boot software directly from the manufacturer (re: IBM) or created programs in-house.[36] Outside of limited groups (like IBM's SHARE), software exchange via physical media was extremely limited until the rise of hobbyist computing and the creation of a consumer market at the end of the 1970's.[37] As such, the IBM patent actually posits a latent affordance of the medium, a use which was largely impractical in the moment but which anticipated the exigencies of a subsequent computing environment.

[35] Flores and Thompson, "Magnetic," lines 4.75-5.1-2.

[36] Campbell-Kelly, *From Airline*, 6, 109.

[37] For more on SHARE, see Akera, "Voluntarism," 710-736.

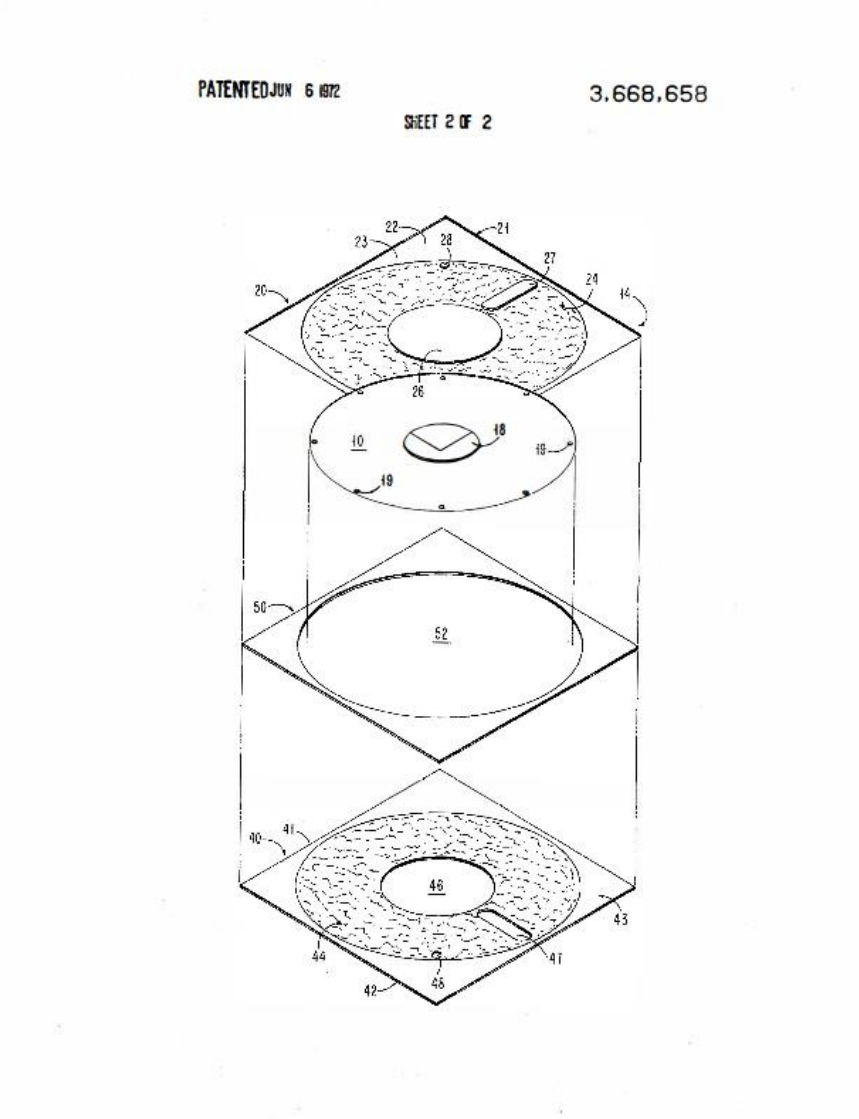

Figure 4.2: Floppy disk composition (from U.S. Patent 3,668,658)

In terms of design, the 8" floppy largely set the parameters for its 5 ¼" successor, announced in late 1976. Since the introduction of the medium a half decade prior, disk drives had become a multi-million dollar industry.[38] Though originally in the mainframe environment, floppy disks were newly compatible with the earliest micro and home computers, particularly the Altair 8800, thanks to Gary Kildall's "Control Program for Micros" (CP/M), the "first disk-based systems

[38] 289.6 million in 1977, per Bates, "Floppy Disk," 5.

software product designed for microcomputer."[39] Paul Ceruzzi credits the 8" disk with making the personal computer itself possible, as "eight-inch floppy disk drives, controlled by CP/M, provided a way to develop and exchange software that was independent of particular models."[40] But it was the 5 ¼" inch disk, itself created by one of the most successful 8" drive manufacturers, which would cement the connection between personal computing and floppy disks. At the time it launched the 5 ¼" "minifloppy," Shugart Associates was already a major force in the drive industry; as former Shugart engineer Don Massaro recalls, "though there were 13 competitors and we were technically the flakiest, we ended up owning the market. We had something around 80/85% of the market share."[41] Despite this success, Shugart created the new format. Massaro himself mocks this decision, stating, "we weren't smart enough to know that, if you own a marketplace with an 80% market share, you come out with another product, that's going to destroy your market share."[42]

Good business sense or not, the move to the 5 ¼" format would serve as a landmark moment, followed by the exponential growth of the industry. Yet the design of the medium, especially the smaller size, reveals little conscious consideration for how use practices might be

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[39] Ceruzzi, *A History*, 237-238; Slater, *Portraits*, 251-261; Kirschenbaum, *Track*, 51. For more on Apple's own disk OS, see Ceruzzi, *A History*, 266; Leonard Shustak, "Apple II DOS Source Code," *Computer History Museum*, Nov. 12, 2013, https://computerhistory.org/blog/apple-ii-dos-source-code/?key=apple-ii-dos-source-code .

[40] Ceruzzi, *A History*, 240-41.

[41] Dalziel et al., "Oral History Panel on 5.25," 4; this number is perhaps a bit exaggerated—Williams Bates 1978 *New York Times* article posits that "Shugart is beginning, but only beginning, to gain market share on IBM, which… has approximately one-third of the market share as measured by revenue;" Bates, "Floppy Disk," 3.

[42] Dalziel et al., "Oral History Panel on 5.25,"14.

affected. In truth, there is some confusion as to *why* 5 ¼" was the size in the first place. One famous (though apocryphal) account, credited to engineer James Adkisson, posits that the new diskette size was modelled on a cocktail napkin, inspired by a late-night meeting at a bar.[43] Don Massaro offers another perspective, suggesting that "5 ¼ was literally the… smallest diskette that you would make that would not fit into your pocket. We didn't want to put it in a pocket because we didn't want it bent."[44] The most likely explanation, however, is that 8" drives were simply too big to fit easily on a desktop, alongside early personal computer platforms.[45] As both Warren Dalziel and George Sollman recall, separately, the goal was to create a more compact drive, which would allow the more reliable floppy to replace the flawed but convenient cassette tape. Accordingly, Shugart started with the dimensions of a cassette *drive*—"3.25 inches high, 5.75 inches wide, 8 inches deep"—and *then* created a medium which could fit those dimensions.[46] This process likewise explains the competing origin stories: there was no underlying, technical rationale to explain the size, as in the case of intentional design, only engineering *after the fact*, to make the predetermined size feasible.

Unlike IBM's release of the 8" disk, Shugart's original promotion and marketing materials for the 5 ¼" drive—the SA 400—show a clear, unified understanding of how the product would fit into the industry, and what it would be used for. Predictably, much of the strategy was built

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[43] Dalziel et al., "Oral History Panel on 5.25," 10; Adkisson et al., "Oral History Panel on 8 inch Floppy," 22, 24.

[44] Dalziel et al., "Oral History Panel on 5.25," 7.

[45] As per a specific request from Dr. An Wang of Wang Laboratories, according to the former Shugart engineers; Dalziel et al., "Oral History Panel on 5.25," 5.

[46] Adkisson et al., "Oral History Panel on 8 inch Floppy," 23; Dalziel et al., "Oral History Panel on 5.25," 8.

around the comparison to cassettes, not other disk technologies. The primary focus was on drive size, as in a September 1976 *Computerworld* news item, wherein the company described the SA400 as "a floppy disk drive in a package the size of a cassette tape unit."[47] Similar language may be found in both the SA400 specs sheet ("compact size and weight-similar to most tape cassette units") and the original marketing brochure ("slightly smaller than the typical 4" x 6" x 9" cassette drive…).[48] In terms of media, the cassette provided favorable grounds for technological comparison, as Shugart repeatedly emphasized the minifloppy's higher quality, especially recording density (2600 vs. 800 BPI), reliability, and its lower cost ($4.50 vs $8).[49] The comparison, in fact, would prove more prescient than Shugart would have imagined, as both forms would face separate piracy controversies over the next decade, albeit for different reasons.[50] At the same time, comparisons to the 8" floppy were limited, likely due to Shugart's continued presence in that market and the greater storage capacity of the larger format. When the 8" *was* invoked, Shugart sought to elide difference, writing that the Shugart minidiskette "is just like a standard

[47] "Shugart Adds," 51.

[48] Shugart Associates, "Shugart Associates SA 400 minifloppy™ Disk Drive," Whitepaper, c. 1976, 1; Shugart Associates, "The Gap is Gone: The SA400 Minifloppy Disk Drive," Marketing Brochure, c. 1976, 3.

[49] Although at 110kb, the capacity of the initial minifloppy was rather lower than the cassette (720kb) or the 8" floppy (400/800kb)—it was, after all, still one-sided. Shugart, "Gap," 3. Note: BPI meaning "bytes per inch."

[50] Though used as a medium for data storage, cassettes grew increasingly ubiquitous as a medium for recorded music. Its writability and standard format allowed users to copy albums, record copyrighted music from the radio, and create mixtapes; in turn, major players in the music industry launched large-scale anti-piracy campaigns in both the U.S. and the U.K. See Bottomley, "'Home Taping,'" 123-145.

diskette, except for its smaller size."[51] Thus, the company suggested that they had preserved all of the benefits and capabilities of the previous format, but transported them to a smaller device.

Once again, however, Shugart tended to emphasize the *drive* rather than the medium, reflecting the latter as an afterthought. This makes sense from a profit perspective; as Bates writes, "the real money in the floppy technology, of course, is not so much with the disks as with the drives."[52] Such thinking carried over to design as well, largely because there was never any real chance of the 5 ¼" disk being a proprietary format under monopoly control. Per the Shugart engineer's recollections, a third-party was responsible for the original product mockup. Norm Dion, of disk manufacturer Information Terminals Corporation (ITC), created the model by simply scaling down an 8" disk to the proper size, which may or may not have involved simply trimming it with scissors.[53] As early as the 1976 *Computerworld* announcement of the minifloppy, readers were already assured that "the media… will be available from Shugart *and other media manufacturers*" (emphasis mine), meaning that the disk was already open to interchangeability.[54] Owing in part to this competition, the 5 ¼" disk would see innovations in double-sidedness and increased density in subsequent years—by the early 1980's, the 1000kb unformatted capacity of the double-sided, double-density disk far exceeded the original 110kb capacity of the single-sided,

[51] Shugart, "SA 400 minifloppy," 1; Shugart, "The Gap is Gone," 4.

[52] Bates, "Floppy Disk," 3.

[53] Dalziel et al., "Oral History Panel on 5.25," 10-11; ITC would become "Verbatim," after its disk product line, and remain a major player throughout the history of the floppy.

[54] "Shugart Adds," 51.

single-density disk.[55] Such developments, coupled with the ease of use relative to the cassette and the continued emphasis on downward compatibility, led to the format becoming a shared medium.[56] The standardization of the form culminated, to some degree, in 1980, when the American National Standards Institute, Inc. released standard for the 5 ¼" single-sided floppy disk, thereby setting cross-industry requirements for the medium.[57]

4.2 A Rhetoric of "Don't": Use Beyond Design

In time, the 5 ¼" floppy disk became inextricably linked to the early personal computer, as the extremely limited internal memory of these platforms necessitated widespread use of storage media. The minifloppy was introduced in 1977, meaning that it coincided with the release of the

[55] For an in-depth look at storage capacities across the range of floppy disk products, see Yaskawa and Heath, "Data Storage," 131-139; as these authors note, "there have been two trends in the evolution of the flexible disk drive: smaller size and higher storage capacity" ("Data Storage," 141).

[56] "Downward compatibility" or "backward compatibility" means that previous iterations of media will be operable within more advanced platforms. Here, disks were intended to work in different types of drives (explicitly so, in ITC's 1976 double-sided disk patent, [abstract, 1.20-22]), and new double-sided and double-density drives were still built to be able to read the original, single-sided/density versions.

[57] "American National Standard for One-sided Single-density Unformatted 5.25-inch Flexible Disk Cartridge (for 3979-BPR Use)," Document ANSI X3.82-1980, American National Standards Institute, Inc., New York, 1980; followed by a double-sided standard in 1985: "American National Standard for Information Systems—Two-sided, Double-density, Unformatted, 5.25-inch (130-mm), 48-tpi (1,9-tpmm), Flexible Disk Cartridge for 7958 BPM Use—General, Physical, Magnetic Requirements," Document ANSI X3.125-1985, American National Standards Institute, Inc., New York, 1985; see also Teja, *Designer's*, 45-6.

"big three" computer platforms which would fuel the rapid expansion of consumer market: the TRS-80, the Commodore PET, and, notably, the Apple II.[58] Whereas the Altair and other microcomputers had been primarily the domain of early hobbyists, like those in the People's Computer Company, these new platforms sparked the so-called "computer revolution" in earnest, as computing culture developed on a mass scale. Throughout the end of the 1970's and into the 1980's, sales of personal computers (and accompanying software) increased dramatically, with gaming software alone increasing to $18 million in sales in 1981, and $405 million by 1983.[59] At the heart of these developments was the 5 ¼" floppy disk, the "workhorse of the personal computer," which served as the medium of choice for much of the software industry and for users alike.[60] As Matt Kirschenbaum explains, "Floppies were to the personal computing industry what the paperback book was to mass-market publishing, and 78 (later 45) rpm singles were to pop music. In the years before ubiquitous hard drives, the floppy was often the sole storage medium, not just for data but for software and operating systems as well."[61]

However, the *ways* in which these new users utilized the minifloppy were a marked departure from those anticipated by Shugart. As will be seen in this chapter, the use practices imagined by Shugart's engineers were necessarily foreclosed by the environment of the time, and limited to a few applications, primarily word-processing. Yet, for users, the floppy was a resource for invention and ingenuity. Rather than be constrained by the recommendations of manufacturers

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[58] Also referred to as the "1977 Trinity" (see "Most Important Companies," *BYTE* 20, no. 9 [Sept 1994]: 99-104.)

[59] Campbell-Kelly, *From Airline*, 276.

[60] Teja, *Designer's*, 45.

[61] Kirschenbaum, *Track*, 220; see also Ceruzzi, *History*, 267.

(and the industry writ large), users found new ways for the medium to fit their ends. It was cheap and writable, a necessary condition for those who sought to play with the code of programs, as was often the case for those who played gaming software. In short, the 5 ¼" floppy was not simply a means of storing data and text, but a crucial resource for creating and exchanging a variety of content, including games, even across distances and legal boundaries.

To begin, Shugart's intended application of the new 5 ¼" floppy reveals much about what the user's experience of the medium was expected to be. Writing in *IEEE Transactions on Magnetics* in 1978, Shugart project manager George Sollman provided insight into both the expected application and use environment of the form, predicting, "word processing will continue to account for 25 to 35 percent of the annual floppy disk drive shipments made with small business systems accounting for a similar fraction."[62] James Porter agreed, and explained the rationale: "the word processing market is expected to be the largest application [for the 5 ¼" disk], due to a pressing need for low cost random access storage in a small physical package—without the real requirement for the higher storage of the 8 inch two sided drive."[63] While both were correct insofar as word processing was a common use of early micro and home computers, they misidentify the most important, if not the most prevalent, use *environment*.[64] In effect, Sollman and Porter failed

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[62] George Sollman, "Evolution of the Minifloppy™ Product Family," *IEEE Transactions on Magnetics* 14, no. 4 (July 1978): 161.

[63] Porter, "Disk Drive Industry," 152. Note: Porter was previously cited as a Shugart engineer; however, at this point in time, he was working as a management consultant in Silicon Valley, and so was no longer officially a part of Shugart Associates. See Bates, "Floppy Disk," 5.

[64] Word processing actually provides an avenue to consider gender in computer use. By one estimate, in 1980, 59% of computer users women, but this only accounted for 31% of computer *programmers*. This was reflected

to recognize the potential for personal computing, dismissing the initial volume of "hobbyist" purchases as merely a niche audience.[65] By positioning word processing within business applications, these designers implied certain use parameters for the 5 ¼" disk, positioning the medium as simply a container, intended to hold text or data; when not in use, it would be stored in a sleeve in a box, not to be handled. Bates' *New York Times* piece takes this perspective even further, suggesting that the smaller disks might be a replacement for *paper*, the medium of choice for documentation and records, and describes "businessmen who now keep their entire sales and inventory records on a collection of floppy disks."[66] This design discourse, which privileged the mundane capacities of the medium best suited to business needs, served to discourage or even foreclose many of the latent capabilities of the 5 ¼" floppy.

By downplaying the hobbyist audience, the intentions of early 5 ¼" disk manufacturers effectively overlooked the possibility of the disk as a medium for gaming. While computer hobbyists of the 1970's had diverse interests, game programs were prominent within hobbyist culture. Within the mainframe environment, games were circulated widely, and noncommercially, via the ARPANET, including Don Daglow's *Star Trek* (1972) and *Dungeon* (1975-76), Gregory Yob's *Hunt the Wumpus* (1975), and Will Crowther and Don Woods' *Colossal Cave Adventure*

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in use practices, as women were reportedly more likely to use computers for word processing (usually a professional task) but less so for gaming or programming (often a hobbyist pursuit) (Marlaine E. Lockheed, "Women, Girls, and Computers: A First Look at the Evidence," *Sex Roles* 13, no. 3/4 [1985]: 115-122). See Kirschenbaum, *Track* for a more comprehensive history of word processing.

[65] Porter, "Disk Drive Industry," 152.

[66] Bates, "Floppy Disk," 2.

(1976).[67] Much of this gameplay would have taken place within university computer labs or time-sharing terminals, though organizations like the People's Computer Company used games to get a broader public interested in computing, especially *Star Trek*.[68] When new micro and home computers were released, gaming programs continued to be a popular purpose for computer use. Those who had experienced previous mainframe games often sought to replicate the experience on the new platforms, including Adventure International's Scott Adams and Sierra On-Line's Roberta Williams.[69] Likewise, games continued to be a means of introduction and instruction—as Leslie Haddon observed in 1988, computer games were "vehicles for learning about the machines" on which they were played.[70]

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[67] Craddock, *Dungeon*, 23-24; Daniel Allington, "Linguistic Capital and Development Capital in a Network of Cultural Producers: Mutually Valuing Peer Groups in the 'Interactive Fiction' Retrogaming Scene," *Cultural Sociology* 10, no. 2 (2016): 269; Montfort, *Twisty*, 166-68; Claire Evans, *Broad Band: The Untold Story of Women Who Made the Internet* (New York: Portfolio, 2018): 83-94.

[68] UNIX co-creator Dennis Ritchie has referred to *Rogue* as "the single greatest waste of CPU cycles in history," per Craddock, *Dungeon*, 62; According to Levy, PCC founder Bob Albrecht likened games to a gateway drug, with the fun of gameplay used to spark a larger interest in computing (Levy, *Hackers*, 168-69).

[69] Lance Micklus describes this process in relation to his own program, *Dog Star* Adventure (1979): "With the advent of microcomputers, a new effort was made to overcome the need for disk drives and large amounts of memory. As a result of this effort, several new versions of (Colossal Cave) ADVENTURE have been released, not only for the TRS-80, but for other systems as well. Even though these new micro versions of ADVENTURE may deviate substantially from the original, they all share that same childish logic characteristic of ADVENTURE." Lance Micklus, "Dog Star Adventure," *Softside* (May 1979): 8-23; Adams III, "Exec: Adventure," 59; Allan Tommervik, "Exec: On-Line," 5; Nooney, "Let's Begin," 71-98.

[70] Haddon, "Electronic," 52-73, 58; see also Montfort, "Adventure," 18.

Although no longer strictly hardware hobbyists, amateur computer users in the late 1970's and early 1980's also had a desire to play, create, and share games—they just needed suitable means to do so. Many of the same media practices carried over to the new micro and home computer platforms. Games continued to circulate as type-in programs, as code printed in magazines, though the most popular publications became less purely hobbyist (as *Creative Computing* had been) and increasingly more consumer-oriented as the period progressed.[71] Though type-ins were affordable and could reach a wide audience, the growing complexity of game programs exacerbated the existing challenges of programs-as-code, increasing the risk of human error *and* demanding more print space that could otherwise be used for advertisements.[72] At the same time, computer clubs remained a popular source for exchanging programs of all kinds, through both face-to-face meetings and by copying and distributing from the groups' collective software catalogues.[73] But without a network through which to share files and data directly, users

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[71] A representative comparison is Yob's *Hunt the Wumpus*, originally published in PCC's *Recreational Computing* in 1975, and Micklus' *Dog Star Adventure*, a well-known and noncommercial adventure game published as a type-in in *Softside* magazine. Though Yob's program was for the mainframe and Micklus' for the TRS-80 microcomputer, both retain a marked similar format: am illustration, personal narrative, and the code listing. See Gregory Yob, "Hunt the Wumpus," *Creative Computing* 1, no. 5 (Oct. 1975): 51-54; Micklus, "Dog Star."

[72] As *Hardcore Computing* notes in 1981, magazines were increasingly comprised of advertisements; whereas *Softside* was comprised of only 33% ads, both competitor *Softalk* and industry stalwart *BYTE* had surpassed the 50% mark. "Librarian: Other Computer Magazines," *Hardcore Computing* 1.1 (1981): 19.

[73] Kirschenbaum, *Track*, 64. Indeed, the challenge of type in programs and the interest in software exchanges are related. As Mark Pelczarski has confirmed, TRS Software Exchange used the bug-prone nature of the type-in programs in its magazine *Softside* as a way to encourage users to pay for the programs on storage media, via the exchange (Maher, "Magnificent Penguin").

still needed storage media in order to make copies of available software. The most obvious choices were cassettes and the relatively-new floppy disk, each of which were readily available and relatively inexpensive.[74] The floppy disk *should* have been the superior choice, with better capacity and speed, easier use (the cassette, like paper tape, was *serial*, in that it required fast-forwarding and rewinding), and greater durability.[75]

However, for these individual users, the design preferences of manufacturers limited the disk's appeal. What surrounded the floppy disk was a prohibitive rhetoric, intended to restrict use practices to a narrow set of parameters specified by the industry. Thom Hogart offered a succinct summation of this discourse in a 1981 column in *InfoWorld*, entitled "Disk Myths Dismissed," writing, "Almost everyone who uses diskettes has seen the warning on the boxes, labels, or separate sheets of paper enclosed with the diskettes: don't touch the diskette, don't bend the diskette, don't get food or liquid on the diskette, don't leave diskettes in glove compartments in the Mohave Desert. The operative word in all of the warnings is 'don't.'"[76] As Hogart suggested,

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[74] Craddock notes that preference for floppy or cassette was at first dictated by platform, as the Apple II utilized the former and the Commodore PET the latter. As will be shown, the floppy was technically superior, even if the Apple II overall was comparable to the PET (Craddock, *Dungeon*, 83). At the same time, it was the floppy that became figural shorthand for computer gaming, and so the medium featured prominently on the covers of magazines like *Computer Gaming World* throughout the early 1980's (Sipe, "Greatest," 7).

[75] As a 1977 tutorial explains, "All of the other mass storage techniques available to hackers, such as paper tape, audio, and even digital cassettes, are fundamentally serial memories. That is, all or most of the recorded data may have to be passed through in order to find a particular piece of data" (Ira Rampil, "A Floppy Disk Tutorial," *BYTE* 2, no. 12 [Dec. 1977]: 24).

[76] Thom Hogart, "Disk Myths Dismissed," *InfoWorld* (Feb. 16, 1981): 3.

floppy disks were literally *surrounded* by warnings, with computer users repeatedly told what *not* to do with the medium before ever inserting a disk into a drive.[77]

Nowhere is this approach more apparent than in Rodney Zaks' 1981 book *Don't! (Or How to Care for Your Computer)*, wherein Zaks applies this rhetoric of "don't" to computing as a whole, writing, "The operative word is generally DON'T!... Quite simply, DON'T… unless you know what you are doing." [78] His third chapter turns this hostile attitude toward floppy disks, offering section after section of the very same warnings Hogart describes: don't bend the disk, don't touch the surface of a disk, don't store disks in an environment above 122 degrees Fahrenheit. But Zaks goes another step further, making explicit the underlying rationale, asserting, "Floppy disks are probably the main cause of failures in any computer system that uses them. Nearly all such failures are caused by *user mishandling*."[79] This last sentence is crucial. Manufacturers were understandably concerned about use, as disks were sensitive: the exposed portion of the magnetic disk required for reading/writing posed a risk of contamination, which could lead to read errors, head wear, or dropout.[80] The fear was that, by introducing the medium to a general audience outside of the "safe" confines of professional settings, manufacturers risked having the product unfairly labelled as unreliable, due to consistent misuse. Thus, they, and by extension writers like

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[77] As in Maxell's "Golden Rules of Floppy Care" ("One Floppy," Maxell, 11).

[78] Rodney Zaks, *Don't! (Or How to Care for Your Computer)* (Berkeley, CA: Sybex, 1981); Chp. 3, "Floppy Disks," was reprinted in the premiere issue of *PC Magazine* (Rodney Zaks, "Don't! Chapter 2: Floppy Disks," *PC: The Independent Guide to Personal Computers* 1, no. 1 [Feb./March 1981]: 72-78).

[79] Zaks, "Don't!," 72 (emphasis mine).

[80] "Dropout" meaning "a portion of the disk surface that can't be recorded on or read." Teja, *Designer's*, 12, 41.

Zaks, placed the blame squarely on the user, suggesting that *responsible* users would know better, while implying that these were human errors, not technological ones. For users like Hogart, the overabundance of simple warnings felt like a gross underestimation of their intelligence—how many times must an adult be told not to bend or touch a disk?

Rather than accepting blame for all disk failures, users sometimes responded by mocking the specificity of certain warnings, through hyperbole. Like Hogart's facetious "Mohave Desert" example, home computer software publisher Penguin visually lampooned such warnings on their paper disk sleeves. On the back of the sleeves, arranged in a three-by-three grid, are images of "incorrect" uses of disks, each circumscribed and struck through by a general prohibition sign (figure 4.3).[81] While a few of the recommendations were likely sincere—specifically not putting the disk in one's back pocket—most were extreme or nonsensical, including not using the disk as a car tire, or lining a birdcage with it, or placing the disk at the center of a nuclear blast. Above the images appears a single line of text: "For extended media life—take care of your Penguin disk." Taken as a whole, the Penguin disk sleeve highlights the ridiculousness of the myriad manufacturer warnings surrounding the medium, as *of course* no rational user would think to subject their disks to such conditions. Rather, by implicitly arguing that the simple encouragement to "take care" of one's media should suffice, the company gave credit to the user base. In this way, Penguin utilized irreverent humor, itself a commonplace in hobbyist and home computing discourse, to challenge the restrictions built around the medium, and reframe the relationship between the producer and consumer.

[81] Disk sleeve, Penguin Software, Media Archaeology Lab, no catalog number.

Figure 4.3: Penguin Software disk sleeve (Media Archaeology Lab, orginal photo)

Beyond humor, the response to the prohibitive rhetoric surrounding the 5 ¼" disk was a mix of internalization and resistance. This dichotomy is foregrounded in the 1984 *PC Magazine* article "Stress Tests for Floppies," in which author Howard Karten sought to test the true limits of the medium. Karten began by decrying the overabundance of caution built into the handling of floppy disks, as users often "act as though they're balancing a stack of Meissen china."[82] As he notes, such practices had developed in response to changes in the environment surrounding computer use: "now that computers have moved from their once pristine preserve—the alleged cleanliness of the white-collar office—into all types of commercial and industrial environments, the question of diskette vulnerability has become acute." To put the medium's durability to the test, Karten proceeded to expose disks to otherwise *verboten* conditions, from corrosive gas to microwave ovens to X-ray machines, and described the results. His findings, that disks were more durable than commonly believed, were relatively unremarkable, but the experiment *itself* indicates a clear skepticism of manufacturer's "official" recommendations. The presumed interest in the article lies in the desire to see for oneself whether disks were as limited as manufacturers would claim. As such, Karten interrogates a question of affordances, whether the medium held more possible uses, could be *made to do more*, than the designers would have the public believe. If they could, then new possibilities for use could open up, driven by the inventiveness of users who sought to push the limits as far as they could go.

By the time Karten performed his tests in 1984, well into the life of the medium, users had long been employing the 5 ¼" disks for diverse purposes. One of the earliest such uses capitalized

[82] Howard Karten, "Stress Tests for Floppies," *PC Magazine* (July 10, 1984): 197.

on a *latent* affordance of the disk—its mailability.[83] Recall the original 1969 IBM patent for the 8" disk, which identified the ease with which it might be circulated by post.[84] In describing the product for the purpose of the patent, IBM meant to highlight any possible commercial viability, even if there was little current need for shippable storage media. The vinyl LP offered an obvious analogy for storing data on a tracked disk, with the longstanding existence of mail-order record clubs emphasizing that form's mailability.[85] For the lighter, smaller floppy disk, such a practice would be just as feasible, should a mass audience develop. When the consumer software market *did* take shape, the hypothetical capability of the medium manifested in actual uses practices, as a means for circulating content on a large scale. Many well-known home computer software publishers began as mail-order businesses, including Microsoft, Sierra On-Line, and Broderbund, while computer clubs utilized mail to share the contents of their software catalogues, games included.[86] Early on, the lack of a standard input format for micro-computers meant that the medium for mail-order varied, including paper tapes used by MITS for Altair BASIC (developed by the nascent Microsoft). By the early 1980's, however, the challenges of shipping more cumbersome media combined with the proliferation of 5 ¼" drives made the floppy disk the

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[83] For more on latency and latent affordances, see Parchoma, "Contested," 360-364.

[84] Flores and Thompson, "Magnetic," lines 1.51-52.

[85] Of course, the transition from shellac to vinyl was essential in enabling this particular affordance (Peter Tschmuck, *Creativity and Innovation in the Music Industry* [Dordrecht, NED: Springer, 2006], 119, 208); such clubs started as early as 1955, and attracted over a million members (Russell Sanjak and David Sanjak, *American Popular Music in the 20th Century* [Oxford: Oxford University Press, 1991], 129-130).

[86] Adams III, "Exec: Adventure," 59; Allan Tommervik, "Exec: On-Line," 5; Carlston, *Software*, 160; Levy, *Hackers*, 228-234; "Washington Apple Pi Mail Order Form," *Washington Apple Pi* 2, no. 10 (Oct. 1980): np.

premier medium for software products, rivalled only by the technically-inferior cassette.[87] As the industry shifted from mail-order to retail distribution, mailing disks became the *modus operandi* for those outside of the commercial mainstream: public domain software distributors, nibble copying programs, and person-to-person filesharing.

The most obviously resistant uses of the 5 ¼" floppy involved the disk's limited restrictions on writability. The floppy disk's primary form of hardware write-protection was a small cutout in the disk sleeve, deemed the write-enable or write-protect notch (see detail B in figure 4.4).[88] The drive program would simply check for the presence of this notch; if it did not exist, or had been covered by an adhesive write-protect tab, the content of the disk could only be *read*, but not altered or overwritten.[89] While the notch was designed to dictate writability, it soon became the key point of differentiation between single-sided disks and their double-sided counterparts, which reached the market shortly afterward and at a higher price point, based on the doubled storage capacity.[90] Users, however, realized that even "single-sided" floppies were capable of recording on both sides: the actual storage medium was the magnetic-coated disk housed within the sleeve, and these were

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[87] Yob, "Hunt the Wumpus"; Craddock, *Dungeon,* 83-4.

[88] For write-enable notch specifications, see ANSI X3.82-1980, 9.

[89] Teja, *Designer's Guide*, 69; note that while the notch was carried over from the earlier 8" disk, the procedure for what constituted protected vs. unprotected for the 5 ¼" was reversed, such that covering the notch on a 5 ¼" disk made it write-protected. This was a common source of confusion for users transitioning between the two formats, per *BYTE* publisher Gordon Williamson (see editor's note in Mike Dahmke, "Product Review: The Altos ACS8000 Single-Board Computer," *BYTE* 5, no. 11 (1980): 168-170.)

[90] Sollman, "Evolution."

always coated on *both* sides. Theoretically, the reverse side of most single-sided disks could function in the same way as the obverse, save for the lack a write-enable notch.

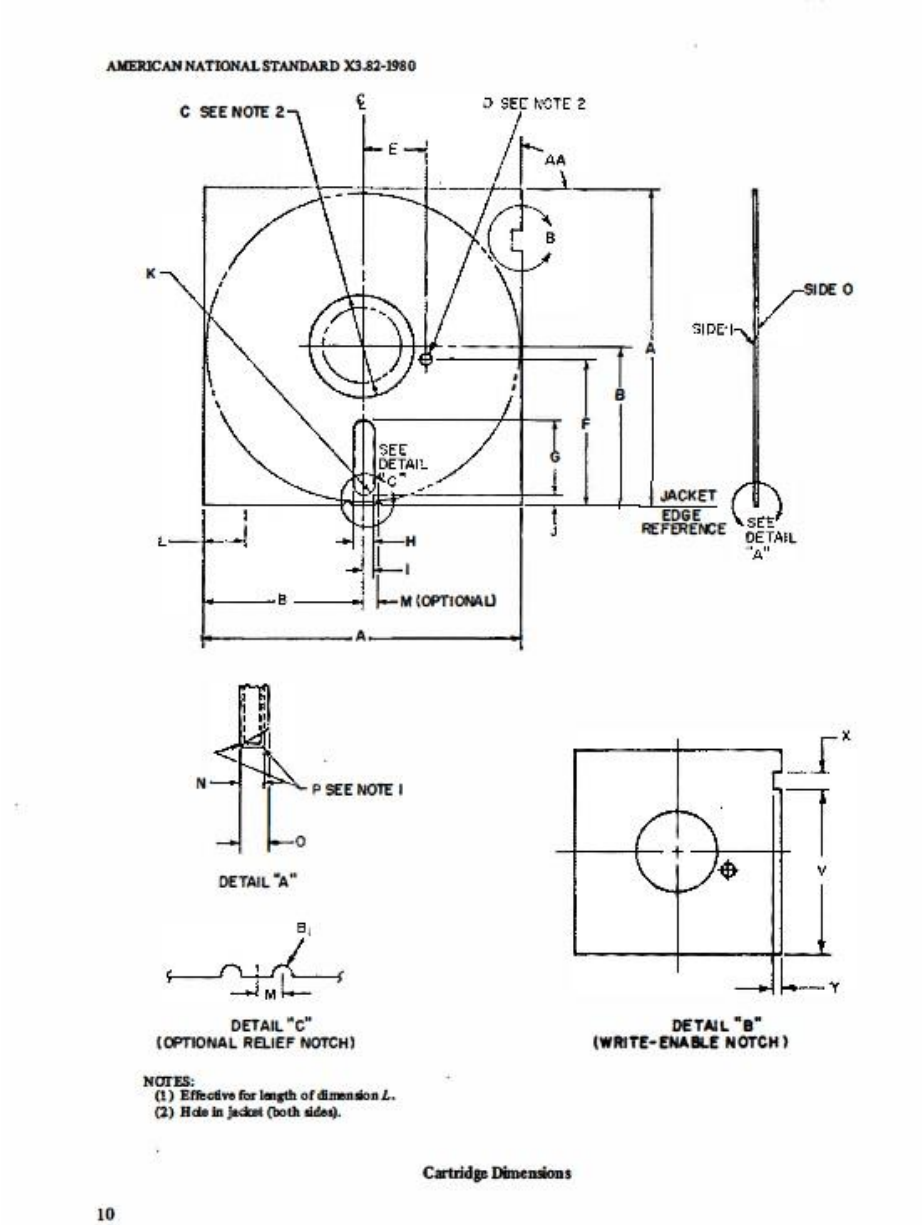

Figure 4.4: Detail B, floppy disk write-protect notch (from "ANSI X3.82-1980)

Inspired by this premise, some users began to "notch" their disks, strategically cutting the disk sleeves in order to expand the storage capacity of their media. While the practice likely began on an ad hoc, tinkering basis, discussions of disk-notching reached computing magazines as early

as 1981. One representative example is M.G Sieg's "Flipping Your Disk," from the March 1981 issue of *Compute!* Here, Sieg asserts, confidently, "you can double the storage capacity of a single mini-floppy at virtually no cost. The only things you need are at least two floppies, a hand held[sic] hole punch, and a colored pencil that will show on black. The trick is simple."[91] The author proceeds to offer a procedural how-to for notching a disk, with an estimated failure rate of only 10%. The *Compute!* editorial team was apparently less than convinced by this figure, cautioning in an editor's note that "While we've printed this article as a reader service, you should be **well aware** of the risks involved. Disks made for single-sided use may contain flaws on the reverse side... try at your own risk!"[92] In truth, the editor's note is in line with other, contemporaneous publications, which emphasized problems with disk-flipping. Just weeks before Sieg, Hogart's "Disk Myths Dismissed" in *InfoWorld* explicitly rejected the premise offered by ads which claimed one could double a disk's capacity by using both sides, "and then offer to sell you the hole punch tools to do so."[93] Hogart, too, emphasizes that the reverse sides of single-sided disks might be flawed, and then proposes *another* problem: that flipped disks would spin in the opposite direction. A disk which was accustomed to spinning in one direction could accumulate dust in its internal cleaning pad, which could then be shaken lose when reversed, causing reliability problems.

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[91] M.G. Sieg, "Flipping Your Disk," *Compute!* 10 (March 1981): 71. This same article was a major source for subsequent discussions, including, explicitly, "Using Both Sides of Your Diskettes," *Hardcore Computing* 1, no. 1 (1981): 20-21; see also T.R. Reid, "Punching Holes in Disks: A Risky Business that Saves Money," *Washington Post- Business*, March 12, 1984, 13.

[92] Emphasis theirs. Sieg, "Flipping," 71.

[93] Hogart, "Disk Myths," 3; such as "Nibble Notch Computer Products," advertisement, Nibble Notch Computer Products (Lauderhill, FL: Nibble Notch, 1981), https://archive.org/details/nibblenotchiinstructions .

Despite such warnings, disk-notching continued throughout the 1980's, as evidenced by both the continued sales of notch tools and repeated warnings against them. Whereas early notching efforts were primarily done with standard, round hole-punch tools, square punches were soon created to better imitate manufacturer notches. Companies like Florida-based Nibble Notch Computer Products began to market these specialized tools to personal computer users, via a familiar appeal (figure 4.5).[94] Like Sieg, Nibble Notch founder Lou Leggett used a direct-to-consumer marketing letter to praise notching as a cost-saving measure, writing, "in two seconds you literally can double the storage capacity of a diskette. Put in dollar terms, it means you cut your diskette costs by half."[95] Yet, at the same time, warnings continued: Jack Stollery of disk manufacturer Verbatim, for example, warned of the risk of contamination due to unauthorized notches within Karten's 1984 "Stress Test for Floppies."[96] So why did users continue the practices, even spending money to do so, when the risks were so apparent? It seems users valued disks far more for their affordability than their reliability. And not without cause—manufacturers may have bragged that their disks were *more* reliable than their competitors, but errors and contamination remained common enough that users would often make backup copies.

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[94] Nibble Notch ads can be found in *BYTE* 9, no. 13 (1984): A121; *BYTE* 10, no. 1 (1985): 91.

[95] Lou Leggett, "Dear Fellow Computer User," c. 1981, https://archive.org/stream/nibblenotchiinstructions/Nibble%20Notch%20Letter_djvu.txt .

[96] Karten, "Stress Test," 199.

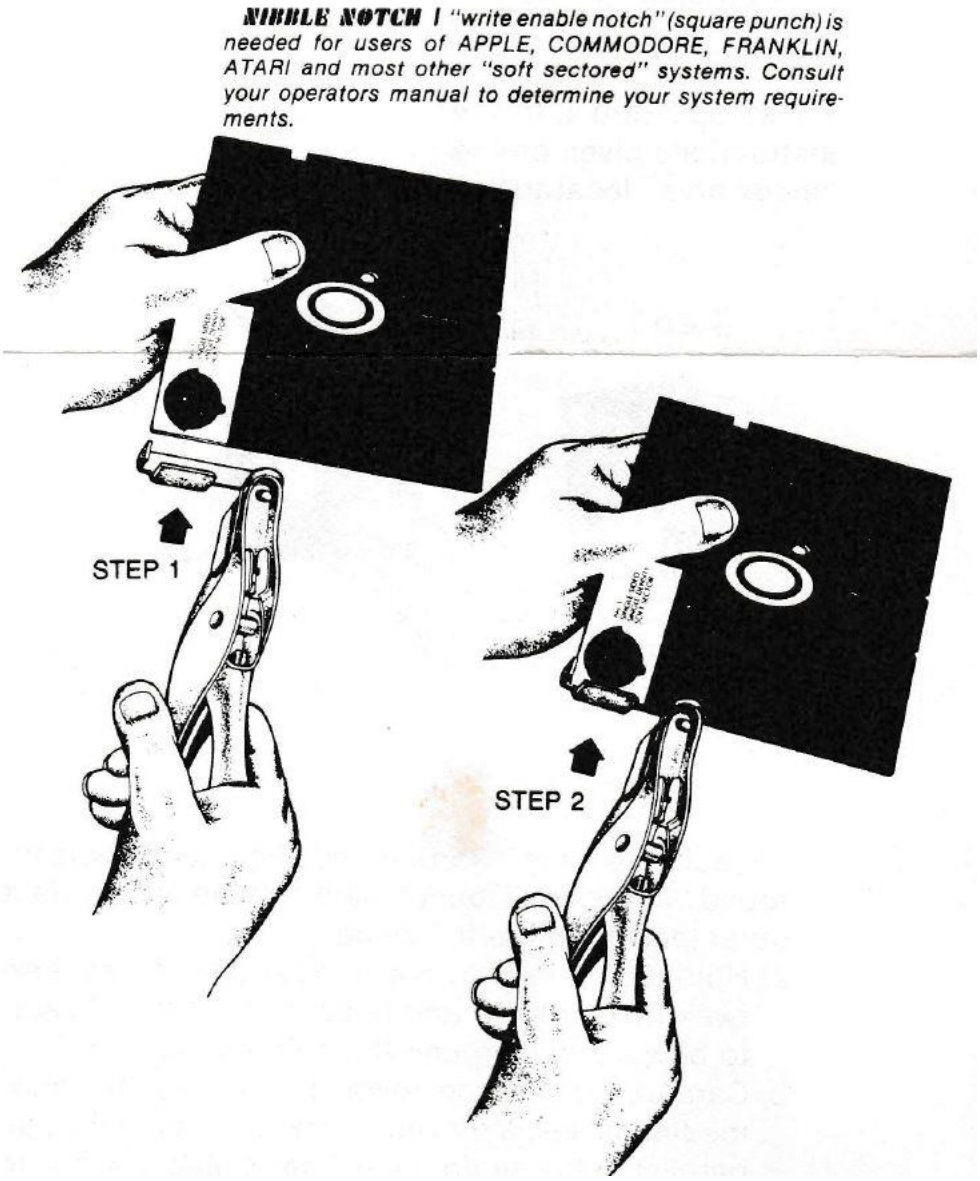

Figure 4.5: Disk-notching with specialized tool (from Nibble Notch ad, 1981)

The risks of notching were worth it if users could get twice the storage for the price, increasing the possibilities for redundancy without further taxing budgets. For those interested in computer gaming, the increase in storage was significant because it allowed for larger collections of programs. These early games, even the commercial releases, often consisted of relatively short playtime and limited replayability. Instead of committing to one program long-term, and therefore worrying about redundancy, gamers often sought *breadth*, to access as many games as possible.

While there was some conception within the industry of games as ephemeral, with a short shelf-life to match the briefness of gameplay, this was not due to gamers having limited attention spans.[97] Instead, many users were interested in accessing the code of games, "tearing apart" programs to see how they worked, and learning to code accordingly.[98] The more games a budding programmer could access and tinker with, the more they could learn and be better equipped to create new, innovative products. Greater storage capacity at a cheaper price made this possible and allowed more space for *altered* programs, as works in-progress or failed experiments. At the core of this idea, then, is the hobbyist notion of "collaborative development," that improvement depends upon accessibility.[99]

As will be shown in the next section, however, the possibilities for collaborative development, enabled by the disk's writability and increased storage, were targeted by the industry's anti-piracy campaigns in the early 1980's. As write-protection schemes worked to inhibit the floppy's inherent writability, gamers grew concerned that their creative rights were under threat. Consultant and programmer David Thornburg highlighted precisely this development in a pair of 1982 essays for *Compute!*, using the hypothetical example of a programmer who had taken the basic idea behind another game and created his own version, which both replicates and improves the original. Thornburg writes,

> It was not his goal to replicate the original game in every detail. Is he to be denied the right to do this? What if no new word processor programs could be developed because the authors of the first antiquated teletype-based version declared broad sweeping rights to the generic field?... In the game area, one might ask if software

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[97] Campbell-Kelly, *From Airline*, 226; Carlston, *Software*, 136.

[98] Amateur programmer Evan Hodson provides a representative account in a letter to *Softline* magazine, as described further in Chp. 3. See Hodson, "Sharing," 6.

[99] Thornburg, "On Piracy…," 16-18; Levy, *Hackers*, 52; Craddock, *Dungeon*, 29-68.

> developers are to be forbidden from improving existing game concepts[?]… I may be too dense to follow [the] logic, I fail to see how developments along these lines are analogous to 'stealing jewels.'[100]

Good game development, as Thornburg makes clear, depended upon wide experience and accessibility, both of which were enhanced by the floppy disk. When these same capabilities posed a threat to the commodity model of the software industry, they were branded as piracy. As a result, the struggle over the affordances of a medium became a struggle over creativity itself, over how users could properly use and engage with technology, and each other.

4.3 Gaming the System: Piracy, Gaming, and Noncommercial Circulation

The lack of proprietary control was foundational to the appeal of the 5 ¼" floppy as a storage and input medium for personal computer users, and made it a key resource for noncommercial gaming. Accessibility had been central to the medium since its 8" format, as it allowed users to both save and revise the content that they created—whether a written document, a spreadsheet, or a program. To make this possible in a competitive drive manufacturing industry, disks had to be interchangeable, compatible across brands—hence the establishment of ANSI's disk standards in 1980 and 1985.[101] Disks, then, were a particularly open medium, defined by the lack of proprietary control. Although writability and interchangeability were *designed* affordances,

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[100] Thornburg, "On Piracy…," 16-18; Thornburg, "Piracy Revisited…," 14-16; Thornburg was both president of developer Innovision and a consultant for Atari (Dorothy Kunkin Heller, "Training is Missing Link in Office-Computer Success," *Infoworld* (Dec. 14, 1981): 17, 21.)

[101] Again, ANSI X3.82-1980 and ANSI X3.125-1985.

users were quick to exploit these capabilities, particularly in order to share content. Unauthorized copying of software preceded the floppy disk, as Bill Gates' 1975 "Open Letter to Computer Hobbyists" decries the sharing of paper tapes of Microsoft's Altair BASIC.[102] But as computing transitioned from a hobbyist niche to a mass market, and the popularity of the 5 ¼" floppy increased dramatically, noncommercial sharing of software (and write-protection meant to prohibit it) became a major point of contention between programmers and users. It was at this point that the divide between gaming and application software became more pronounced. While producers were somewhat willing to concede the need for copying and manipulation of commercial programs, they doubled down on games as static products, as commodities. Game programs, lacking the profit-generating capabilities of business-oriented software, became easy targets for an industry seeking to foreclose accessibility.[103] What resulted was a struggle over agency, of who had the *right* to reproduce and circulate content, rather than who had the *ability*. At the heart of this debate was the trope of piracy, and the storage medium that enabled piratical practices: the floppy.

By the end of the 1970's, software publishers had begun to experiment with coded write-protection schema to compensate for the disk's limitations, such as the approach utilized by Personal Software's spreadsheet program, VisiCalc (1979), which was notably complex for its

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[102] Driscoll, "Professional," 257-283; Petrick, "Imagining," 34.

[103] Although the link was rarely made explicit, this may have been bolstered by the console videogame industry's dependence upon proprietary storage formats (ROM cartridges), which carried over to hybrid platforms like the Commodore 64 (1982) or Atari's 8-bit family (1979). Considered historically, the lack of writability of these proprietary forms proved crucial in cultivating a set of use-practices for console gamers which were distinct from the coding literacy encouraged by micro and home computer game programs.

time. In the early days of personal computer software, programs stored on disks were susceptible to unlimited reproduction, largely due to the lack of write-protection in the medium. As was apparent in Gates' "Open Letter," there was no guarantee that software would ever be commercially viable; where entrepreneurs like Gates saw unauthorized copying as an existential threat to a budding industry, other users simply viewed this as an extension of the hobbyist sharing economy, an extension of the hacker ethic.[104] VisiCalc, however, acted as a landmark for the commercial viability of the consumer software market. The program was one of the best-selling pieces of software of its day, selling an estimated 12,000 copies per month by 1981, for a total of 700,000 units sold by 1983.[105] So successful was VisiCalc, in fact, that it has been regarded as one of the first "killer apps," responsible for driving the sales of the Apple II such that it was widely adopted, including by Steve Wozniak himself.[106] Such a view was popular in the period, with the program famously referred to as "the software tail that wags (and sells) the personal computer dog."[107] To ensure long-term demand for the program, and thereby establish *software* as a viable product, Personal Software created a copy-protection method to overcome the limitations of the 5 ¼" floppy disk (the exclusive medium for the program through its first year).[108] What they devised was a surprisingly simple solution: "in its first versions, VisiCalc was protected by simply

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[104] Turner, *From Counterculture*.

[105] Freiberger and Swaine, *Fire*, 230; Campbell-Kelly, *From Airline*, 215.

[106] Williams and Moore, "Apple Story," 174. Campbell-Kelly frames VisiCalc as the defining example of the "killer app": "the 'killer app' hypothesis argues that a novel application, by enabling an activity that was previously impossible or too expensive, causes a new technology to be widely adopted" (Campbell-Kelly, *From Airline*, 212).

[107] Slater, *Portraits*, 291; Carlston, *Software People*, 38-39; Ceruzzi, *History*, 267-268.

[108] Freiberger and Swaine, *Fire*, 230.

changing the order of the bytes that told the computer where on the disk it happened to be at a given time." [109] In other words, this was one of the opening shots in the battle over write-protections, manifested in a form specific to the nuances of disk-based storage.

Though novel in design, VisiCalc's protection scheme was broken relatively quickly, as was so often the case with copy-protections in subsequent years. A 1982 *TIME* feature suggested that "for every authentic version of VisiCalc, there are an estimated 1 ½ illegal, copied ones. Said Daniel Fylstra, chairman of VisiCorp[:]… 'We're not sure how much we're losing in sales, but it is probably millions.'"[110] Whether such figures were correct or not, it is evident that users, long accustomed to being able to copy and share programs with peers, were not content to let publishers limit their agencies. At times, this manifested in obviously resistant fashion, of self-styled "pirates" actively working to prove their skill by cracking commercial copy-protections. Game programs proved to be easy targets.[111] Although Sirius Software's Jerry Jewel may have exaggerated somewhat in his assessment that there were "five illegal copies of every legal copy [of a game] sold," unauthorized copying was a pressing concern for game publishers as a whole.[112] California Pacific founder Al Remmer explained the potential effect of piracy on game sales by comparing

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[109] Meaning the disk OS would not be able to locate the proper sector on the disk (Gomes, "Secrets," 61).

[110] "Roaming," *TIME,* 83; More measured estimates still suggest that piracy existed on a large-scale. Muse Software founder Ed Zaron explained in 1982 "We were getting more trouble calls [for their "Dr. Memory" program] than we had sales." Stinson, "Exec: Muse," 33.

[111] Hunter, "Exec Penguin," 54.

[112] David Hunter, "Exec: Sirius," 36; Levy quotes On-Line Systems' Ken Williams as giving nearly the same estimate ("for every disk he sold, five or six were pirated"), but likewise chalks this up to hyperbole (Levy, *Hackers*, 391).

the performance of their *Super Invaders* (1980) to the (copy-protected) *Bill Budge's Trilogy of Games* (1980).[113] As he told *Softalk*'s Richard Knudsen, "in areas where *Super Invaders* was sold on cassette and unprotected, *Trilogy* outsold *Invaders* ten to one," despite *Invaders* being one of the bestselling Apple games of the year.[114] Of course, copy-protection schemes were no more successful for game programs.[115] Those who were able to crack protections were easily romanticized. Lee Gomes' 1982 *Esquire* article "Secrets of the Software Pirates," posits hacking as a competition, to "be the first on your block to crack [Bill Budge's] Raster Blaster."[116] Thus, piracy served as a point of pride and a rite of passage for a subculture of hackers, not a means to make money.

For most users, however, the process of circumventing protections was more nuisance than adventure. Due to the fragility and unreliability of the floppy, making copies of all of one's software was common practice. Naturally, *Hardcore* describes creating back-up copies as "the first rule of any wise computerist."[117] Most standard user guides, like Zaks' *Don't*, were explicit in

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[113] *Super Invaders* was a clone of Taito's arcade hit *Space Invaders*, which Cal Pacific bought the regional rights from Astar International. *Super Invader* was initially only available on cassette, but Cal Pacific's deal included a plan to produce it on floppy disk, with a copy-protection scheme (Knudsen, "Exec California," 32). Budge's *Trilogy* included *Night Driver, Pinball,* and *Spacewar* (Bill Budge, "The Best of Bill Budge," Internet Archive, https://archive.org/details/a2_asimov_budgealb.)

[114] Knudsen, "Exec California," 34.

[115] The perception, likely justified, was that "the vast majority of software pirating [was] apparently of arcade-style games and' adventures,'" (C.E. Walker, letter, *SoftSide* 30 [March 1981]: 8-9).

[116] Gomes, "Secrets," 58-9, 62. *Raster Blaster* was itself a Bill Budge and Cal Pacific venture, like the aforementioned *Trilogy*.

[117] "How to Copy," 6.

advocating for the practice. Per Zaks, "your first reflex should be to make a copy of the diskette and to file the original away in a safe location. Work with the copy that you have created. No exceptions. No excuses."[118] Doing so was not only legal, as was made abundantly clear in American copyright law, it was crucial to protecting an investment: original programs were expensive, but so too was procuring a replacement for a corrupted, copy-protected program like VisiCalc.[119] So users, caught between the contradicting impulses of responsible disk ownership and the rigors of copy-protection, often sought out the work-around procedures discovered by others. For specific cases, these "softkeys" might be shared in-person at computer club meetings, or in printed newsletters or niche publications.[120] More commonly, users might seek out copy programs (also called "nibble" or "byte" copiers), which were purported to allow users to make back-up copies of most commercial software. Between 1980 and 1984, a wide range of copying programs were developed and marketed, including Omega Software's "Locksmith," Sensible Software's "Back-It-Up," and Central Point's "Copy II Plus."[121]

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[118] Zaks, "Don't," 75.

[119] As with recorded music, under the doctrine of first sale in the U.S., making copies for personal use was perfectly legal, so long as these were not sold. The right to make copies of software for personal use was made explicit in the Section 117 in the Software Copyright Amendment of 1980 (Root III, "Protecting," 221; see also Bottomley, "'Home Taping,'" 126; Bev Haight, "Editorial," 4). Note: VisiCalc had an extremely limited warranty, so a replacement could cost up to $40 (Maher, "Magnificent.")

[120] "How to," *Hardcore,* 7.

[121] Tommervik, "The Great… Part 2," 18; Sensible co-founder Chuck Hartley would later say of Back-it-up "At times, it's been painful to its publisher," as its apparent popularity far outstripped its sales (Dave Alpert, "Exec: Sensible Software: Uncommonly Good," *Softalk* 4, no. 7 [March 1984]: 56-60).

The 1980-81 release of Locksmith, and the subsequent backlash it received, led to a heated confrontation between commercial publishers and software consumers over ownership rights, intellectual properties, and the ethics of software copying. Chicago-based publisher Omega Software's rollout of Locksmith was relatively standard for the period, with the company placing an advertisement in computing publications (including *Creative Computing, Micro,* and *Softalk*). The ad itself was quite plain, a simple text box barely filled by the program's black-and-white lock-and-key logo and six small sections of text, and the contact information for mail-order purchases. The language was likewise muted, explaining that "The Locksmith makes a BIT by BIT copy of your disk. Duplication of just about any disk is possible with this program including 'uncopiable' protected disks," while couching the appeal in compatibility, peace of mind, and cost-effectiveness.[122] Though seemingly mundane, and buried in the ad-laden back end of magazines, the Locksmith ad sparked controversy immediately. As Omega president Dave Alpert related in a subsequent interview with *Hardcore Computing,* after publishing the first ad in January of 1981, "*Micro* immediately got phone calls from other software vendors who said that if [*Micro*] continued to run our ad they would withdraw their advertising."[123] Though too late to stop printing in the February issue, *Micro* removed Locksmith from subsequent issues, and instead ran an editorial stating that they were "unconditionally opposed to the illegal copying of… diskettes or any other protected material."[124] Other publications followed suit: *Creative Computing*, *Call*

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[122] "Locksmith: Apple Disk Copy" (in *Micro* 32 [January 1981]: 80; *Micro* 33 [February 1981]: 69).

[123] "Censorship in Computer Magazines: An Interview with Dave Alpert of Omega Software about the 'Locksmith' Ad. Controversy," *Hardcore Computing* 1, no. 1 (1981): 8-9.

[124] Robert M. Tripp, "Editorial: Copyright/Copywrong," *Micro* 34 (March 1981): 5.

A.P.P.L.E. and *Softalk* cancelled ads, even refunding ad fees, while *Compute!* and *Nibble* also ran editorials opposing copying.[125]

The collective decision not to publish the Locksmith ad, and by extension publicity for other nibble copiers, left magazines open to accusations that they were on the side of the *industry*, rather than on the side of the average user. Perhaps the most overt voice of criticism was *Hardcore Computing* magazine, founded in direct response to the Locksmith ban. In the magazine's very first column, self-styled "Publisher" Chuck Haight redefined the consistent refusal to publish Locksmith ads as the willful "suppression of information" on the part of magazine publishers, who were financially beholden to software manufacturers.[126] *Hardcore* editor (and Chuck's sister) Bev Haight is explicit in labelling this practice as *censorship*, writing "If a computer magazine's editorial policy is to deny the publication in their pages of any information about the ease and necessity of making back-up copies of your copy protected software… is that censorship?... I answer, yes, yes, yes, and yes!"[127] Considered in this way, the controversy served to expose the economic dimension of computer publications, which were beholden to their advertisers (re: software publishers) and thus made decisions based on advertiser interests rather than user

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[125] "Censorship in Computer Magazines," 9; Bev Haight, "They Don't," 5; see also Robert Lock, "The Editor's Notes," *Compute!* 16 (March 1981): 4; George Blank, letter, *Hardcore Computing* 1, no. 2 (1981): 37.

[126] Haight, "What I Need," 2.

[127] She continues by emphasizing a tradition of free "information exchange" in computing, effectively prefiguring Stuart Brand's famous aphorism "Information wants to be free" ("Editorial: They Don't Want," 4); see Stewart Brand, *The Media Lab: Inventing the Future at M.I.T.* (New York: Viking Adult, 1987); Turner, *From Counterculture*, 132-40.

needs.[128] To Chuck and Bev Haight, this was a catastrophic failure. Magazines, they argued, should exist to help users share knowledge and techniques, thereby fostering collaboration. In this way, users could get the most out of their technology, collectively imagining affordances and developing the techniques to make them real. *Hardcore Computing*, then, was launched as an antidote to the pro-business (meaning "anti-user") practices of *other* magazines. Funded by subscriptions and ad fees from otherwise blacklisted programs, the magazine (and its later iteration, *Hardcore Computist*) was devoted to enabling a single use practice—copying write-protected disks—through whatever means necessary. At the same time, they resisted the categorization of this action as piracy, asserting, "we do NOT condone software piracy, but we do believe that honest users are entitled to backup commercial disks they have purchased."[129]

From the industry perspective, overcoming the inherent copyability of the medium was crucial to making software a commodity. But, as *Hardcore* and its audience demonstrate, many users were unwilling to part with an established affordance, especially backups and modifiability were considered necessary conditions of use. Disk failures and coding bugs were common, after all, and many users still learned coding skills by altering pre-existing programs of all kinds, including games. So, whereas some in the industry did seek to suppress these practices, others, like Penguin Software's Mark Pelczarski, worked to negotiate between the two sides by redirecting the focus from the medium to the type of software. At a time when most commercial software publishers were struggling to enforce copy-protections on their full range of products, Penguin decided to release their applications software unprotected. Pelczarski announced the policy himself

[128] See 3.1 "Stop the Presses" for a comprehensive discussion of magazine commercialization.

[129] "How-To's of Hardcore," *Hardcore Computist* 25 (1985): np.

in a March 1982 letter in *Softalk*, timed to coincide with the release of "Graphics Magician" and updated "Computer Graphics System II," which would "all be available now on unprotected disks."[130] Justifying the new policy, Pelczarski situated his company as sympathetic to both sides of the debate. As a publisher, he wrote, the company had "been drawn into the prevailing point of view that lack of copy protection leads to greatly reduced sales"; but, as programmers and users themselves, company members "appreciate the ability to have several working copies of our application software and the ability to go in and modify code."[131] Out of this *dissoi logoi*, Penguin portrayed itself as siding with the user, in hopes that this openness would lead to positive consumer attitudes and, accordingly, additional sales. Pelczarski finished by casting the company and its audience as relative equals, asking, "please don't abuse our trust."[132]

Users, however, were quick to notice that Penguin was not proposing to distribute *all* commercial software on unprotected disks—just application software. A 1983 reader letter from Martin Halpern to *Hardcore Computing* spelled out the potential downside of this decision. He wrote, "Penguin is still copy-protecting their arcade/adventure games. Too bad Mark Pelczarski's 'faith' in the end user pertains only to his more expensive software. Of course, games are where

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[130] Mark Pelczarski, "Penguin Pioneers Unprotected Good Will," letter, *Softalk* 2, no. 7 (March 1982): 7; Reprinted in *Softline* 1, no. 4 (March 1983): 58; *BYTE* 7, no. 6 (June 1982): 26.

[131] Pelczarski himself had particular credibility in making this case, as a former hobbyist, game programmer, and editor of amateur-oriented *Softside* magazine. Maher, "Magnificent."

[132] Pelczarski, letter, 7.

the fast money is, too."[133] Although Pelczarski had only mentioned application software, it was clear that Penguin's decision was to differentiate copy-protection schemes by software type, meaning that expensive applications packages were open while games were not. While this did present a way around the hard anti-piracy/pro-copying binary, and earned Penguin some praise for being user friendly, hardliners (like those at *Hardcore*) saw this as a cop-out.

The criticism clearly touched a nerve for Pelczarksi personally, as he wrote a reply published in the same magazine later in 1983. His defense began by articulating the commercial risk Penguin took by leaving their applications unprotected, though readers could be assured that Penguin has been "doing just fine," so much so that other publishers followed suit. Yet most of the letter was devoted to rebutting Halpern. Pelczarski's primary argument was that none of the same reasons to leave applications open would apply to games. He writes, "You don't have situations where you need to modify [the program]… even so, with game programs, the coding tends to get very obscure so as much as possible could be packed into RAM. Games certainly can't be considered critical data, and you're not going to have situations where if a game disk gets blown, the week's wait for a replacement is going to shut down the office."[134] By this logic, games are inherently different products from applications, with different needs. Whereas applications might be modified for bespoke arrangements, and could be crucial to business operations, games had no such need. They were simply there for play, for consumers to access the virtual, ludic world of the game *as intended by the programmer*. Other gaming products—board games, tabletop RPG's,

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[133] Martin Halpern, "Reader Reviews Protection-Free Software," *Hardcore Computist* 2 (1983): 5. Note: Halpern was very much an amateur user—his only other appearance in the archive is another letter to the editor (Martin Halpern, "Light Pen," *Infoworld* [Feb. 6, 1984]: 6).

[134] Mark Pelczarksi, "From Geneva (Ill.)…" *Hardcore Computist* 4 (1983): 3. Ellipses from original.

even console videogames—were fully-finished products to be bought and sold, with copyright protection to match.[135] By considering computer games in this way, producers (like Pelczarski) could cast them as a self-contained market commodity, rather than a tool to be used for diverse purposes. The relatively low price-point for games ($19.95 vs. $50 for applications), coupled with their limited sales window, meant that games were more dependent on protections to be viable on the market.

Penguin's effort to distinguish between types of software, and the pushback that it received, speaks to computer users' perceptions of software in a disk-based environment. Pelczarski emphasized the divergent needs of games and applications, but for users, software products were perceptually the same when in tangible, physical form. All were programs written onto storage media, primarily floppy disks, and so were subject to (and conducive of) the same set of use practices. Differentiating program types meant asking users to ignore the commonalities of the *medium*, and all that it implied, and think instead of the abstract program. This felt like an artificial distinction to users who were accustomed to treating all of their disks the same. Thanks to the lack of protections inherent in the medium, and the prevalence of rhetoric promising the copying of *any* disk—in ads for nibble copy programs, in *Hardcore Computist*, and in the prevalent practices of user groups—lay users were primed to take an absolute stance on free copying, as hardline as the industry's stance on piracy. At times, the alignment with piracy was overt, such as using the skull-

[135] Various cases in the early 1980's solidified the copyrights of coin-operated arcade and console game manufacturers, notably Atari (Atari, Inc. v Amusement World Inc., et al., 547 F. Supp. 222 [MD 1981]). See Tommervik, "The Great… Part 1," 18-22; Frow, "Repetition," 4-21; *BYTE* 6, no. 5 (1981) issue on piracy, which includes Chris Morgan, "Editorial: How Can We Stop Software Piracy?", 6-10; Christopher Kern, "Washington Tackles the Software Problem," 128-138; and Becker, "Legal Protection," 163-165.

and-crossbones or adopting the term "pirate," like PBI Software's "Pirate Bay" seminar at Applefest 1983.[136] In an *Infoworld* report on the "Pirate Bay" seminar, reporter Kathy Chin captured such sentiment through attendee Kirk Meyers, a 15-year-old who founded a computer club at his school. He bragged, "I already have $8000 worth of software that I haven't even paid for… I want to learn how to take a copyright program and crack it."[137] Nevertheless, for most users resistance was smaller, and less obviously oppositional: they needed to look at other programs to learn to code, and needed backup disks to make programs operable *in practice*. Copying and sharing disks continued, albeit against a backdrop of moral confusion, as the desire to help fellow users conflicted with the shaming from anti-piracy discourse.

4.4 Conclusion: Affordable Storage

When *BYTE* cast the 5 ¼" floppy disk as "the 'sail' that powers the underhanded business of software piracy" in its 1981 cover, this was not a radical claim. The disk was the preeminent storage medium for software at a time when programs (in the abstract form of code) had to be instantiated in physical form for widespread circulation, placing the medium squarely at the center

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[136] Chin, "Have," 60. This should not be confused with Swedish torrent site The Pirate Bay, founded in 2003, which was at the center of *another* copyright infringement controversy decades later (Alex Hern, "European Court of Justice Rules Pirate Bay is Infringing Copyright," *The Guardian* [June 12, 2007], https://www.theguardian.com/technology/2017/jun/15/pirate-bay-european-court-of-justice-rules-infringing-copyright-torrent-sites.)

[137] Chin, "Have," 60.

of home computing software practices. Being rooted in accessibility and reproducibility, the floppy lacked the internal write-protections which had allowed console videogames to fit easily into the traditional model of creative products as mass commodities. To bring software into alignment with commodity production, and the copyright system which reinforced that model, producers had to create new forms of write-protection. In so doing, the industry effectively *created* the concept of home computer-based software piracy, to include and thereby prohibit a diverse range of noncommercial creative practices, from making personal backups to publishing softkeys. For many users accustomed to the productive and exchange capabilities of floppy disks, however, the restrictive policies of the industry were unacceptable. How could standard use practices surrounding a medium simply *become* theft? Hence the familiar response from users: if copying disks makes one a pirate, then "we, the software consumers, are all pirates!"[138]

It is no surprise, then, that the floppy disk was at the center of the piracy controversy of the early 1980's, being at once a longstanding hobbyist resource and a commodity format for the industry. And yet the floppy disk was not explicitly designed for either purpose: this was a *storage* medium, meant to hold a boot program or other data. In its 8" form, the disk quickly became an input medium, befitting the needs of a use environment with limited internal memory. When the 5 ¼" version arrived, loosely coinciding with the rise of personal and home computing, it became a means to reproduce and recirculate content thanks to the users themselves. Carrying on a hobbyist ethic, users treated the medium as resource, to be employed in whatever ways they could imagine to accomplish their goals. Indeed, the floppy proved well-suited to the noncommercial needs of users, being simple to replicate and easy to mail or exchange by hand.

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[138] Bev Haight, "Censorship," 4.

As a historical case, the floppy disk demonstrates the way in which media resist deterministic understandings of users and use practices. Floppies did far more than perform the few functions for which they were intended, as the designers' imagined fewer affordances than those which would be dreamed up by the average user. After all, despite the longstanding existence of computer gaming, none of the designers seem to have expected floppies to act as a medium for gaming. Where the disconnect between designed and user-imagined affordances became a problem was when the intended uses became integrated into the commercial system of production. Within such a system, the medium was meant to house the program-as-commodity, with its reproducibility benefiting only official producers. Efforts to reproduce and recirculate program outside of this model were effectively marked as deviant in order to maintain the newly-established dominance of the software industry. To do so, computer publications and industry insiders developed a host of new ways to restrain resistant users, all built around or in response to the capabilities offered by floppy disk, including (anti-)piracy discourse, copy-protections, legal pressure, and even direct negotiations. Conflict between the industry and users, then, should not be considered as a struggle over technological capabilities. Rather, the conflict demonstrates the challenge of incorporating a non-proprietary medium (and the practices surrounding it) into the commodity system. Affordances, once imagined, are not so easily erased.

5.0 Noncommercial Distribution Welcomed: Competing Visions of the Noncommercial in the Eamon Adventures Series

In the summer of 1980, a feature in *Recreational Computing* magazine introduced Donald Brown's new text-adventure game creation system, "Eamon," to a larger public. Brown, then an undergraduate at Drake University, had previously circulated the program to friends in and around The Computer Emporium store in Des Moines, Iowa. Now, he turned to the pages of *Recreational Computing* to describe his product in-detail, personally, along with the program listing.[1] It was a common practice then for game creators to write about (and share) their games in publications, especially those with an amateur focus like *Recreational Computing*, published by the nonprofit People's Computer Company.[2] While much of Brown's article simply describes the program's underlying gameplay mechanic, it serves as an important articulation of Eamon's *noncommercial* project, prescribing a method of decentralized creativity and exchange. Though Brown did not use the term here, the very concept was written into the text of the master disk's boot screen: "Noncommercial distribution welcomed." The ambiguity of this phrasing, as this chapter will show, had important ramifications for how these games would be considered in terms of intellectual property, and how they would be traded, disseminated, or edited. Brown's

[1] Donald Brown, "The Wonderful World of Eamon," *Recreational Computing* 9, no. 1 (1980): 32-41.

[2] As Christopher Kelty has explained, "When they aren't programming, and sometimes when they are, many hackers evince an affinity for proposing explanations—cultural, psychological, and quasi-scientific—for their own behavior" (Kelty, "Culture's," 502). For more on type-in programs, see 3.2 "What's in a Name?"; for People's Computer Company, see Levy, *Hackers,* 165-171.

Recreational Computing article offered a clear depiction of *his* understanding of what being noncommercial meant for Eamon. This was "a new set of rules to be used freely by anyone who cares to," Brown wrote, already "being legitimately freely traded in many places."[3] Little could Brown suspect that the series would expand significantly beyond his own creative agencies, growing to more than two hundred adventures from at least seventy distinct programmers by the end of the decade. Nor could he imagine that, as computer gaming software developed into a multimillion-dollar industry, the Eamon community would serve as a site of a debate over what noncommercial gaming software could be.

Despite the breadth and scope of the series, the Eamon Adventures have been conspicuously underrepresented within histories of software and gaming. The highest-profile consideration is single paragraph in Nick Montfort's *Twisty Little Passages*, wherein he situates Eamon within the context of "interactive fiction development systems," or software which facilitated the creation of text-adventure programs by providing a simplified platform. As Montfort writes, "special purpose interactive fiction development systems were used by the ordinary home computer owner in the early 1980's. An important early one was Donald Brown's 1980 freeware system Eamon, a system for creating text-based roleplaying games."[4] Clearly, Montfort sees the series as valuable largely as a tool for creativity. His consideration of Eamon focuses on its overarching framework, which, through the Dungeon Design program, allowed amateurs to make their own adventure games *without* coding them entirely from scratch. Of the individual adventures, however, Montfort has little to say, dismissing them as "primitive interactive fiction"

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[3] Brown, "Wonderful," 33, 36.

[4] Montfort, *Twisty,* 196.

due to their limited command set. Equally brief is Matt Barton's discussion of Eamon within the history of the computer roleplaying game (CRPG) genre. For Barton, the series is significant for its emphasis on user-generated content, and "the ease with which other people could create their own modules or expansions to the game."[5] Still, Barton offers only a limited (and somewhat misleading) consideration of how these new creations were circulated and exchanged, and how such practices might differ from the mostly commercial games that comprise his study. As he suggests, Eamon "was never released commercially but was distributed as part of the Apple II's public domain library, particularly by the many Apple user groups."[6] It is true that the series was never sold in any official capacity, and that computer groups were a central driver of exchange. But there was no centralized Apple II public domain library, nor a consistent model of distribution for such programs. By utilizing only broad description and vague formulations, both Montfort and Barton make Eamon fit into their respective narratives, but do so without confronting the complex means by which a noncommercial series could exist on such a large scale.

The prevailing historical absence of Eamon highlights the larger challenge of accounting for amateur creativity. Margaret Ezell traces this issue to early print culture, noting that the motives and forms of professional and amateur authorship have deviated from one another since the development of the printing press.[7] The commercial perspective that the press fostered has become embedded in our historical understandings of authors, such that "we are positively flummoxed by

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[5] Matt Barton, *Dungeons & Desktops: The History of Computer Role-Playing Games* (Wellesley, MA: A.K. Peters, 2008), 50.

[6] Barton, *Dungeons*, 50.

[7] Ezell, *Social*, 19.

a writer or author who had no desire to see his or her work in print."[8] In truth, many amateur authors are motivated by social rather than economic factors, as Ron and Mary Saracino Zboray suggest in their conception of social authorship (adapted from Ezell).[9] Historians of computing have understood the centrality of the commercial perspective in analyses of technology and culture, and gaming specifically, since at least 1997, when Espen Aarseth decried "how commercial rhetoric is accepted uncritically by academics with little concern for the precise definitions or implicit ideologies."[10] Subsequent scholars have sought to counter this trend, both by refining Aarseth's rather blunt claim and through attempts at critical histories of gaming, to encompass more than just the supposed "great men" and "killer apps."[11]

What is needed, then, is an alternative understanding of creative production that does not assume commercial aspirations, but is open to and inclusive of alternative modes of doing. In the face of the "commodification of everything," of late-capitalism's tendency to defined all cultural production as commodity production, how can we make sense of ongoing, noncommercial creative production?[12] Is amateur creativity simply an aberration waiting to be commercialized, a lesser

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[8] Ezell, *Social*, 19.

[9] Zboray and Zboray, *Literary*.

[10] Aarseth, *Cybertext*, 48.

[11] Allington, "Linguistic Capital," 270; Matt Kirschenbaum and Sarah Werner, "Digital Scholarship and Digital Studies: The State of the Discipline," *Book History* no. 17 (2014): 406-58; Lowood and Guins, "Introduction," xiii-xx.

[12] Or, as Marx argues, that capitalism "gradually transforms all commodity production into capitalist production," thus rendering the articulation of alternative models inevitable (Marx, *Capital: Volume II*, 120); Immanuel Wallerstein, *Historical Capitalism* (London: Verso, 1983).

imitation of its commercial counterpart, or something else entirely?[13] What the Eamon series offers, as a case study, is a clear historical manifestation of the spontaneous creativity of noncommercial production, the analysis of which provides crucial insights into these questions. By Eamon's inception at the end of the 1970's, the consumer software industry had taken hold, and with it came a cultural understanding of software, especially games, as a commodity.[14] Judged by a commercialist heuristic, the National Eamon User's Club (NEUC) was relatively short-lived, spanning a mere four years. And yet, this is a common feature, in that "DIY-based projects are usually ad-hoc and temporary, but when they last, long-term sustainability becomes a problem."[15] As such a group, Eamon was fueled by bursts of energy, within brief moments, as even individual authors tended to contribute only a handful of adventures. What makes Eamon's story so significant is that it spanned several *different* creative moments, each encapsulating a different conception of programing agency, community, and circulation methods. Therefore, Eamon is not simply a single "crack" in the social field, to borrow John Holloway's term for spaces where the totality of commercial production is ruptured or resisted, but rather a manifestation of the persistence of the noncommercial impulse, even in the face of failure and the risk of absorption into the capitalist commodity system.[16]

With this chapter, I reconstruct competing visions of noncommercial gaming creation and circulation at work over the history of the Eamon Adventures series, as explained by members and

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[13] Ryan, *Making,* 10-11, 47 (footnote 10).

[14] Levy, *Hackers*; Turner, *From Counterculture*; Markoff, *What the Dormouse*; Akera, "Voluntarism," 710-36.

[15] Carlsson, *Nowtopia*, 53.

[16] Holloway, *Crack*; see also Prodnik, "3C," 303-307.

demonstrated in practice. I begin with the series' inception, situating Donald Brown's initial article within the vibrant culture of computing clubs in late 1970's and early 1980's by tracing its early availability from clubs and other mail-order/public domain sources. Dissatisfied with this decentralized, sporadic model, which necessarily limited possible growth, new series steward John Nelson offered a new vision when he co-founded the National Eamon User's Club in 1983. Drawing upon the newsletter of the club, I explicate Nelson's model of noncommercial creativity and circulation, and its focus on standardization, connectivity, and equal exchange. Even with Nelson's best efforts, the original model of the NEUC proved unsustainable. By the last few years of the club, Nelson himself argued for a new model, inspired by commercial subscription services. Members of the community were so aligned with the NEUC's original model that they soundly rejected the change, only to see the organization fall apart shortly thereafter. The Eamon Adventures may have faded after the dissolution of the NEUC, but their history reveals the competing ideologies at work within noncommercial gaming culture, between communal sharing practices and the material realities of physical storage media. As the Eamon community found, encouraging noncommercial circulation entailed more than just a line of text on every title screen—it meant fostering amateur creativity, building community, and regularly reaffirming a central ethos of audience contribution and sharing.

To capture the history and practices of the NEUC, I've used a mixture of practice-based and textual-analysis methods, attending to both the games themselves *and* the discursive and technological environment of the period. To account for the material experience of the Eamon Adventures, I first accessed the game programs on their original platform, via the Apple IIc at the

University of Colorado's Media Archaeology Lab (MAL).[17] Using the MAL's Eamon Adventures collection, consisting of 90-plus adventures and various utilities across more than 100 5 ¼" floppy disks, I was able to play a wide range of these games, as well as create my own using the Dungeon Design Disk.[18] Of course, access to working legacy hardware is a consistent challenge for media historians, and due to these constraints, I supplemented my experience in the MAL with emulation, specifically the open-source Apple II-emulator AppleWin and disk-images of every Eamon adventure downloaded from Eamon Adventurer's Guild (EUG).[19] At same time, I recognize that *both* media archaeology and emulation decontextualize play, as experiencing this programs today means doing so outside of the network of discourse and practice which originally surrounded their use.[20] Accordingly, I have worked to reconstruct this context by tracing appearances of Eamon across the wide-range of computer magazines of the early to mid-1980's, mostly before the formation of the NEUC. Finally, much of my analysis concerns the *Eamon Adventurer's Log*, the newsletter of the NEUC, which was made available by the EUG (a successor organization to the

[17] I use "platform" here to refer the "underlying computing environment," per the "platform studies" approach posited by Ian Bogost and Nick Montfort. See Montfort and Bogost, *Racing,* 145-50; Dale Leorke, "Rebranding the Platform: The Limitations of 'Platform Studies,'" *Digital Culture & Education* 4, no. 3 (2012): 257-268.

[18] As lab manager at the MAL (AY 2014-2015), I accessioned this collection when it was donated, returned on research grant in June 2016 to catalog the collection, play through as many adventures as possible, and create my own adventure.

[19] "Eamon Adventurer's Guild Library Master List."

[20] Cuttell, "Arguing," 55-75; Borchard, "Super," 446-54; for consideration of the limitations of emulation in game studies, see Jon Ippolito, "Emulation," in *Debugging Game* Studies, eds. Henry Lowood and Raiford Guins (Cambridge, MA: The MIT Press, 2016), 133-141; Melanie Swalwell, "Towards the Preservation of Local Computer Game Software," *Convergence* 15, no. 3 (2009): 275.

NEUC). The text of the newsletter, as the official internal communication of the club, reveals the story *as told by the club*, and so provides crucial insight into the intentions and methods of this amateur organization.

5.1 Starting Out, Changing Hands

The Eamon Adventures, like many other early pieces of home computer software, began as the work of a solitary, amateur programmer.[21] Between 1978 and 1980, Brown developed the Eamon system, programming the Master Disk and the first few adventures, inspired by his interest in tabletop roleplaying games.[22] Like their tabletop counterparts, every Eamon session begins with

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[21] Levy describes this early programming model in terms of the *auteur*: "single-handedly you could conceive, script, direct, execute, and polish a work, completing an *objet d'art* which was every bit as good as the bestselling game on the market." Levy, *Hackers*, 382; see also Matt Yuen, "Exec: Electronic Arts: Software Construction Company," *Softalk* 4, no. 12 (Aug. 1984): 37.

[22] The comparison here is usually to *Dungeons & Dragons*, Gary Gygax's popular tabletop RPG— for example, a AAA catalog calls it "Dungeons and Dragons in the public domain," ("Eamon By: Donald Brown," catalog, 3A Computer Products [Aug. 1983]: 149-151), while Brown himself refers to the program as acting as the "dungeon master." Robert Plamondon, however, noted the Eamon system's similarity to another tabletop RPG, 1978's *RuneQuest* (Robert Plamondon, "Anatomy of an Eamon Adventure," *Call-A.P.P.L.E.* 6, no. 3 [March 1983]: np). Note: the starting date for Eamon is commonly listed as 1980, when the *Recreational Computing* article was published. But, as Brown himself writes, several subsequent adventures were *already* in circulation, meaning that the series is somewhat older than this estimate. "Digital Antiquarian" Jimmy Maher explains that this dating is complicated further still by the recollections of John Nelson, who claims to have first played Eamon in 1978. However, as Maher goes to great detail to explain, while AppleSoft BASIC (the language in which Eamon was coded) was released in January of

character creation—in this case, a user character populating the "Main Hall." To start, players would insert the Master Disk into the floppy disk drive, which would click and whirr to life, before displaying a glowing green dragon, its meticulously drawn vectors creating the lone image in this text-only series (figure 5.1).[23] Beneath the dragon, the series wastes no time in announcing itself: "Welcome to Eamon: The computerized fantasy role-playing system designed for the Apple II… Noncommercial distribution welcomed." Upon entering the command "RUN WONDERFUL WORLD OF EAMON," users would be prompted to build a character via simulated diceroll, much like a tabletop RPG, before being offered a limited set of options to buy gear, spells, etc. It is only when the user enters their intention to "GO ON AN ADVENTURE" that the nature of the Eamon system becomes clear. Users are then prompted to "INSERT DISKETTE WITH ADVENTURE IN DISK DRIVE, THEN HIT 'C,'" as the program dumps the character into the computer's memory, to be loaded into whatever adventure is to follow. Thus, the Master Disk was not a self-contained text adventure at all but rather a utility, used to set the stage for the many adventure programs to follow. While Brown may have created the overall structure, as well as this character-creation program, Eamon would need more individual adventures which, like RPG campaign modules, would take players far beyond the limited worlds as scenarios of Brown's imagination.

1978, the language did not gain widespread popularity until May of 1979. See Jimmy Maher, "My Eamon Problem," *The Digital Antiquarian: A History of Computer Entertainment*, April 15, 2012, https://www.filfre.net/2012/04/my-eamon-problem/.

[23] Adventure games like this were almost entirely text-based, in the manner of *Adventure* or *Zork!*, until On-Line Systems developed the *graphical* adventure with "Mystery House" in the same year (see Nooney, "Let's Begin," 71-98). Text-based games continued to be popular in both commercial and amateur form until at least the mid-1980's and, despite a few sporadic attempts, Eamon proper never truly made the transition to graphics.

Figure 5.1: Eamon "Main Hall" title screen (from Eamon Adventurer's Guild)

With the programs written, Brown faced the common problem of distribution, as there was no single mechanism for exchanging programs with other users, let alone encouraging subsequent creativity. Unlike the mainframe environment, wherein the ARPANET was instrumental in spreading games like *Spacewar!* and *Colossal Cave Adventure* to institutions across the country, home computers lacked a widespread means of digital filesharing.[24] Without a technological network through which to make their products available for free to other users, early home computer programmers had to develop other possibilities for sharing. Such solutions were primarily social in nature: one could distribute programs face-to-face in computer clubs, though

[24] As a very select few had access to early Usenet groups—these would grow somewhat more popular throughout the 1980's, but remained relatively niche (see note 548); Levy, *Hackers*; Montfort, *Twisty*, 37-63.

with a necessarily limited scope; programs could be submitted to a club's software library, to be copied and shared a bit more widely; the program could be published in a computer magazine, to be typed in by those users who purchase the magazine; or one could start a mail-order business, effectively commercializing in order to reach a much larger potential audience. Ultimately, Eamon would be subject to all of the above. Yet Brown's preferred methods, when considered critically, reveal a view of noncommercial software circulation that is consciously aware of its limitations, and which depends upon existing social infrastructures to make spread possible.

To find an audience for his program, Brown's first move was to bring Eamon to his local computer store, the Computer Emporium of Des Moines, Iowa. The store itself was one of the first computer retailers in the state, founded by former programmer Richard Skeie in 1978 to sell both Alpha Micro computers and Apple II's.[25] Despite a rather meager start, the Computer Emporium became the gathering place for a small social group of computer users, including employee Jim Jacobson, who designed five of the first fifteen adventures, and John Nelson, who would later head the National Eamon User's Club.[26] By 1979, Skeie founded CE Software (for "Computer Emporium"), driven by the programming talents of Donald Brown and Jacobson. CE Software would serve as the publisher for Brown's commercial programs, including the database "MFI" (1979), commercial adventure game "SwordThrust" (1981), as well as Jacobson's "Mission

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[25] Jerry Borrell, "Verbatim: An Interview with Richard Skeie, President of CE Software," *Macworld* 7, no. 3 (March 1990): 87.

[26]Jimmy Maher, "Eamon, Part 2," *The Digital Antiquarian: A History of Computer Entertainment*, September 25, 2011, https://www.filfre.net/2011/09/eamon-part-2/; such hangers-on included groups like "Glitch Kickers Computer Club" ("Glitch Kickers Computer Club," letter, *BYTE* 4, no. 4 [April 1979]: 204).

Escape" (1981).[27] But in 1978, the Computer Emporium was simply the best location for a face-to-face meeting with Brown, who personally gave away copies of the series' adventures.

Brown's impulse to bring his program to a computer retailer for distribution was not unique for the time. *Ultima* programmer Richard Garriott (self-styled "Lord British"), for example, was unsure of how to reach a publisher for his first commercial program, *Alkalabeth* (1979), so he brought it to the ComputerLand store where he worked. As he explains, "the store owner sent a copy of [the] game to a publisher called California Pacific," who ultimately contracted it for commercial distribution.[28] In a similar case, Nasir Gebelli, then an undergraduate at the University of California-Davis, attempted to sell what would become his *E-Z Draw* (1980) program to a ComputerLand store in Sacramento. The store manager not only helped him finish the program, but launched Sirius Software with the store's owner in order to sell the product (it would become one of the major gaming software publishers of the period).[29]

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[27] Though CE is perhaps best known for 1987's "QuickMail" (Borrell, "Verbatim," 87). For "SwordThrust," see Donald Brown, "The Hero, The Sword, and the Apple," *Apple Orchard* 2, no. 3 (Fall 1981): 25-27; for Jacobson's "Mission Escape," see "Games for Thinkers (Who Want to Have Fun," advertisement, *Computer Gaming World* 1.1 (Dec. 1981): 17; Graham Masters Jr., review, *Computer Gaming World* 1.1 (Dec. 1981): 30-31; Not coincidentally, Donald Brown had the high score for "Mission Escape," per "High Scores," *Softline* 1.1 (Sept. 1981): 28. This program should not be confused with Thomas Schuman's "Mission: Escape" from MicroSparc Inc. (Owen Linzmayer, review, *Creative Computing* 9.11 [Nov. 1983]: 130).

[28] Richard Garriott, "Inside Ultima IV: Interview with Lord British," *Computer Gaming Monthly* no. 26 (March 1986): 18-21.

[29] The partnership was extremely lucrative for Sirius Software, as Gebelli contributed four of *Softalk*'s Top 30 programs in 1981. Dissatisfied with his 35% royalty and lack of recognition as a founding partner, Gebelli left to form his own company in 1982. See Carlston, *Software,* 148-51; David Hunter, "Exec: Sirius: Reaching for the Stars,"

Such interactions underscore the growth of computer retail between 1977 and the mid-1980's, especially through the franchise model utilized by ComputerLand. When the Des Moines Computer Emporium was founded in 1978, the success of computer retail stores was far from assured. As *Softalk* notes in a 1983 profile of ComputerLand of South Bay owner Jim Sadlier, starting such a business "was a risky operation: computer stores started up and failed by the hundreds in the late seventies and early eighties."[30] Skeie himself felt this pressure, insofar as the Des Moines store took three months to break even (and even then, lost more than half of its investors in that time.)[31] Although early retailers had existed since the 1975 founding of The Computer Store and (later that year) Computer Mart (both in Los Angeles), it was the ComputerLand franchise (founded in 1976) which would dominate the industry.[32] As Robert Slater details in his profile of company founder William Millard, ComputerLand opened 24 stores across 13 states in 1977 alone, doubling that number (to 50) in 1978, and doubling it yet again the following year.[33] For users across the country, like those in Des Moines, these were far more important to local computing communities than just making hardware and software products

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Softalk 2, no. 11 (July 1982): 33-4. Reversing this process, Scott Adams of publisher Adventure International opened his own retail location in Florida (Scott Adams Computers) in 1979, effectively combining his successful publishing business with a retail business (Adams, "Adventure International," 59).

[30] David Hunter, "Exec: Continental Software: At the Forefront of the Revolution," *Softalk* 3, no. 12 (Aug 1983): 57-58. Note: Sadlier was also the president of publisher Continental Software.

[31] Borrell, "Verbatim," 87.

[32] Freiberger and Swaine, *Fire*, 187-193.

[33] Slater, *Portraits*, 337; see also Littman, *Once*. For a list of the top companies by number of outlets or franchises c. 1983, see Efrem Sigel and Louis Giglio, *Guide to Software Publishing: An Industry Emerges* (White Plains, NY: Knowledge Industry Publications, Ltd., 1984): 33.

available for purchase. Being one of the few computing-related institutions in certain areas, especially for those who were geographically removed from major urban centers or Silicon Valley, the store was a place to congregate, to build a community, to meet likeminded enthusiasts, to troubleshoot problems, and exchange programs and ideas.[34]

Unlike computer clubs, which likewise existed to foster community and exchange, retail stores offered users an additional resource: access to the commercial production chain. As the software industry took shape into the mid-1980's, it was increasingly standard for publishers to produce programs as material products, and for commercial distributors to then circulate to retailers (and thus to consumers).[35] Yet, around 1978, because such a model was still inchoate, retailers often had direct relationships with publishers and individual coders, as well as early distributors. Amateur programmers seeking to circulate their own programs might not have known how to contact publishers or distributors, but their local stores *did*, having the channels of communication already in place. As Garriott's experience shows, many early publishers were looking for independently-produced games to productize and sell, and so retailers served as a crucial intermediary. For amateur programmers, of course, this process logically led to commercialization. No matter what the original motivations were behind a game's creation,

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[34] Again, ComputerLand of South Bay is a representative case: "ComputerLand of South Bay was much more than just another outlet for microcomputer products. It was a meeting place, a temple for the weary and the lost in the early days of personal computing" (Hunter, "Continental," 58).

[35] Mail-order and direct sales were popular early in the industry, including for self-publishers, and certain publishers also distributed their own products, maintaining personal relationships with retailers (Levy, *Hackers*, 314); for a diagram of the competing distribution channels for software, see Sigel and Giglio, "Guide," 31.

retailers were built for sales, and so served to integrate otherwise amateur (re: noncommercial) creativity into the economic model of the nascent home computer gaming industry.

Despite not wanting to commercialize his work, Brown's *Recreational Computing* feature is evidence of his larger vision for the series, beyond the relatively small user base of the Computer Emporium. By publicizing his work in a national computer magazine, Brown could bring Eamon to the attention of a much larger community than his own, minute social circle. That Brown was familiar with *this* magazine is unsurprising. Although its circulation was relatively small—it peaked at 8,900 by its end in 1981, a number dwarfed by market-leading BYTE's 156,000 in May of 1979—the magazine was available at hobbyist-oriented stores (like the Computer Emporium) due to its cultural prominence.[36] *Recreational Computing* was published by the Menlo Park, California-based People's Computer Company (PCC), perhaps the most prominent computer club of the 1970's. The mission of the PCC was to bring computing out of the cloistered, institutional confines which were characteristic of the mainframe environment, and expand it to a much larger and more general audience.[37] As Fred Turner explains, the group embodied the "hacker ethic," "an ethos of information sharing, of peer-to-peer collaboration, and of information technology as something around which to build a community."[38] The PCC's eponymous publication, *People's*

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[36] "Recreational Computing," Ulrich Web, Ulrich Global Serials, accessed Dec. 10, 2019, http://ulrichsweb.serialssolutions.com/title/1567623282711/63209; Helmers, "The More," 14.

[37] Levy, *Hackers*, 165-78.

[38] Turner, *From Counterculture*, 116; although the phrase "hacker ethic" was coined by Steven Levy in his 1984 *Hackers: Heroes of the Computer Revolution*, it motivated the creation of the "Hacker's Conference," wherein figures like *Whole Earth Catalog* mastermind Stewart Brand, Apple's Steve Wozniak, and other programmers sought to fully define the hacker ethic as a coherent ideology (Turner, *From Counterculture*, 132-137).

Computer Company, was started in 1972 by club figurehead Bob Albrecht, and allowed the club to operate beyond face-to-face interactions, addressing club business as well as circulating tips and programs. Though ostensibly a newsletter, *PCC* served as a crucial forerunner for the many computer magazines which would follow, and was remembered as "the first and only computing magazine when it started in 1972."[39] By 1980, it had already been renamed *Recreational Computing* (in 1979), but continued as a PCC publication until late 1981.[40]

Brown's selection of this particular publication shows a conscious effort to situate Eamon within the larger hobbyist tradition. Like many enthusiasts in the middle of the country, Brown was physically isolated from the Silicon Valley hobbyist community, but the magazine allowed him to function as a part of it, and to be exposed to the collaborative hacker ethic. Indeed, the inclusion of the source code for the Eamon Master Disk actively performed the sharing and accessibility espoused by such groups. "Type-in programs" of this kind were common in hobbyist-oriented magazines like *Recreational Computing* and *Creative Computing*: publishing the source code made a game freely available, to be copied as well as changed, altered, or reused, and the very act of entering these codes served a pedagogical function for new users.[41] Further, Brown,

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[39] "Recreational Computing Back Issues," 97. Of course, *Compute!* had something of a vested interest in this historiography, having acquired the magazine in late 1981, but the influence, as of the PCC, is readily apparent regardless (see Robert C. Locke, "Editor's Notes," *Compute!* no. 18 [Nov. 1981]: 4).

[40] Note: the newsletter was "People's Computers" from 1977-1978; it was purchased by *Compute!* in November of 1981, which effectively ended the publication (Locke, "*Recreational*, 4). See 3.1 "Stop the Presses" for more on *PCC*, which would become *Recreational Computing*.

[41] At least one user describes such an instructional function of the Eamon Adventures themselves: "I taught myself to program by tearing [Donald Brown's] programs apart and tinkering with them" (Hodson, "Sharing," 6-7);

perhaps aware that typing in programs could be a time-consuming and bug-prone process, provided his own contact information and offers to mail copies of the executable program on disks. Like the do-it-yourself, mail-order software businesses common at the time, this made Brown the central source of distribution. But such businesses were labor-intensive, and clearly Brown did not wish to run such an operation uncompensated. As he wrote, "these diskettes are being legitimately and freely traded in many places, including the program libraries of computer clubs such as the Apple Pi club of Denver, Colorado. If you can get copies from such places, it would be preferred."[42] Here, Brown emphasized that he should only be treated as a last resort, if the games cannot be found locally via in-person user groups, or through other means of mail-order.

Browns hesitance, and the countermodel that he proposed, highlights the proliferation of smaller, local computer clubs across the country at the dawn of the 1980's. As *Softalk*'s Matt Yuen noted in 1980, computer clubs were vital resources for interested amateur users, as "the best way for owners to learn more about their investments [re: their computers] was to meet and share ideas

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"Type-in programs" remained a feature in computer magazines well into the 1980's, although their prevalence was largely displaced by publicity features on commercial games. By this point, a perceptual divide took hold, with "freeware" (published to help user *learn* to code) largely cast as inferior to commercial releases, which did not make their code available.

[42] Brown, "Wonderful," 36-37. Denver Apple Pi announced its formation in February 1979, and met in Golden, CO, at the Colorado School of Mines ("Announcements," *MICRO: The 6502 Journal* no. 9 [Feb. 1979]: 34). Its best claim to fame may be a speaking appearance by Steve Wozniak in 1984 (Matt Burns, "Steve Wozniak, Speaking to the Denver Apple Pi Club in 1984, On College Pranks, Building the Apple I & II, and the Apple Pledge of Allegiance," *TechCrunch*, March 23, 2013, https://techcrunch.com/2013/03/23/steve-wozniak-speaking-to-the-denver-apple-pi-club-in-1984-on-college-pranks-apple-ii-features-and-the-apple-pledge-allegiance/).

with other owners."[43] Part of learning about computing meant sharing programs, and so most clubs curated a library of software of various types, developed as individual members bought (or otherwise acquire) a copy of a program, and then made it widely available to other members of the club. Naturally, this form of noncommercial exchange—"an informal gift economy"—made clubs the target of concerns around intellectual property rights and piracy throughout the period.[44] Although Brown's specific example, the Denver Apple Pi Club, was relatively insignificant, it was representative of the network of Apple-related groups nationwide, many of which came to be affiliated with the International Apple Core (IAC) as a governing body.[45] Brown's hope, it seems, was that user groups would operate in their standard manner and circulate his software through their software libraries, allowing the Eamon Adventures to spread and flourish through decentralized, grass-roots means, without requiring his continued involvement. By largely removing himself from the equation, Brown set the stage for the community to take over, to drive the series entirely by dispersed, user-generated creativity.

Computer clubs did allow Eamon circulate noncommercially, but the scope and long-term viability of this model was limited. In addition to Denver Apple Pi, the much larger (and unrelated) Washington (DC) Apple Pi Club listed the Dungeon Design Disk and first seven Eamon

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[43] Yuen, "Pirate," 16. For more on user groups, see 3.1 "Stop the Presses."

[44] Driscoll, "Professional," 264; see also Gates, "Open Letter," 2; Yuen, "Pirate," 15. Note that fearmongering over computer club "piracy" was not a uniquely American phenomenon. As a hyperbolic 1981 *BYTE* editorial warns, "Piracy has reached near epidemic levels in Europe, where it is not uncommon for an entire computer club… to line up computers and make hundreds of copies of programs from United States manufacturers for use of the entire club!" Christopher Morgan, "Editorial: How Can We Stop Software Piracy?" *BYTE* 6, no. 5 (May 1981): 10.

[45] For IAC, see *Apple Orchard* 1, no. 1 (March-April 1980); Yuen, "Pirate," 16.

Adventures in in its own catalog by October of 1980, while, on the opposite coast, Apple PugetSound Program Library Exchange (A.P.P.L.E.) had the Design disk and thirty adventures by March of 1983.[46] Larger groups like these made programs available to members in person, as well as offering mail-order to other interested parties, for a small fee.[47] While such a system was certainly practical for those affiliated with and/or aware of these user groups, it posed a problem for isolated users. Smaller or more regional clubs could reproduce and distribute programs to their members, but someone in the group had to obtain the program *first*. If the local computer group did not have Eamon in their library, interested gamers would have to seek out other sources as best they could. This further limited awareness surrounding the series, insofar as exposure to the games occurred primarily through word-of-mouth. Unless an acquaintance or local club member was particularly taken with Eamon, even a potentially interested gamer might not know to seek it out.

By early 1983, the limitations of the type-in program/user group circulation model came to the fore, as users took to two separate publications to decry Eamon's lack of availability. First, in a letter published in the January 1983 issue of *Softline*, amateur user (and Eamon adventure

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[46] "Washington Apple Pi Mail Order Form"; Clardy, untitled, 2.

[47] A.P.P.L.E. was perhaps the best-known club for mail-order, as its magazine, *Call-A.P.P.L.E.*, promoted its library on a national scale. By naming the group as a "library exchange," the software library was deemed a prominent feature. Synergistic Software's Bob Clardy, a longtime member, describes distributing programs in-person as well (David Hunter, "An Odyssey to Apventure," *Softalk* 2, no. 9 [May 1982]: 43).

author) Evan Hodson issued a call for help.[48] After praising Brown for making Eamon free to the public, which helped him learn to code, Hodson explained his predicament:

> I cannot find a central clearing house for additional *Eamon* adventures. I have written Mr. Brown twice, thanking him for his gift to the computer world and each time enclosing a self-addressed and stamped envelope, but I have gotten no reply after several months. Does anyone know of a place that I can write to and obtain additional adventures, and then provide my own for distribution?[49]

Despite being located in Harker Heights, TX, far removed from the Des Moines Computer Emporium, Hodson had been able to obtain the early Eamon programs. But Brown had proven himself an unreliable central mechanism for continued distribution of his *own* programs, much less for new user-created adventures, so Hodson turned to the community-oriented letters page of his preferred user magazine. The responses in the ensuing issue were a bit of a mixed bag. One user was intrigued, asking, "Exactly what is the *Eamon* program and how may it be obtained? We've seen a vague reference to [Eamon] before but could never get any hard information."[50] *Softline* proceeded to identify another user magazine, *Magnetic Fantasies*.[51] In his own response to Hodson, Synergistic Software founder Robert Clardy used Eamon to stress availability as a key shortcoming of public domain products as a whole. As he wrote, locating these programs was a

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[48] By this point, Hodson had authored adventure #35 "The Lair of Mutants," #36 "The Citadel of Blood," #37 "Quest for the Holy Grail," with his final program (the *Empire Strikes Back* copy #38 "City in the Clouds") forthcoming.

[49] Hodson, "Sharing," 6-7.

[50] C.S. Engel, "From Mainframe to Micro," *Softline* 2, no. 4 (March 1983): 2.

[51] A relatively minor (and poorly received) magazine focused on fantasy/adventure-games, based in Los Angeles, first published in February 1981. See "Fantasy Magazine Springs to Life," *Infoworld* 3, no. 6 (March 30, 1981): 14; "Adventure Magazine: MAGNETIC FANTASIES," *Hardcore Computing* 1, no. 1 (1981): 15.

challenge because retail would *never* be a viable option for distribution, insofar as "a dealer won't expend wall or floor space and the time of a clerk on products that net him only a dollar or two."[52] Without this commercial incentive, he suggested, "the product is either not written (no one gets it), not promoted (no one knows about it), or not distributed (no one can find it)."[53] Though Clardy's outlook is perhaps overly pessimistic, his assessment makes clear the many hurdles faced by noncommercial programmers and their potential audience—in short, why grassroots organization and collaboration would be necessary.

A more positive response came from Robert Plamondon, an Eamon contributor who, coincidentally, had published an article on the series the very same month as Hodson's letter.[54] Like Hodson, Plamondon lived far from Des Moines, in Corvallis, OR. Despite being an adventure game enthusiast, Plamondon had not been exposed to Eamon by August of 1981, when he published an article defining the genre in *Creative Computing* magazine.[55] In the wake of that first article, he was contacted by Des Moines resident John Nelson, who sent disks with several of the Eamon Adventures.[56] Impressed, Plamondon returned to *Creative Computing*, praising the series

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[52] Clardy, untitled, 2.

[53] He nevertheless identifies the Apple PugetSound Program Library Exchange, run by his own local user group, as a source (Clardy, untitled, 2).

[54] Robert Plamondon, "Eamon: An Adventure Game for the Apple II with (Almost) Everything," *Creative Computing* 9, no. 1 (Jan. 1983): 94-102; Plamondon was the author of adventure #22 "The Senator's Chambers," as well as a collaborator (with his brother Robert) on #23 "The Temple of Ngurct."

[55] Robert Plamondon, "Putting Adventure in Adventure Games," *Creative Computing* 7, no. 8 (Aug. 1981): 70-76.

[56] Maher, "Eamon Pt. II."

in his January 1983 feature "Eamon: An Adventure Game for the Apple II with (Almost) Everything." The article itself functioned as an effort at publicity, of raising awareness for an audience which would likely be unfamiliar with the series. But, as Plamondon noted, there was a larger problem of circulation: "Finding them is something of a trick, however. While I know of 25 adventures, there may well be hundreds of which I have not heard, because the authors haven't made their creations known."[57] Again, it seems, awareness of the series was not enough—users already aware of the series may not have known where to find any other adventures, nor have a sense of how to circulate their own works in turn. So Plamondon offered a few options. The first was *Magnetic Fantasies*, the source advised by *Softline* magazine and personally deemed the "official distributor" by Donald Brown, but that "magazine was so obscure that Plamondon was unable to make contact. The second was the Apple Avocation Alliance (AAA or 3A) from Cheyenne, WY. Founded in 1980 by Ron Malaika, AAA was one of many for-profit public domain software distributors active during the period, which ran software libraries (like computer clubs did) and charged small fees for their services.[58] Such companies were relatively affordable and

[57] Plamondon, "Eamon," 98.

[58] The AAA library began as the work of Jim Hassler, a friend of Malaika who operated the HAM radio forum The Apple Net. AAA, however, was Malaika's company, which by 1983 included several employees, a physical office space, and published a newsletter, *3A Press*. See "Focus: Apple Avocation Alliance," *Hardcore Computing* 1, no. 3 (1982): 16, 49; Jay Lucas, "See Some Skin, Learn the Alphabet with AAA's Disks," *Infoworld* 5, no. 10 (March 7, 1983): 62-65.

reliable, and reasonably well-publicized, with AAA itself having been featured in both *Hardcore Computing* and *Infoworld* within a year of Plamondon's writing.[59]

But it was the final option offered by Plamondon which would portend the future of the Eamon community. As he wrote, established program author John Nelson was not only a source for the Eamon program, but was "also trying to coordinate the *Eamon* adventures by making sure new adventures don't have the same names and volume numbers."[60] Such an endeavor speaks to a user's frustration with public domain software: with distributed, grass-roots creation and a wide variety of diverse sources for recirculation, *Eamon* was messy, eclectic. Nelson's vision for the series, so eloquently articulated in a single sentence, was a new kind of noncommercial circulation, characterized by uniformity and accessibility, which would take shape over the ensuing years.

5.2 The National Eamon User's Club: Expansion through Standardization, Centralization

Eamon may have been noncommercial at the behest of Donald Brown, but his decentralized vision and focus on local and face-to-face exchange limited the growth of the series.

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[59] Plamondon would identify A.P.P.L.E. as a similar source for Eamon just two months later, in a feature for *Call-A.P.P.L.E*, but pushes for AAA as the most *comprehensive* source (Plamondon, "Anatomy,"); see also Computer Learning Center (CLC) of Tacoma, WA, which likewise included 30+ Eamon adventures at the time (Computer Learning Center, "$4 Buys 20 Programs," advertisement, *Hardcore Computist* no. 5 [1984]: 24; "Computer Learning Center Public Domain Software Index," *Hardcore Computist* promotional issue (1983): 6-7, 10-11, 14-15, 18-19, 22-23, 24-25).

[60] Plamondon, "Eamon," 98. Nelson had written between 5-10 separate Eamon adventures by January of 1983.

By 1983, two years after Brown's introductory article, there were only twenty-five adventures, most of which were created by the Computer Emporium crowd. The trajectory of the series changed in 1982, when John C. Nelson asked Brown if he could take over as curator of the Eamon catalog.[61] Nelson had met Brown in 1980, when he purchased his first Apple II from the Computer Emporium, and received the existing adventures in person. When Brown's interest in his creation waned, following his shift to commercial software production, Nelson was able to take on a more authoritative role, shaping the series as he saw fit.[62] Though never articulated as such, what Nelson envisioned was a system of centralization, which, as Alexander Galloway notes, implies a relationship of control.[63] The user group would be built to serve as the *official* certification, debugging, distribution, and communication apparatus of the series, effectively standardizing it.[64]

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[61] Nelson was never particularly forthcoming with personal information, but it is clear that he worked in technology in Des Moines, having both a day job and engaging in contract programming ("Eamon By," *3A,* 23; John Nelson, "John's Editorial," *Eamon Adventurer's Log* 2, no. 3 [June 1986]: 1.)

[62] As Nelson explained, retrospectively, to Maher. See Maher, "Eamon Pt. II."

[63] Hobbyists, Nelson included, were typically uncomfortable with the power relation this implied. The NEUC was usually referenced as a "clearing house," perhaps to avoid such connotations. Alexander Galloway, *Protocol: How Control Exists after Decentralization,* (Cambridge, MA: MIT Press, 2004), 201; see also Cait McKinney, "Newsletter Networks in the Feminist History and Archive Movement," *Feminist Theory* 16, no. 3 (2015): 317-19.

[64] The idea for a group dedicated to exchanging such programs was not unique in and of itself—a June 1981 classified ad in *BYTE* proposed a "National Adventure Software Exchange," and was subsequently republished in the first issue of *Hardcore Computing*, though no responses were ever published (Paul Callahan, "National Adventure Software Exchange," *BYTE* 6, no. 6 [June 1981]: 463; Paul Callahan, "National Adventure Software Exchange," *Hardcore Computing* 1, no. 1 [1981]: 15).

With the establishment of the National Eamon User's Club (NEUC) in 1984, Nelson put this model into practice, and the series expanded rapidly as a result, growing from forty-eight adventures to 153 by the time Nelson stepped away in 1989. Nevertheless, developing this centralized system in a noncommercial, amateur community proved exceedingly difficult. The NEUC sought to operate, in Kevin Gotkin's phrasing, through "standardization 'from below,'" with decisions driven by the grassroots user base, not a top-down power structure.[65] As the discourse of the official newsletters reveals, this meant constant evolution and negotiation, as the NEUC struggled to adapt to realities of compensation and voluntary labor. Rather than a fully-articulated plan put into action, the operations of the NEUC consisted of trial-and-error, with constant adaptations and revisions meant to make the project viable. Such changes required transparency, with the newsletter used to justify changes to the community and thereby construct maintain the trust needed for noncommercial exchange.

The NEUC began to take shape in early 1983, when John Nelson was inundated with requests following Plamondon's *Creative Computing* article. Individually, Nelson was already performing many of the functions that would later be served by the user's club. As the previous article noted, Nelson was in the process of generating an official master list of adventures. This project sparked the original NEUC membership advertisement, a full-page ad in the August 1983 3A Computer Products catalog, which 3A's Rob Malaika decided to publish after a conversation with Nelson (figure 5.2).[66] Likewise, Nelson continued to distribute the programs (via mailed

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[65] Gotkin, "When Computers," 9.

[66] "Dungeons and Dragons in the Public Domain," *3A Computer Products* (August 1983): 151; Bob Davis described the role of this ad in his 1985 history of the NEUC (Bob Davis, "The Birth of a Club," *Eamon Adventurer's Log* 1, no. 6 [March 1985]: 5-6.)

diskettes, for five dollars media and postage) to those who requested, as he had done for Plamondon. Perhaps of greater significance were Nelson's efforts to keep users apprised of "bug fixes," corrections to errors in the code of a program. As club co-founder Bob Davis described in his 1985 essay on history of the club, Nelson once explained, "Whenever I find a bug in an Eamon adventure, I search my customer data base for the people who have ordered that adventure from me and send them a postcard with the bug fix on it."[67] In so doing, Nelson performed a quality-assurance role, making himself both the central distributor and unofficial debug coordinator for the community. This too proved overwhelming. Responding to individual questions or mailing out specific bug fixes was easy and inexpensive only on a relatively small scale, and the community had outgrown this capacity. Nelson (along with Bob Davis, a friend) determined that what was needed was a means of mass communication, of conveying information on a large scale to their user base. The answer appeared on the same page as the original NEUC advertisement in *3A*—an Eamon newsletter. Within the *3A* ad, the newsletter is listed as a separate project from the club, to be published by Ken Sherwood of Reading, PA.[68] As Bob Davis once again explains, when Sherwood failed to launch the publication, "John talked to Ken and… came to the conclusion that… it would be better for John to create the newsletter himself."[69] Thus all of the organs of the National Eamon User's Club were in place by February of 1984, with the newsletter, now the *Eamon Adventurer's Log*, serving as the club's main form of communication. The ambitious project that the NEUC represented—of circulation, community definition, and standardization—

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[67] Davis, "Birth," 5.

[68] Although Nelson was already involved, as the text asks "if you are an experienced Eamon Adventurer, John and Ken invite you to write about Eamon for the newsletter" ("Dungeons," *3A*, 151).

[69] Davis, "Birth," 6.

was a radical departure for noncommercial gaming culture, bringing distributed creativity together into a single, centralized system.

EAMON

EAMON ADVENTURES

There are now 45 adventures! Each is on a separate disk volume. The EAMON MASTER (Version 4) and the first adventure, BEGINNERS CAVE are on the same disk--E01. To run any of the adventures you must run the EAMON MASTER first!

There is also an EAMON DESIGNER volume (Version 5)--ED5, that will permit you to create your own adventure. Also on the Designer disk are 2 "manuals" that explain all the secrets of Eamon and how to design your own adventure which you may read on your monitor or print hard copy on your printer. Highly recommended for Eamon adventurers and writers are three EAMON UTILITY DISKS--EU1, 2 and 3.

NEW EAMON NUMBERING

The growing library of Eamon adventures required changing a few adventure numbers (which is easily done). When you complete a NEW ADVENTURE and are satisfied it is perfect then send it to JA for exchange. We will assign the next available number. Meanwhile use any two digit number.

EAMON NEWSLETTER

Send for your free introductory issue of the Eamon Newsletter! Now you have a way to become informed about new developments happening in the Wonderful World of Eamon. Read articles on your favorite Adventures, previews of adventures in-the-works, and more. Stay informed about new developments in the Eamon Master program and in the Utilities. Send your request for a free sample issue to KEN SHERWOOD, 117A N 25th Street, Reading * PA * USA * 19606. By the way, if you are an experienced Eamon Adventurer, John and Ken invite you to write about Eamon for the newsletter.

Typed by Epson RX80/PKASO EP12/Applewriter I/Apple II+.

NATIONAL EAMON USERS CLUB

The official National Eamon Users Club is now forming to bring together all Eamon Adventurers. The purpose is to assemble knowledge of adventures, notify members of new adventures, utilities, tournaments, program bugs, new versions, improvements, features you can add yourself, ways of saving your characters, helpful hints, designing adventure tutorials, and have a great time.

A newsletter sent out to all members, meetings scheduled for Adventurers in the same region, a possible membership list to help members find other members in their region and other fantastic things not even dreamed of yet. No dues have yet been levied and will be avoided, until printing and postage costs become too much.

Send your name, address, phone and a list of the Adventures you have to: JOHN NELSON, 1226 E University, DesMoines * IA * USA * 50316. □

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Figure 5.2: Original advertisement for the NEUC

What sets the NEUC vision apart from Donald Brown's was an interest in uniform circulation, in establishing the club as the sole, *official* distributor of the series. The club's insistence on remaining noncommercial while doing so posed a distinct methodological challenge, due to the material and technological constraints of the time. Unlike mainframe games, which could be circulated digitally via the ARPANET, home computer game programs were mostly dependent upon storage media, like the 5 ¼" floppy disk. Although there were some early modems and bulletin-board systems (BBS) by 1984, which allowed users to share files digitally, these were rather limited and certainly uncommon in the Apple community (and Eamon was Apple-specific).[70] As such, the NEUC consistently depended upon storage media for circulation, which posed material constraints in the form of media costs and shipping. To make such an operation feasible, money had to change hands, such that the club did not constantly operate at a deficit. The question, then, was how to remain noncommercial, when the exchange of money for goods would seem to imply a commodity system.

The answer for the NEUC was to demonstrate equivalence of exchange, by being as transparent as possible about the club's monetary structure. At first, the club followed Nelson's

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[70] In his 1982-83 *Infoworld* series on freeware/shareware, Jay Lucas "the blossoming of freeware" to the development of the modem, a hardware device which allowed personal computers to connect via the telephone system (Jay Lucas, "Freeware: How to Expand Your System with a Modem," *Infoworld* 4, no. 30 [Aug. 2, 1982]: 56-8). Lucas primary focused on the CP/M community—that is, IBM-PC users (CP/M being its OS)— which utilized RCPM (remote CP/M) or BBSes, and allowed remote functionality through the freeware program MODEM. His discussions of *Apple* freeware, however, *always* describe mail-order rather than remote access (see Jay Lucas, "Cheap Commercial Software and Apple Freeware," *Infoworld* 4, no. 38 [Sept. 27, 1982]: 60-61; Jay Lucas, "Freeware: The Chicken/Egg Dilemma with MODEM7," *Infoworld* 4, no. 44 [Nov. 8, 1982]: 64-67; Lucas, "See Some," 62-65).

original pricing structure, charging five dollars per disk. Nelson explained in the first issue of the newsletter that this fee was "for diskette packaging and postage expenses and anything left over goes to the production of the newsletter."[71] This soon proved insufficient to the club's needs, and, in issue two of the newsletter, they announced annual dues of twelve dollars, before moving to an elaborate, differential pricing scale for members and nonmembers the next quarter.[72] Consistently, the NEUC staff members were careful to explain their rationale, to justify why gamers cannot just "expect something for nothing."[73] In the fourth issue, for example, Nelson stated that the club's programs cost more than some for-profit alternative due to issues of scale, as such companies face lower per-disk costs by dealing in high volume.[74] Even the newsletter costs were likewise itemized for readers—a 70 cents to $1.05 per person cost with printing and postage.[75] These efforts highlight

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[71] "Notices and Junk," *Eamon Adventurer's Log* 1, no. 1 (March 1984): 4.

[72] Dues were always an option, but one the NEUC initially sought to avoid. The original *3A* advertisement suggests "No dues have yet been levied, and will be avoided, until printing and postage costs become too much" ("Dungeons," 3A, 151); "Club News," *Eamon Adventurer's Log* 1, no. 2 (May 1984): 5; John Nelson, "Club News," *Eamon Adventurer's Log* 1, no. 3 (Aug. 1984): 2.

[73] Nelson, "Club News," 1, no. 3, 2; in this, Nelson inadvertently echoes Gates' "Open Letter."

[74] For example, the Computer Learning Center (CLC) offered all 44 Eamon disks for $140, or just over $2.70/disk, even cheaper than their regular $4/disk price, or NEUC's $5/disk (Computer Learning Center, "EAMON: Where the Adventures Never End," advertisement, *Hardcore Computist* no. 5 [1984]: 33). As Nelson writes, "We try to compete with these sources, but some of them buy their diskettes by the boxcar full and we can't match that volume" (John Nelson, "A Word from the Editor…," *Eamon Adventurer's Log* 1, no. 4 [Oct. 1984]: 1).

[75] Nelson, "Club News," 1, no. 3, 2. A later issue includes a full breakdown of expenses: printing: 91 cents, mailing 39 cents, envelopes 11 cents, for total of $1.41 per issue (John Nelson, "Much Ado About a Lot of Things," *Eamon Adventurer's Log* 2, no. 4 [Jan. 1987]: 10.)

the essential challenge of their noncommercial system, of *proving* the equivalence between material costs and money received. If commodity production is defined by the creation of surplus value through the combination of labor and materials, an alternative must show equilibrium, that costs are being covered *without* generating profit. This was an incredibly delicate balance to strike in practice, as it required the trust of the user base. And even with their best efforts at transparency, the club remained vulnerable to accusations of profit motive. In one notable instance, Nelson used an October 1984 editor's note to justify the NEUC's policy to only publish bug fixes for the version of adventures the club distributed.[76] Despite having been an early supporter of the club, 3A's Rob Malaika interpreted this policy as the NEUC "trying to capitalize on [bug fixes]" by withholding information and providing it only to members.[77] In response, 3A used its latest catalog to propose its *own* Eamon club, to "keep Eamon in the public domain and discourage locking up programs."[78] The new club, "World Eamon Group," never got off the ground, as Malaika and the NEUC staff reconciled later in March 1985; but the controversy, and the defensive posture of the NEUC response, highlighted the precarity of appearing "noncommercial." Trust, it seems, required a delicate balance.

The newsletter itself played an essential role in building and maintaining the NEUC as a community, rather than simply a governing body. In lieu of the top-down structure of commercial organization, groups of amateurs have a long history of collaborating to build their own social structures and practices, through uncompensated organizational work.[79] Newsletters have served

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[76] Nelson, "A Word," 1, no. 4, 1.

[77] "Club News," *Eamon Adventurer's Log* 1, no. 6 (March 1985): 1.

[78] "Eamon by Donald Brown: A World Far, Far Away," *3A Computer Products* (1985): 23.

[79] Yra van Dijk, "Amateurs Online: Creativity in a Community," *Poetics,* no. 43 (2014): 90-2.

as the primary communicative infrastructure for dispersed organizations of all kinds, typically operating with an inclusive ethic, meant to disseminate information *and* foster subsequent contributions and participation from the larger audience.[80] As such, newsletters have never been intended as solely one-way communication, but rather tended to be a "multiauthored communication system," meant to replicate the decentralized structure of the amateur group in the editorial process, and thereby create a sense of collaboration.[81] Nelson and Davis might have put most of the work into the first few issues, and in fact did not mind doing so, but the success of the newsletter depended upon community contributions, of others offering their time to write about Eamon for "the love of it," for the enjoyment derived from the experience.[82] Efforts to attract such participation became a consistent feature of the *Eamon Adventurer's Log*, and a constant struggle for the NEUC.

As a printed publication, the *Eamon Adventurer's Log* was relatively simple. Throughout its run, the newsletter was printed on standard 8 ½ x 11" printer paper, stapled and folded horizontally for mailing. The earliest issues featured a markedly DIY aesthetic, a spare six pages composed of a uniform, type-written font, all of a single font size. Design, at first, was limited to only ASCII symbols, so the nameplate and section headers made liberal use of hyphens, creating the illusion of dividing lines. In the third issue, the design grew somewhat more complex, with pages divided into two columns by a bold line, a more streamlined font, and the appearance of the newsletter's first image, a drawing of a club member's adventure character ("Nanoc the Thick").[83]

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[80] See McMillian, "'Our Founder,'" 86-87; McKinney, "Newsletter," 310.

[81] Gotkin, "When," 7.

[82] Booth, *For the Love*, 3-17; Csikszentmihalyi, *Flow*, xi, 4; Gelber, *Hobbies*; "Notices and Junk," 3.

[83] "Adventurer of the Month," *Eamon Adventurer's Log* 1, no. 3 (Aug. 1984): 3.

Issue four saw the NEUC settle on a standard design: fourteen pages, with a distinct, bold font and lines demarcating the title and section breaks. The definitive addition was a new nameplate, with the title—bookended by an oversized E and G—surmounted by the image of a dragon, a polished version of the Eamon title-screen image (figure 5.3). Even as the appearance changed, the *Eamon Adventurer's Log* maintained a consistent set of sections. Some of these functioned as one-way communications, of the club broadcasting to its members, notably the editorial, "Club News," and the humorous "Terminological Inexactitudes" column. Other sections sought varying degrees of interaction, with users able to submit questions for the "Questions & Answers" or the later "Letters" sections, or describe programming bugs to be listed in the "Bug Bytes" section. Design-minded users could write columns for the "Designer's Den," describing their own creative process, or more hypothetical "Adventure Tips."[84] Perhaps the most common interaction between club members and the newsletter occurred in the "Reviews" section which ended each issue, as programmers would submit their programs to the Club to add them to the official series list, and staff would review the adventure. In this way, the newsletter itself was not always collaboratively written, but it at least created the sense of Eamon as a collective enterprise, built by distributed effort across the community.

[84] Perhaps the best user contribution to the designer's den came from Pat Hurst, who described in-depth the rationale behind his program #145- Buccaneer! (Pat Hurst, "Designer's Den," *Eamon Adventurer's Log* 2, no. 5 [Oct. 1987]: 3-4).

Figure 5.3: Eamon Adventurer's Log nameplate

Although financial transparency and community-building were essential functions of the newsletter as a communicative apparatus, it was not sufficient in growing the Club. Fortunately, the first year of NEUC dues raised slightly more money than required for circulation, to cover the newsletter, fixed costs, etc. One function of this surplus income was a focus on publicity, which allowed the club to meet the need for collaboration, bringing in new members with whom to share the creative and administrative work. The first such effort was a single text-only classified ad in the April 1984 issue of *Softalk* magazine, a prominent publication for Apple users.[85] The ad itself was relatively simple, announcing only the club's key functions (bug fixes, design help, answering questions, shipping) and Nelson's contact information, though this concision was likely a consideration of affordability. By mid-1985, when the NEUC was near its peak popularity, it ran a more detailed classified, published in trade-publication *Infoworld*, detailing the club's mission ("standardization, promotion and distribution of the public domain adventure system, Eamon"), its newsletter, and the dues structure.[86] In each case, the NEUC demonstrated a turn to being

[85] "National Eamon User's Club," advertisement, *Softalk* 4.8, April 1984, 22; Discussed in Newsletter 1.2.

[86] "User Groups", advertisement, *Infoworld* May 27, 1985, 23; discussed in Newsletter 1.7.

proactive, investing in the community's growth. Knowing that there was a built-in limit to the efficacy of word-of-mouth, the club used the small surplus from order fees to reach a wider base. Such a step is remarkable, as it coincides with the industry's growing emphasis on marketing and promotion as a component of production. Like for-profit publishers, the NEUC was seeking out its audience where it could, in the pages of computer magazines alongside other advertisements.

Finally, the NEUC is notable for its focus on standardization, on maintaining a uniform master list of adventures and bug fixes, and ensuring quality—a task which would test the limits of control possible for a noncommercial organization. As the 1983 Plamondon article made clear, Nelson had long been interested in cataloging all of the Eamon adventures. Donald Brown's preferred model for distribution—depending on local computer clubs—meant that numerous communities developed in isolation from one another. Thus, some adventures were only available in certain pockets or from specific sources. By compiling as many of the extant adventures as possible, Nelson sought to bring these disparate strands together, under a single banner. With the launch of the NEUC, this project was extended to regulating *new* adventures, by keeping a running list of programs as they were created in order to avoid replicating the fragmentation of the previous moment. To do this, the NEUC put a system in place wherein gamers would submit original programs directly to the club, to be tested, copied, and added to the catalog.[87] The bar for what could constitute an "official" adventure was not set particularly high, for fear of inhibiting creativity or willingness to submit to the club. As Nelson and Davis note in issue 1.2, an official adventure only needed to be "one designed with any version of the Dungeon Designer Diskette," meaning that it fit the technical standard by which the series was defined. But even this was not as

[87] "Questions and Answers," *Eamon Adventurer's Log* 1, no. 2 (1984): 6.

strict as it might seem. They continued by explaining that "changing the base program to do special or altogether different processing does not exclude the adventure from being 'official.' On the contrary, it is a welcome and refreshing change."[88] Therefore, programmers were welcome to change the gameplay mechanic, the parser, the commands list, or any other specific components of gameplay, so long as they utilized the core design program to do so.

While standardizing a master list was relatively simple, debugging and quality control proved a much more difficult task for the NEUC. Certainly, having "bugs" was not unique to the Eamon adventure programs. Then as now, committing errors when coding was almost inevitable, especially in programs of any complexity. As Friedrich Kittler muses, "anybody who has written code even only once…knows… all words from which the program was by necessity produced and developed only lead to copious errors and bugs."[89] Commercial software usually had the benefit of rigorous quality control to work out all of the bugs before a program's release and/or aftermarket support when problems arose. For amateur software, such testing was only as good as the efforts of the individual programmer, and so finding and correcting errors was a part of the cooperative development ethic. Moreover, software quality was of particular concern in the moment of the NEUC's inception, which roughly coincided with the software industry shakeout of 1984 and its disproportionate impact on computer gaming.[90] Like the videogame crash of the previous year, in which "it was almost universally agreed that the principal cause… was the flood of low-quality games that saturated the market," this software shakeout was commonly linked to low quality

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[88] "Questions and Answers," 1, no. 2, 6.

[89] Friedrich Kittler, "Code (or, How You Can Write Something Differently," in *Software Studies: A Lexicon,* ed. Matthew Fuller (Cambridge, MA: MIT Press, 2008), 46.

[90] Carlston, *Software People,* 9; Lowood, "Brief," 36.

"shovelware."[91] In his history of the software industry, Martin Campbell-Kelly offers just such an explanation, writing that many computer games "were derivative or plain unexciting, and ordinary buyers, unable to distinguish the good from the dross, stopped buying games altogether."[92] As a result, production within the industry moved away from individual programmers and toward a complex system of specialization and team-based development, with concerns about quality being part and parcel of pro-industry rhetoric.[93]

For amateur programmers, like those who made up the Eamon community, the discourse surrounding "shovelware" imposed a distinct need to emphasize the quality of their products. Pushing against the pejorative connotations of "amateur" software was a key part of the project for Nelson and the larger Eamon community, as high-quality programs could prove the validity of their approach.[94] Accordingly, the NEUC devoted significant effort to debugging. The group began by compiling a "master bug list," consisting of both previously known errors and notifications mailed in by users.[95] The club would then fix any problems in their master programs, so that subsequent copies would be error-free, while publishing these fixes in the newsletter.[96] By the end of the first year, however, this approach demonstrated a need for standardization. As Nelson describes:

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[91] Campbell-Kelly, *From Airline,* 280.

[92] Campbell-Kelly, *From Airline,* 279.

[93] As in Allan Tommervik, "Exec SoftSel: The Art of Software Distribution," *Softalk* 2, no. 2 (1981): 47.

[94] Booth, *For the Love,* 3-17. For the "hackers" and "hobbyists" of the 1960's-1970s, see Levy, *Hackers*; Turner, *From Counterculture*; for the open-source movement, see Kelty, *Two Bits,* 205-7.

[95] "Bug Bytes," *Eamon Adventurer's Log* 1, no. 1 (March 1984): 1-2.

[96] Nelson, "A Word," 1, no. 4, 1.

> In trying to control bugs, we find it necessary to standardize the Eamon diskettes—to try to get all of the copies out there the same. Part of the problem we have in doing this is some people have versions… that are very old and even printing fixes to these doesn't help, because the fixes don't match the programs.[97]

Due to the original, nonstandard creation and dissemination of the series, there was simply no way to guarantee that uniformity existed in older adventures. The only solution would be to redistribute corrected copies, which was impossible to do as a noncommercial operation. Nelson continues, musing, "it would be nice if we could somehow have a free exchange policy to get everyone updated at once, but this would wear out the disk drive of anyone attempting it. Therefore a fee has to be charged to copy the diskettes."[98] Standardizing the entire series, then, would have required more monetary exchange, investment in a process which was largely of interest to only those involved in the debugging process.

Worse still, as the same issue describes, the flow of new adventures was too rapid for the NEUC officers to test fully. For fear of unfairly holding new adventures back, the club allowed these to circulate, and so had to keep up with bug fixes on an expanding base of programs. The problem for the NEUC was that creative production was widely distributed, but quality control was centralized, performed by a relatively small group with a limited amount of time (and capacity for uncompensated work). Unlike commercial development, quality control was only performed after a game was created and sent out, and the NEUC did not want to be the reason for constraining the series' growth. For these reasons, in spite of their best efforts, complete standardization proved largely unattainable, leaving the refinement of pre-existing to copies to the lay members of the community.

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[97] John Nelson, "A Word from the Editor…," *Eamon Adventurer's Log* 1, no. 5 (Jan. 1985): 1.

[98] Nelson, "A Word," 1, no. 5, 1.

The focus on quality assurance carried over to the content level as well, though user creativity proved markedly difficult to standardize. Again, all that was required for an adventure to be "official" was the use of the Dungeon Design Disk's underlying framework. This left genre, tone, storytelling, and even gameplay mechanics up to individual programmers, with execution wholly dependent upon the designer's skill level. The results of this openness are apparent across the list of adventures, especially when the original swords-and-sorcery milieu was thrown aside in programs like "The Beermeister's Brewery" or (less successfully) "The Shopping Mall." The challenge for the NEUC was how to encourage the distributed, spontaneous creativity on which the series depended, while ensuring that these new adventures were interesting and well-made. In the first three issues, concerns about "unimaginative" or rudimentary adventures were engaged pedagogically, with "how-to" features devoted to instructing potential authors in adventure design. Both the brief tutorial in the first issue (said to provide a "skeleton procedure" for dungeon design) and the program overview in issue two served as outreach, to help facilitating new entries into the community.[99] In the third issue, design tips were reconfigured as "Design Standards," establishing which tendencies were good (consistency! originality!) or bad (repetition! instant death!) in an effort to prescriptively counter a tendency toward generic adventures.[100]

By March of 1985, the club's openness to user creativity reached its tipping point, with the editorial staff announcing its intention to "take a stand" against so-called "bad" adventures.[101] As Nelson noted, the concern was twofold. On one hand, the issue was quality, as games which

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[99] "Designer's Den," *Eamon Adventurer's Log* 1, no. 1 (March 1984): 2-3; "Designer's Den," *Eamon Adventurer's Log* 1, no. 2 (May 1984): 2-3.

[100] Jeff Harris, "Design Standards," *Eamon Adventurer's Log* 1, no. 3 (Aug. 1984): 3.

[101] John Nelson, "From the Editor," *Eamon Adventurer's Log* 1, no. 6 (March 1985): 1.

"scraped the bottom of the creative barrel" by including "no mission, no story, no plot, no effects, no special programming" were found to be generally unplayable. The Eamon system itself meant that such adventures were common, in that, unless one was competent and capable in altering adventures on the level of code, the Dungeon Design Disk would produce a barebones product. Even so, learning more complex creative techniques required practice, repetition, and experimentation, so discouraging the process would silence new creative voices. Recognizing the utility of simple games for beginners, the newsletter staff adapted their rating system to denote specific "beginners" adventures, and, separately, those with limited special features.[102] The second area of concern was of morality, specifically the kinds of content that should be permitted within the community. In this, the editorial staff appears to have been responding to a particular adventure, Jeff Allen's "The Jungles of Vietnam," which featured lurid descriptions and hard drug use.[103] Nelson describes this program directly, writing "we do not think distributing an adventure wherein you have to shoot up heroin to escape the adventure is what the system was intended for."[104] Coupled with the earlier "House of Ill-Repute," this adventure posed a challenge for the NEUC, who could determine whether "bad" adventures should be a part of the official catalog and thus continuously distributed. Despite taking a central role in standardizing and circulating the series,

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[102] John Nelson, "From the Editor," *Eamon Adventurer's Log* 1, no. 7 (May 1985): 1.

[103] The program's meaning is somewhat ambiguous, in that it may be read to either glorify lurid themes, or critique them. Dismissing this possibility in his review of the program, Bob Davis writes "Perhaps Mr. Allen was making a social comment with his adventure—but looking through his other adventures… I rather doubt it" (Bob Davis, "Review: #59- The Jungles of Vietnam (1:1)- by Jeff Allen," *Eamon Adventurer's Log* 1, no. 6 [March 1985]: 12.)

[104] Nelson, "From," 1, no. 6, 1.

the NEUC did not wish to police user creativity, and voiced this hesitance to engage in censorship. Fearing such accusations, the NEUC held a committee meeting on April 27, 1985, wherein the Club staff and Des Moines-area club members discussed the issue.[105] Though meeting attendees resolved to discontinue four "amoral" adventures, the editorial staff ultimately prioritized accessibility over taste, and resolved to ship amoral adventures only to someone who "tells us they are aware of the type of material and says they are willing to take the adventure anyway and that they are of legal age."[106]

5.3 The NEUC Disbands: The End (and Afterlife) of Eamon

By the beginning of 1986, the NEUC was a remarkable success, even with the advanced age of the Apple II platform and the gradual commercial decline of text adventures. Since the club's inception, the number of adventures had more than doubled in size, from forty-eight to 114, with membership growing to more than 180 and an even larger number of people ordering programs. In some sense, Nelson's original vision for the NEUC was perhaps too successful, as merely processing membership dues proved too much to keep up with by May of 1985. The latter half of the club's existence, from 1986 through its dissolution in 1989, is a striking demonstration of the amount of energy and uncompensated labor required to keep a noncommercial organization

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[105] Nelson, "From," 1, no. 7, 1.

[106] To be discontinued: #32 House of Ill-Repute ("may be borderline illegal"), #59 Jungles of Viet Nam (drug use), #71 Operation CrabKey (lurid descriptions), and Shopping Mall (boring) ("Editorial," *Eamon Adventurer's Log* 1, no. 7 [May 1985]: 1); "Editorial," *Eamon Adventurer's Log* 2, no. 1 (Aug. 1985): 1.)

running. The structure of the NEUC was doubly precarious. Grassroots groups are often on the verge of collapse, dependent as they are upon a limited window of creativity. This was further heightened by centralized structure of the NEUC—as Cait McKinney writes, "centralized networks crumble when the main hub fails [such as] when a publication goes out of print."[107] Knowing that the Eamon community was dependent upon the survival of the NEUC, but struggling to keep his original model alive, Nelson reached out to the larger community with a new vision, inspired by for-profit "adventure-of-the-month" clubs. He soon found that inertia had taken hold: the user base was largely resistant to compromising the NEUC's original vision, but few were willing to take on the responsibilities of centralization and standardization.

Purely in terms of participation and series expansion, 1985 was a high-water mark for the NEUC. Sensing this rapid growth, and aware that the community had surpassed the limited bounds of the Des Moines Computer Emporium, the NEUC ran a user survey to get a sense of member demographics and interests. Yet the published results of the survey, appearing in the January 1985 issue, revealed very little: of demographics, the club simply writes, "the members seem to be very diverse, ranging in age from 9 to 58 and ranging in sex from male to female."[108] That the club offered such limited information about gender suggests that there were some, albeit few, women who submitted surveys. The list of adventures seems to support this, as only four adventures

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[107] McKinney, "Newsletter," 319, 325; see also Galloway, *Protocol*, 200; Roy Rosenzweig, "Wizards, Bureaucrats, Warriors, and Hackers: Writing the History of the Internet," *American Historical Review* 103, no. 5 (1998):1532–1533.

[108] "Notices and Junk," 1, no. 5 (Jan. 1985): 2.

created during the NEUC years came from female-identified programmers.[109] Certainly, female authors were no less committed than their male counterparts—Margaret Anderson, for example, created or co-authored at least four adventures, and, after winning first prize at KansasFest's HackFest in 2013 with an Eamon utility, wrote "I have been playing Eamon games off and on for as long as I've had a computer."[110]

The NEUC does appear to have *tried* to avoid explicitly gendering Eamon. The brief acknowledgement of gender in the user survey reveals some effort on the group's part not to self-identify as male-dominated, and is further supported by mostly avoiding pronouns in reviews of adventures submitted by new programmers, and concerns about overt sexism in the "bad" adventures. Nevertheless, the club staff was entirely male throughout the NEUC's existence, and so a masculine perspective dominated the newsletter. Often, this occurred subtly, as in Jeff Harris' August 1984 column on "Design Standards," wherein he implored readers to "BE ORIGINAL! My wife (John's wife, too) collects Harlequin Romances by the box-full. I've looked at a few of them, and they're all the same—only the names and locations have changed to keep the reader awake!"[111] While his point about the need for originality is fair, he does so via comparison to a

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[109] Note that some adventures *could* have been listed under an apparently male pen-name, but I have consulted the Eamon Wiki whenever possible to confirm the gender identity of authors. Female-authored adventures include #52 Devil's Dungeon by Jeanette Merrill, #64 Modern Problems by Bonnie Anderson (and a few male co-authors), #139 Peg's Place by Margaret and Ann Anderson, and #140: Beginner's Forest by Margaret Anderson; Anderson also created Margaret also made #215 Treasure Island and #216 Pirate's Cave, both c. 1992.

[110] Margaret Anderson, "Mapping the Unknown: An Adventure in Eamon," *Juiced.GS* 18, no. 3 (Sept. 2013): 10.

[111] Harris, "Design," 3.

stereotypically feminine-coded hobby, which he positions as obviously inferior. In this way, Harris imposes a heteronormative frame while reaffirming the sexist value judgment, all in order to make his fantasy gaming seem less frivolous.[112] Likewise, in his review of Jeanette Merrill's adventure "Devil's Dungeon," Steve Mahr jokes, "A battle scarred veteran would probably get a bit bored and be wishing for a skin of wine… and a fair wench (I tried, but she refused)."[113] Here, Mahr marks adventuring as a masculine pursuit, with propositioning a female NPC ("nonplayer character") the natural response of a bored gamer. Naturally, the character would not respond to his advances, but the mere attempt (and its presumed comedic value) speaks to the male gaze through which Eamon was described.[114]

These problems, of course, did not originate with the NEUC. The gendering of computing as male was a long-term, ongoing process on both sides of the Atlantic, and the rise of micro- and personal computers saw hobbyists bring masculinist conceptions into this new computing

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[112] Harris overlooks the fact that such romances often serve the same community-building and social functions as Eamon (see Janice Radway, *Reading the Romance* [Chapel Hill: University of North Carolina Press, 1982]), and that *both* computer games and romance novels carried their own specific types of cultural stigma.

[113] Steve Mahr, "#52 The Devil's Dungeon (5:3) by Jeanette Merrill," *Eamon Adventurer's Log* 1, no. 7 (May 1985): 8.

[114] "Gaze" here serves an ironic function, insofar as these were text-only adventures. Not that this precluded erotica: like Online Systems' famous "Softporn Adventure" (1981), there was a pornographic Eamon adventure, #34- "House of Ill-Repute," which featured a revised parser suited to such pursuits. See Laine Nooney, "The Odd History of the First Erotic Computer Game," *The Atlantic*, Dec. 2, 2014, https://www.theatlantic.com/technology/archive/2014/12/the-odd-history-of-the-first-erotic-computer-game/383114/; Lucas, "See Some," 62-65.

culture.[115] Though the NEUC was not an explicit outgrowth of the patriarchal capitalist relations built into the computer industry, it nevertheless carried over the "geek masculinity" of hacker culture.[116] Thus, the NEUC operated, tacitly, on a common assumption, described by Judy Wajcman: that it was comprised of "prominently young men" designing games meant to "appeal to male fantasies, and reinforce a particular brand of masculinity."[117] So while the newsletter may have taken some measures to avoid overtly alienating female gamers, the NEUC did not do nearly enough work to counteract the latent gender bias in hobbyist computing. As a result, the newsletter functioning primarily as a male discursive space, with the women who participated in and created Eamon adventures operating largely outside of the club, making games without the communal support of the larger, more public community.

The failure to make space for female adventurers, or any who did not feel themselves to fit into the masculinist nature of the club, would have a larger impact on the NEUC in the coming years, as it further compounded the club's growing labor problem. 1985 was the last year in which the club was able to maintain a regular publishing schedule, as the NEUC remained heavily dependent upon the limited editorial staff, particularly Nelson and Davis. In one of the few instances of delegating labor, however, the March 1985 announced that "Des Moines member Steve Mahr has volunteered to help with some of the duties we have here at the club and has been given the job of processing."[118] Even though Mahr's inconsistent availability made it impossible for him to process *all* orders sent to the club, he was able to process larger orders, thereby

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[115] Hicks, *Programmed,* 234; Turkle, *Second Self*; Kirkpatrick, "How Gaming," 453-468.

[116] Salter, "From Geek," 249-50.

[117] Wajcman, "Gender Politics," 707-721.

[118] "New Staff Member," *Eamon Adventurer's Log* 1, no.6 (March 1985): 2.

alleviating some of the responsibilities of the board. As Nelson notes in the May 1985 issue, "by having Steve process orders, we have time to work on bugs, more adventures and to do correspondence."[119] At the same time, the growth of the Eamon community forced the NEUC to take other measures to increase efficiency, to ensure that their limited labor could continue operations on a larger scale. To do so, the club invested in a photocopier which, in Nelson's words, "will improve response time immensely for documentation[sic] orders, requests for adventure lists, etc."[120] Such an expenditure was a risk for the noncommercial enterprise, but it was only through this fixed capital (coupled with the distributed labor of various volunteers) that the NEUC could continue to expand.

Unfortunately, just as the club invested its funds in a copier, it was forced to confront the unreliability of noncommercial labor. In the August 1985 newsletter, Nelson wrote that the NEUC had fallen behind in its duties, for seasonal reasons: "with vacations and other things reducing our staff to a mere shadow of what it normally is, it is difficult to get all the things done that we want to do."[121] This speaks to the *petit bourgeois* class of much of the community, as those with the resources and free time to sink into the hobby could also afford to take a vacation. But it also raises a crucial problem, that Eamon was *simply* a hobby, and so did not always take precedence. A problem particular to amateur computing was that, due to the skills required, many who took part also worked in the tech sector. Gotkin's analysis of the earlier Amateur Computing Society, for example, quotes a member complaining that he had "been too busy designing computers at work

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[119] John Nelson, "Notices & Junk," *Eamon Adventurer's Log* 1, no. 7 (May 1985): 8.

[120] John Nelson, "Club News," *Eamon Adventurer's Log* 2, no. 1 (Aug. 1985): 1.

[121] Nelson, "Club News," 2, no. 1, 1.

to feel much like doing it also at home," while journalist Tracey Kidder tells of engineers at Data General Corporation being shocked that a new recruit tinkers with a hobbyist computer after work.[122] For similar members in the Eamon community, stepping away from work likely also necessitated taking a break from gaming, as both involved programming. This was further compounded by the fact that, regardless of profession, members could not be depended upon to return to their tasks within the club after a hiatus. In August 1985, Nelson remarked that Mahr had become too busy to continue processing orders, and so ceased to contribute. Furthermore, "it appears we have temporarily (permanently?) lost the services of two of our staff for some reason… We are hoping they'll come back."[123] The labor problem faced by the NEUC, then, was more fundamental than a mere change in season. Because all labor was voluntary, contributors could step away at any time, for any reason, and the organization was forced to make do in their absence. This volunteerism was possible in the early days of the club, as novelty of the endeavor fostered energy and interest. As newness waned, and the demands of everyday life intervened, the NEUC was left with a small, diehard staff and a distributed user base, with few in-between.

For as long as Nelson and Davis remained active, the club was able to maintain some level of functionality, although they too struggled to balance personal and professional demands with club responsibilities. To their credit, Nelson and Davis were able to keep the NEUC running regularly (albeit consistently behind schedule) for two full years. But depending upon two people meant that the club's very existence was precarious, and thus subject to the kind of precipitous decline which began in late 1985. Only one NEUC newsletter was published in 1986, and not until

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[122] Gotkin, "When," 11 (citing *ACS Newsletter* 1, no. 11 [Dec. 1968]: 4); Kidder, *Soul*, 258-59.

[123] Nelson, "Club News," 2, no. 1, 1.

June, a full seven months after the previous iteration. In it, Nelson opens with an effort to explain the delay (self-deprecatingly dismissed as "whiny excuses.")[124] Once again holidays seem to have played a role, with Christmas and New Year's noted to have interrupted the usual workflow. Subsequently, he writes, "we each started putting in lots of overtime at our full-time jobs and had even less time [for club duties.] Then we had to do the books for the club and our contract programming affairs as well as finish up some major contract programs."[125] Here, Nelson and Davis ran into a common problem for hobbyists: *paid* labor often must be prioritized over recreation, which constrains the scale of energy, effort, and resources one can devote to a passion project. This was perhaps even worse for those (like Nelson and Davis) working in the programming industry, with its history of demanding long hours in "crunch time" and the possibility for lucrative contract work.[126] There was only so much time and effort one could devote

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[124] Nelson, "John's Editorial," 1.

[125] Nelson, "John's Editorial," 1.

[126] "Crunch time," defined by Nick Dyer-Witheford and Greg de Peuter as "the industry term for an ostensibly unusual period of crisis in the production schedule, when hours intensify, often up to sixty-five to eighty hours a week, sometimes more," has been a major controversy for the videogame industry in the 2010's, giving rise to the activist group Game Workers Unite (see Nick Dyer-Witheford and Greg de Peuter, *Games of Empire* [Minneapolis: University of Minnesota Press, 2019]: 59-65; Woodcock, *Marx,* 41-43; Jason Schreir, "The Horrible World of Videogame Crunch," *Kotaku*, Sept. 26, 2016, https://kotaku.com/crunch-time-why-game-developers-work-such-insane-hours-1704744577; Ian Williams, "Crunched: Has The Games Industry Really Stopped Exploiting its Workforce?," *The Guardian*, Feb. 18, 2015, https://www.theguardian.com/technology/2015/feb/18/crunched-games-industry-exploiting-workforce-ea-spouse-software; "About Us," *Game Workers Unite*, accessed Sept. 15, 2019, https://www.gameworkersunite.org/about-us). But the practice is much older, and transcends the game industry. Tracy Kidder describes precisely this condition in the (mini)computer hardware industry in the 1981 book *The Soul of a New*

to programming, and adding more to the already onerous demands of a career would prove unsustainable for both Bob Davis, who left the NEUC by October of 1987, and, eventually, Nelson himself.

Aware that such a collapse was on the horizon, the NEUC board solicited community feedback in the June 1986 newsletter, in order to assess the viability of restructuring the club. Echoing Nelson, Davis describes falling behind on membership dues, owing to career commitments and overcrowded personal schedules. As a result, the club would be re-organized according to the responses to an attached questionnaire (figure 5.4). He notes, "this is designed to give us more time to work on the ever-increasing World of Eamon. The final result hopefully will be improved order processing, time…, reduced bug reports, less duplication of effort and lower costs."[127] In short, the club needed to improve efficiency, to get the most out of the limited time and effort available, without necessarily sacrificing its key functions. But Davis is careful to emphasize the goals of the group *before* providing the questionnaire, to try and constrain feedback. The objectives were two-fold: 1.) to "provide members with new, tested adventures on a regular basis," and 2.) to "provide information on an as needed basis, rather than give all the information to everyone."[128] While centralized quality-control and circulation remained the first objective, Davis seems to contradict the original purpose of the newsletter, that information be communicated broadly so that individual requests are unnecessary. In seeking a return to direct, interpersonal sharing of information on a need-to-know basis—the exact opposite of the newsletter—Davis

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Machine, notably in the tellingly-titled Chapter 14: "The Last Crunch" (Tracy Kidder, *The Soul of a New Machine* [New York: Little Brown and Company, 1981]: 327-240).

[127] Bob Davis, "Club News," *Eamon Adventurer's Log* 2, no. 3 (June 1986): 4.

[128] Davis, "Club News," 4.

demonstrates the shifting aims and approach at work in a noncommercial structure. Where the newsletter (and the mass communication it represented) once served as the solution to a problem, it had become its *own* problem, taking up labor that could be better used in service to other tasks.

NATIONAL EAMON USER'S CLUE
QUESTIONAIRE II

1. Would you like to see the club offer an 'Adventure of the Month' (eliminating annual dues!) somewhat like record and book clubs? (New adventures that would be fully tested and standardized.)

If so, what setup, per month, would you prefer?

___ A) One adventure per month.
___ B) One adventure and some newsletter articles on disk.
___ C) Two adventures on one disk.
___ D) Two adventures on one disk with newsletter articles replacing one of the adventures quarterly.
___ E) Two adventures on disk each month with a small newsletter published quarterly.

And at what price per month do you think would be fair? _____

2. Please rate the newsletter articles on the following scale:

___ Bug Bytes
___ Eamon News
___ Utility Lines
___ Customizer's Corner
___ Designer's Den
___ Club News
___ Adventure Tips
___ Spotlight On:

1 = Very useful
2 = Somewhat useful
3 = No Opinion
4 = Somewhat unuseful
5 = Unuseful

3. How often do you play Eamon?

___ Once a day
___ 2-5 times a week
___ Once a week
___ Once a month
___ Once a year
___ Never
___ Other

4. If the club accepted VISA and Mastercard, would you use them for your Eamon purchases? (yes / no)

5. Has your enjoyment of Eamon increased or decreased since you started playing, and why?

Comments / Suggestions:

Figure 5.4: NEUC Questionnaire II

For Nelson and Davis, the solution was to convert the NEUC to an "Adventure of the Month" club, similar to those run by their for-profit competitors. This is apparent in the very composition of the June 1986 questionnaire, which was clearly intended to gain audience consent for the pre-determined redesign. It began with a yes/no question: "Would you like to see the club offer an 'Adventure of the Month' (eliminating annual dues!) somewhat like record and book clubs? (New adventures would be fully tested and standardized.)"[129] While a simple yes/no formulation would have left the choice to the community, Nelson and Davis included multiple interjections within the question itself to encourage favorable responses. As such, the question itself provided reasons for the affirmative—a viable model in other media, an economic justification, and assurance that quality will remain undiminished. Assuming assent, the questionnaire then asked, "if so, what setup, per month, would you prefer?," with a list of options as to number of adventures per month, per disk, and with/without the newsletter. To conclude this line of questioning, the NEUC asked for users to write in what would be considered a fair per-month price. As this framing makes clear, Nelson and Davis already had a structure in mind, but wanted the appearance of grass-roots community input. While the proposition itself was heavily weighted, users were given the chance to assert their desires, and to help establish what level of monetary exchange would be considered fair should the status quo change.

By the time the next newsletter was published, in January of 1987, the problems facing the NEUC had only compounded further as a result of the community survey. The proposed Adventure of the Month structure was meant to be a solution to the club's two (related) needs for volunteer

[129] "National Eamon User's Club Questionnaire II," *Eamon Adventurer's Log* 2, no. 3 (June 1986): 16.

labor and monetary flow. But, as Nelson writes to open the newsletter, the community largely rejected the new model:

> Most of you would like to see the club continue in the same manner it has been forever. Since this is not really possible to do in the current format with the limited amount of time we have, we have to find a more efficient mode of operation. We were attempting this with the questionnaire we sent out. The theory was that we could make the operation less expensive and more efficient, we would have more time to do the work of the club.[130]

Here, Nelson frames the issue around efficiency: if the club could only find a system to make the most of the limited means available, they would be able to continue operations. The new model, he argued, would have streamlined the process and made running the club easier, but the community rejected it. To foster a new solution, Nelson continued by explicating the factors inhibiting the club's efficiency. In his view, "one of the greatest time factors here in the [club] is printing newsletter articles, proof-reading them… and printing them again."[131] Any change to the newsletter process—whether by adopting a less frequent schedule or by going digital-only—should have served to increase efficiency, reducing the time and work demands placed upon club staff. Once again, this highlights the labor shortage for the NEUC. At this point, Nelson seems to have given up on recruiting additional help, outside of assuring that services offered to the club would be counted in lieu of dues. With all but three of the NEUC staff listed (facetiously) as

[130] "Notices & Junk," *Eamon Adventurer's Log* 2, no. 4 (Jan. 1987): 1.

[131] "Notices," 2, no. 4, 1.

"Missing" in the "Club Staff" section, it is clear that Nelson was now running most of the group's functions, and thus hoped to reduce his untenable workload.[132]

Even with increased efficiency or more labor power, a larger problem loomed for the organization. In Nelson's words, "If everyone sent us work instead of money, we wouldn't be able to publish, anyway… it really just boils down to: the club needs funds to operate."[133] The challenge for the NEUC, as a noncommercial enterprise, was that it had to take in sufficient funds to make standardization and circulation possible, without generating profit. The founders never wanted the NEUC to involve dues—as Nelson noted, "When we first started the club, we wanted it to be free and run simply off donations and orders. We didn't get enough of either to continue, so we had to resort to a fixed dues schedule."[134] With such hesitance, it comes as little surprise that club leadership struggled to keep up with dues, abandoning the system by 1987. Without consistent cash flow, the group could not cover its overhead and printing fees.[135] Nelson made one final effort to restructure the dues system in the January 1987 issue, suggesting a standard annual rate of $12, with those less willing or able to pay allowed to "send in whatever you could afford." If this proved insufficient for the club, "a minimum rate (such as say, $1.50 per issue) would be established."[136]

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[132] Including Bob Davis ("Missing and presumed dead"), Dan Cross ("almost totally missing"), and Steve Maur ("Even more missing than Bob"). See "Club Staff," *Eamon Adventurer's Log* 2, no. 4 (Jan. 1987): 2; John Nelson, "John's Editorial," *Eamon Adventurer's Log* 2, no. 5 (Oct. 1987): 12.

[133] "Proposed New Dues—What Do You Think?," *Eamon Adventurer's Log* 2, no. 4 (Jan. 1987): 3.

[134] "Proposed," 3.

[135] To make financial matters worse, the club's headquarters (Nelson's house) was robbed in early 1987 (Jennifer Nelson, "New Club Address!!!," *Eamon Adventurer's Log* 2, no. 5 [Oct. 1987]: 2.)

[136] "Proposed," 3.

At the same time, Nelson continually second-guessed himself in the column, suggesting "we would like to put out the newsletter on a free basis and accept donations" and musing "I have been thinking about going to a voluntary dues basis anyway." In so doing, Nelson reveals his continued discomfort with asking for payment within a noncommercial endeavor. If the community were simply committed to contributing, willing to donate money rather than seeking an equivalent exchange, the club would be able to continue into perpetuity. But the members proved too unreliable, their donations (of both money and labor-time) insufficient.

By the end of 1988, NEUC membership had dwindled to only 23 members, newsletters were no longer published, and centralized distribution ceased. Even Nelson, series steward for most of the decade, decided to step away from the Apple version of Eamon, having grown more interested in his IBM-PC. Does this gradual, drifting collapse mean that we should regard the NEUC a failure? Is this just another "dead-end" for amateurism, an instructive failure?[137] Thinking outside of the commercialist paradigm, and the equivalence it draws between success and continual growth, reveals that the NEUC was no dead-end at all. Counter to Nelson's doomsaying, the final few issues of the *Eamon Adventurer's Log* contain the seeds for a new phase of Eamon. October 1987 saw Tom Zuchowski and Ames, IA-based Pat Hurst step up, writing for the newsletter, acting as a helpdesk, and reviewing adventures, respectively.[138] Their efforts were not enough to save the

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[137] In his study of the Amateur Computer Society (1968-1977), Gotkin asks "What do we gain by tracing dead-ends of a small group of amateur tinkerers?" (Gotkin, "When Computers," 12).

[138] John Nelson, "John's Editorial," *Eamon Adventurer's Log* 2, no. 5 (Oct. 1987): 1; Tom Zuchowski, "Eamon News," *Eamon Adventurer's Log* 2, no. 5 (Oct. 1987): 1; Tom Zuchowski, "Tech Support Dept.," *Eamon Adventurer's Log* 2, no. 5 (Oct. 1987): 2; Hurst, "Designer's," 3-4; and assorted reviews in *Eamon Adventurer's Log* 2, no. 5 (Oct. 1987).

NEUC, which essentially folded when Nelson followed Bob Davis in leaving the series; and yet this moment is perhaps better understood as a transition between *generations* of Eamon users. After nearly a decade with Eamon, Nelson and Davis had more or less ceased making new adventures.[139] Zuchowski, Hurst, and users like Nathan Segerlind (of Portland, MI), however, were still actively creating adventures, even pushing the boundaries of what the Eamon system could do.[140] Recognizing the creative vitality of this new generation, Nelson "consigned the NEUC records, software library and remaining membership funds" to Zuchowski and his new Eamon organization, the Eamon Adventurer's Guild (EUG).[141] In many ways, the early EUG replicated its forebear, with yearly dues, central distribution, and a newsletter (*Eamon Adventurer's Guild*) which replicated the sections and features of the *Eamon Adventurer's Log*, with written contributions from the aforementioned new generation of authors. By the end of 1989, the newsletter itself moved online, where it ran four times a year until 2000.[142] Thus, whereas the internet often killed specialized newsletters, the connectivity it offered actually helped preserve

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[139] Though Nelson would return with 1991's #206- "Curse of the Hellsblade, co-authored with Zuchowski ("Curse of the Hellsblade," *Eamon Wiki*, edited March 21, 2020, https://eamon.wiki/Curse_of_the_Hellsblade).

[140] "Eamon Adventurer's Guild Newsletter Archive," *Eamon Adventurer's Guild Online,* edited April 1, 2013, http://www.eamonag.org/pages/newsletters.htm.

[141] As Nelson notes of Pat Hurst, "most of his adventures are real epics and won't fit on a single disk" (Hurst, "Designer's," 3.) In fact, many of Hurst's adventures fit within a shared universe, a project so ambitious that he issued his own "Gazeteer" as a supplement (John Nelson and Tom Zuchowski, "Bug Bytes," *Eamon Adventurer's Log* 2, no. 5 (Oct. 1987): 11; Pat Hurst, "The Eamon Gazeteer," c. 1987, *Eamon Wiki*, added Nov. 11, 2013, https://eamon.wiki/index.php?title=File:Eamon_Gazetteer.pdf&page=1).

[142] And sporadically afterward. Tom Zuchowski, "News and Comments," *Eamon Adventurer's Guild* (Dec. 1989): np.

written discourse about Eamon, and the community it served, for another decade.[143] Likewise, the internet soon allowed for the Eamon adventures, whose file sizes appeared increasingly small as data storage improved, to be shared *without* physical storage media. Even today, four decades removed from Donald Brown's original program, the EUG's (extremely Web 1.0) website allows users to download every Eamon program in a variety of formats, for free. The public-domain adventure perseveres.

5.4 Conclusion: Struggling to Keep the Adventure Alive

If the Eamon Adventures can be considered as a coherent whole, they represent one of the most expansive videogame series in history. Yet the very factors which made the series' rapid growth possible—its noncommercial circulation and dependence on distributed, amateur creativity—have rendered it largely invisible in the annals of gaming and software history. Taken at any one moment, the Eamon Adventures appear relatively insignificant, devoid of graphics and lacking the sheen and complexity of commercial releases. But, when the series' long history is considered as a progression, it encapsulates the challenges and rewards of noncommercial creativity. Visions for what this kind of production and circulation can be are fascinating, because they show a clear understanding of the material realities of the moment, as well as the perceived boundaries of the commercial system. These visions were necessarily limited, having been viable only within certain conditions and thanks to unsustainable voluntary labor. The fact that the Eamon community continued, however, bringing the series into new historical moments and technological

[143] McKinney, "Newsletter," 313.

environments, reveals the persistence of the noncommercial creative impulse. Like the hardware hobbyists of the previous decade, Eamon enthusiasts not only wanted to create and share their own work, but to exchange with others, to foster a collaborative space. As the computer gaming industry grew and evolved, it altered the entirety of computing culture, affecting even those who actively defined themselves against the commodity system. Rather than acquiesce to commercial pressures, the Eamon community instead redefined their own practices, constantly seeking a better system until their resistant energies faded.

Nonetheless, the noncommercial creative impulse was not distinct to this one group, nor did it end with their dissolution. The internet would soon pave the way for different forms of amateur games to circulate through digital filesharing. This connectivity only exacerbated the fragmentation of creativity, keeping noncommercial production on an individual scale and ultimately casting amateur games as prevocational.[144] When amateurs have sought collective organization, as in the free and open-source software movement, they face the same challenge, of how to remain amenable to creativity without ceding creative control.[145] As the development of Eamon shows, there is no single vision of noncommercial production which can withstand the seemingly constant expansion of commercialization. Technological development, economic changes, and the accompanying shifts in culture make any vision of the noncommercial viable only for a short period of time. To create outside of the commodity model, to foster sharing and collaboration without profit, we need to be adaptive and inventive, constantly seeking out the cracks in capital.

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[144] Nieborg and van der Graf, "The Mod," 177-195.

[145] For more on this, and the concept of "copyleft" protections, see Kelty, *Two Bits*.

6.0 Coda: Rethinking the Past, Reshaping Our Future

This project started with a single box. While processing donations to the University of Colorado's Media Archaeology Lab (MAL) in September of 2014, I came across a cardboard box filled with hundreds of black 5 ¼ inch floppy disks, some with crudely scrawled handwritten labels, others with once-official looking printed ones from places like "The Big Red Computer Club" or "Adventurer's Guild." Some two hundred of the disks bore some variation of the name "Eamon." Outside of the name, the contents of the set were virtually identical to the many other disks in the lab's collection. It was only when I inserted the "Eamon Master Disk" into the disk drive of the Lab's decades-old Apple IIe, and the glowing green dragon of appeared on the screen with the message "Welcome to Eamon: The computerized fantasy role-playing system designed for the Apple II… Noncommercial distribution welcomed," that I even realized what the box contained. Written onto these disks was a massive series of text-adventure games, created by a *community*, a disparate group of users who utilized a standard framework to create as they wished, driven not by the possibility of profit but by the desire to make and share. Somehow, the donor of this collection had managed to obtain copies of so many of these programs, without the benefit of digital filesharing, or even retail distribution. This finding shattered the culturally-conveyed assumptions that I carried about games and gaming history, which I came to realize were shaped by the market logic of commodity production—though, truly, no commercial series has ever approached Eamon's number of unique games. Since that day, I have worked to reconstruct the creative process behind these kinds of noncommercial games, the sociality and methods of exchange by which these programs were shared, and the larger culture of computing which made all of this possible.

What I've describe above is representative of the state of noncommercial software from the early home computer period, as it exists in the present. Programs remain as objects, saved on a relatively unstable medium (the floppy disk) poorly suited to long-term storage.[1] Due to the limited storage size and affordability of disks, redundancy was a pressing concern in computer use of the period, meaning that programs—even commercial ones—exist in varying states across disks, as drafts, experiments, and backup copies. But noncommercial software faces a bigger challenge: it is very difficult to discern their existence just from looking at the disk. Unlike commercial programs, which typically bore official-looking, graphically-designed labels, amateur disks read as *user-generated content*, being nondescript, and often bearing hand-written labels (if they are labelled at all). It takes work to actually determine what is on such a disk—that is, you have to either put it in a drive and access the content, or create a disk image to do likewise via emulation. With floppy disk drives (and corresponding computer platforms) growing ever older and more obsolete, fewer computer users have the ability to experience floppies as anything but residual media, a vinyl shell empty of signification.

Even more so than for commercial programs, the preservation of noncommercial programs is deeply uncertain, as institutions and archives are far more likely to preserve media objects whose significance is legible. Organizations like the Strong National Museum of Play and the Computer History Museum, some of the best institutions in their respective fields, contain not only top-selling products and platforms, but often the personal papers of significant *industry* figures and documents of influential companies. Kept in this way, in the care of archivists and curators, these collections (including magnetic storage media) have a secure future. In reconstructing the history

[1] Sterling, "Digital Decay," 20. See also note 355 (page 136) for a longer explanation.

of noncommercial gaming software, as I have in this project, I have relied on a different kind of preservation: digitization. The Internet Archive has been essential to my research process, as its massive (and growing) collection of computer magazine scans, and commitment to "Universal Access to All Knowledge," has allowed me to fill out my own digital archive of primary source texts.[2] Just as helpful, but far less known, has been the Eamon Adventurer's Guild website, which provides free access to all of the Eamon-related newsletters (NEUC and EAG), the official list of adventures, a Wiki, as well as disk images of all of the Eamon Adventures to date.[3] Yet both of these sources are at risk. The Internet Archive recently survived a "willful mass copyright infringement" lawsuit from the Association of American Publishers, wherein its noncommercial ethic, like those studied in this dissertation, made it a target for anti-piracy action.[4] The Eamon Adventurer's Guild, meanwhile, faces the more mundane threat of technological obsolescence. Always extremely bare-bones, being little more than plain-text, the site has seen no upkeep in four-plus years. Lacking the financial backing of something like the internet archive, it is unclear how long the EAG site can remain operational. Will a new group of amateur enthusiasts step up to

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[2] "About the Internet Archive," *Internet Archive*, accessed Feb. 19, 2021, https://archive.org/about/.

[3] "Eamon Museum," *Eamon Adventurer's Guild Online*, last updated Jan. 1, 2017, http://www.eamonag.org/museum.htm.

[4] One group associated with the suit explicitly called the Archive's posting of e-books "piracy hidden behind a sanctimonious veil of progressivism." See Elizabeth A. Harris, "Publishers Sue Internet Archive Over Free E-Books," *New York Times*, June 1, 2020, https://www.nytimes.com/2020/06/01/books/internet-archive-emergency-library-coronavirus.html; Timothy B. Lee, "Internet Archive Ends 'Emergency Library' Early to Appease Publishers," *Ars Technica*, June 11, 2020, https://arstechnica.com/tech-policy/2020/06/internet-archive-ends-emergency-library-early-to-appease-publishers/.

rescue Eamon yet again, or will the site simply fade away, living on only in the Wayback Machine? As with all obsolescent technology, only time will tell.

My concern is not simply preservation for preservation's sake, but the fact that we have barely scratched the surface of computing history in this period, let alone that of noncommercial and gaming software. There is a general consensus among scholars that neither field has progressed beyond Huhtamo's "chronicle model" of history, "built around the same landmarks, breakthroughs, and founding fathers."[5] Raiford Guins suggests that this manner of history results in "invention and invention-centric accounts [which] lead readers on a linear path across landmarks of origins," told in descriptive snapshots which offer little in the way of rigorous critical engagement.[6] In practice, this underdevelopment has forced my own project to take on much macro-level historical work, beyond case studies of noncommercial game programs. For example, there has never been a comprehensive history of computer magazines, despite the incredible volume of publications from the period.[7] As such, my efforts to contextualize noncommercial software in the discourse of the time meant reconstructing the corresponding commercialization of computer magazines from primary sources, and secondary analyses from within the period. The same was true of computer clubs and user groups—as I note in my second chapter, the best studies

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[5] Huhtamo, "Slots," 4; Lowood and Guins, "Introduction," xiii-xx; Nooney, Driscoll, and Allen, "From Programming,"124.

[6] Guins, *Game*, 22-3.

[7] As Matthew Kirschenbaum and Sarah Werner wrote in 2014, "Computer magazines such as *BYTE* and *PC Magazine*… offer key documentation from this period. In short, the reality is that much significant computer history has been written and rendered in print; this is a vast and largely unexplored space" (Kirschenbaum and Werner, "Digital," 440).

of such clubs are those focused on the 1970's hobbyist groups of Silicon Valley (the People's Computer Club and the Homebrew Computer Club), and so these publications continue to comprise the bulk of citations.[8] I have had to reassemble the history of computer clubs and user groups in the early 1980's myself, insofar as so much of the development, discussion, and exchange of software and games happened in these spaces, and has gone unaccounted for. Nevertheless, a full history of the many user groups of the time would be a full project in itself, with explication of timelines, member rosters, and demographic makeup informed by the surviving newsletters (many of which are not consistently archived or available), oral history, and firsthand accounts.

Furthermore, the larger problem with the chronicle model of tech history is that it results in a historical record rife with exclusions, creating flawed conceptions of the race, gender, location, and status of those who shaped the development of the field.[9] Fortunately, the years since my project began have seen many exciting efforts to rethink the history of computing, to bring into focus aspects of social difference otherwise elided or overlooked. Akin to my own project, albeit in an earlier period, Joy Lisi Rankin's *A People's History of Computing in the United States* (2018)

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[8] Major works include Petrick, "Imagining," 27-39 Driscoll, "Professional," 257-83; Gotkin, "When Computers," 4-14; and Turner, *From Counterculture*. Indicative of the citation practices, the most recent publication concerning computer clubs and early 1980's computing culture, Nooney, Driscoll, and Allen's "From Programming to Products: *Softalk* Magazine and the Rise of the Personal Computer User" (2020) cites all of these, as well as studies of clubs in Australia and Eastern Europe, but there remains little examination US-based clubs in the early 1980's (Nooney, Driscoll, and Allen, "From Programming," 126-129, notes 3, 7).

[9] Nooney, "Let's Begin," 71-98; Hicks, *Programmed*; Evans, *Broad Band*; Kirkpatrick, "How Gaming," 453-468.

works to decenter the Silicon Valley mythos, which has long framed the history of personal computing around tinkerers-turned-billionaires (see: Steve Jobs, Bill Gates).[10] Instead, Rankin highlights educational spaces, and the role of projects like PLATO and BASIC, which have otherwise been overshadowed by corporatist narratives of commercial development. Another massive gap in computer history concerns race: as Nooney, Driscoll, and Allen explain, within the textual record, "Race remains present in its conspicuous absence, affirming stereotypes regarding the pervasive whiteness of early American computer culture."[11] Indeed, not only do race and ethnicity go largely unremarked upon in print discourse, the visuals in computer magazines and marketing render computing as white as the iconic figures of Silicon Valley. Charlton D. McIlwain's *Black Software: The Internet and Racial Justice, from the AfroNet to Black Lives Matter* (2019), however, offers one of the best attempts to piece together a history of black user communities.[12] Though his focus is primarily on the internet era, the book both demonstrates a method and highlights a need for critical examination of the larger history, including the early period that has gone largely unchallenged in its whiteness. A further section of tech scholars has sought to read against the heteronormativity of early computing and videogame history. Adrienne Shaw's *LGBTQ Video Game Archive* (founded 2015) is an ongoing attempt to highlight LGBTQ characters and content throughout gaming history, while Shaw's *Queer Game Studies* (2017) co-editor Bonnie Ruberg makes a case for queer readings of game history in her book *Video Games*

[10] Rankin, *A People's*.

[11] Nooney, Driscoll, and Allen, "From Programming," 115.

[12] McIlwain, *Black Software.*

Have Always Been Queer (2019).[13] Even more exciting is Ruberg's latest book, *The Queer Games Avant-Garde: How LGBTQ Game Makers are Reimagining the Medium of Video Games* (2020), which brings into sight a *current* movement of amateur and independent game creators, using game design to express their own LGBTQ identities and the needs of their community. [14] Though contemporary, many of these creators identify their process with the same noncommercial game programmers I've highlighted in this study. In so doing, these game designers reveal the relationship between history and their own other-doing, showing how even a flawed past example can provide imaginative resources for progressive creativity in our present moment. In all, this is a vital moment for rethinking the history of technology, as scholars are rejecting the narrow purview of prior narratives more than ever before, and recovering the kind of intersectional history needed for tech to become a revolutionary tool for a better future.

For my part, there is still more to do in tracing the history of noncommercial gaming software. My intention was never to be exhaustive, were that even possible. Rather, my project has been to develop a new critical lens, built around idea of noncommercial activity. By viewing the history in this way, I have sought to read crucial segments of early home computing culture—the magazines, the media, and the community—against the grain, counter to the standard commercialist lens, to reveal the noncommercial layers that were there all along. Following the larger rejection of the chronicle model of history, I have not put forward a definitive list of important or popular programs. By their very nature, noncommercial games from this period resist

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[13] "Home," *LGBTQ Video Game Archive,* accessed Feb. 21, 2021, https://lgbtqgamearchive.com/; Ruberg, "Creating," 165–173; *Queer,* Ruberg and Shaw; Ruberg, *Video*.

[14] Ruberg, *Queer Games*.

the imposition of a canon: what would be first? Would it start with games from earlier platforms, since many early programmers were inspired by mainframe games, like *Hunt the Wumpus*, *Colossal Cave Adventure*, and *Star Trek*? Since this precedes copyright protection, what of noncommercial clones of previous games? Or games that started noncommercial, but became more widespread once they were commoditized (like *Zork* or *Rogue*)? Further, there is certainly more to be done with individual case studies, from specific Eamon adventures to games like *Moria*, as such method would make these objects more legible to game studies as field, rather than just history of computing scholars and, in Eamon's case, interactive fiction. Finally, the challenge for studying noncommercial software has always been about establishing sufficient context for its very existence, as these programs often provide fewer resources for historical inquiry than their commercial peers. By looking more closely at computer clubs (and their software libraries) in a future project, I hope to trace this particular mode of exchange, and set the stage for the modems and BBSes of the late 1980's and early 1990's, as well as the early internet.[15]

Today, other-doing via technology is more important than ever. This is a moment in which the seams are starting to show on late-capitalism. In the last half-decade, there has been much

[15] There was limited use of BBSes and modems to share software libraries by some clubs (notably CP/M user groups) in the period, but again, most sent disks by mail or exchanged them by hand. This technology took off in the late 1980's, as noted in Benj Edwards, "The Lost Civilization of Dial-Up Bulletin Board Systems," *The Atlantic*, Nov. 6, 2014, https://www.theatlantic.com/technology/archive/2016/11/the-lost-civilization-of-dial-up-bulletin-board-systems/506465/. Notable shareware games, like Carl McLawhorn's *Trek* (1985), were circulated via modem (see Benj Edwards, "7 Early Modem-to-Modem Computer Games," *PC Mag*, Nov. 27, 2017, https://www.pcmag.com/news/7-early-modem-to-modem-computer-games; Carl McLawhorn, "TREK Game," *Archive.org*, uploaded Feb. 22, 2012, https://archive.org/details/TrekGame).

hand-wringing over the millennial/post-millennial generation's apparent rejection of free-market capitalism as an organizing philosophy, and turn toward democratic socialism.[16] But how could this be otherwise, for a group, born in/around capitalism's supposed triumph at the end of the Cold War, who have lived through two global economic recessions, seemingly-interminable wars, a pandemic, the effects of human-made climate change, and corporate consolidation fueled by neoliberal capitalism? This generation now controls only 4.6% of US wealth, despite being the largest workforce (at 72 million members), and the economic limitations are palpable in all aspects of life.[17] We know the system is broken. The cracks are clear. The bigger question is, what can be done about it? And, I would add, what role would technology play in a better future?

Gone is the technological optimism, even *utopianism*, of the 1970's. In the most apparent sense, technological platforms have helped foster precarity, shaping the "New Economy" into the "gig economy."[18] But, considered against its own history, computer technology has played an ever

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[16] Max Ehrenfreund, "A Majority of Millennials Now Reject Capitalism, Poll Shows," *Washington Post*, April 26, 2016, https://www.washingtonpost.com/news/wonk/wp/2016/04/26/a-majority-of-millennials-now-reject-capitalism-poll-shows/; Malcolm Harris, *Kids These Days: The Making of Millennials* (New York: Back Bay Books, 2017); Derek Thompson, "How Capitalism Broke Young Adulthood," *The Atlantic*, Jan. 27, 2020, https://www.theatlantic.com/ideas/archive/2020/01/boomers-have-socialism-why-not-millennials/605467/; Marie Solis, "Why Gen Z Is Turning to Socialism," *VICE*, May 4, 2020, https://www.vice.com/en/article/g5xz7j/gen-z-socialism-ydsa.

[17] Ben Steverman and Alexandre Tanzi, "The 50 Richest Americans are Now Worth as Much as the Poorest 165 Million," *Bloomberg*, Oct. 8, 2020, https://www.bloomberg.com/news/articles/2020-10-08/top-50-richest-people-in-the-us-are-worth-as-much-as-poorest-165-million.

[18] Murillo, Buckland, and Val, "When the Sharing," 66-76; Henninger and Gottschall, "Freelancers," 44; Guy Standing, *The Precariat: The New Dangerous Class* (London: Bloomsbury, 2011).

more insidious role by moving users away from concrete doing, from creation. Scholars of game modding communities (c. 2000-2010) once lamented that the practice only gave the illusion of free creativity, with user-generated content immediately co-opted to add value to game products.[19] For the most prominent tech platforms of the current moment, like Facebook and Amazon, there is no emphasis on making anything at all—users are just meant to *use*, with their idle activities commodified as data. In this way, users are neither makers nor consumers, merely the product, to be sold to advertisers.[20] No real change can come from this status quo. Instead, creating a more equitable future will require *doing*, imaging generative possibilities outside of the limited purview of capitalist relations and then making them real. Technology must be a part of this, enmeshed as it is into the fabric of our lives. It is my hope that the history articulated in this project can inspire others to create in the present, just as it has for those in Ruberg's queer games avant-garde. Moreover, for the programmers of early noncommercial games, fulfillment wasn't found merely in the act of creation, but in *sharing* that work, in collaborating. Thus, the history I have drawn out here is meant to capture the sociality required for, as Holloway phrases it, "cracking" capitalism's totality. More than just working in the metaphorical cracks, resisting through doing where possible, what we need is a commitment to sharing, to welcoming others to participate and circulating these possibilities widely. Capitalism may be singular in its appearance of totality—we do not need to replace it wholesale, with a new totality. We can start by imagining possibilities, and then building them.

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[19] Sotamaa, "On Modder," 8; Postigo, "Of Mods," 310.

[20] From Dougas Rushkoff (Olivia Solon, "You are Facebook's Product, Not Customer," *Wired [UK]*, Sept. 21, 2011, https://www.wired.co.uk/article/doug-rushkoff-hello-etsy).

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