Bodies, Brains, and Machines: An Exploration of the Relationship between the Material and Affective States of Librarians and Information Systems

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Abstract

This paper uses the idea of information networks and the ways librarian bodies are called to serve as a relay within information systems. The founding of librarianship as a profession in the Victorian period during a period of increased bureaucracy and mechanization has had a profound and far-reaching impact on the way women's bodies and affective states are subsumed into information systems. The history of librarianship is read alongside Kittler's analysis of Bram Stoker's novel *Dracula* as a story not about vampires but about office technology. The connection between women's bodies and information processing is further traced through an analysis of the film *Desk Set*. The film is examined for the ways librarian bodies and affective states interact with computer technologies to show that women are encouraged to fully give over brains and bodies to serve as nodes along library information systems, in effect becoming cyborgs. Finally, contemporary issues around digital systems and affect are examined as a possible means to provide a bulwark against the complete surrender to capitalist information flows.

Introduction

The smooth flow of information aids the aims of the capitalist information system through the efficient and unproblematic delivery of information. The work of caretaking and ensuring data is flowing in the correctly prescribed ways, including providing library users with the "best" information, is both gendered and foundational to librarianship. Librarians form part of a complete media system of transmission, processing, and recording. It is important to examine the intersections between a techno-

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materialist view of librarianship and a theory of affect to reveal the human impacts of these systems.

The use of technology in professional librarianship frequently takes an instrumental approach (i.e., as a tool to be used to help make work easier and more efficient). It is essential to consider how technologies employed in libraries act back on librarian bodies and affective states and the ways these bodies are subsumed within and become part of information systems. As librarians are increasingly called to mould themselves to the needs of library information networks, librarian bodies and affects become instruments of labor. Locating mechanisms for resistance to the capitalist comingling of librarian and machine bodies is challenging, but, as Kate Milberry suggests, a conscious shift to love might hold the key.

This paper contends with these issues through the pairing of a discussion of the early history of technology in libraries. This history of librarianship is read alongside Kittler's analysis of Bram Stoker's novel *Dracula* as a story not about vampires but about office technology. The connection between women's bodies and information processing is further traced through an analysis of the 1957 film *Desk Set*. While the film has frequently been an object of study in relation to women and early computer technology in libraries (Colatrella 2001; Malone 2002; Keilty 2018), there has been less focus on the material conditions of technology and the bodies and affective circumstances of the female librarians in the film.

The utilization of film as an object of study is an effective means to uncover the aims of capitalist systems through the study of the documentation of affective flows. This methodology makes visible the ways in which "affectively accessible forms of testimony or visual documentation frequently lend themselves to neoliberal politics, inspiring, for example, forms of sympathy or compassion that reproduce social hierarchies and stereotypes about helpless or innocent victims" (Staiger, Cvetkovich, and Reynolds 2010, 7). To take a polemical viewpoint, the shift to computer-based information-retrieval systems is potentially a final step away from human autonomy and selfhood. In the course of information work, the librarian body and affective flows become fully subsumed within the flow of information within capitalist systems. The study of this process, and in particular how librarianship is tightly bound together with the material nature of technology, reveals that the entire profession was and is driven by technology and capitalist enterprise.

Overview and Background

The contemporary profession of librarianship divides practice into different roles, such as creation and maintenance of information systems, indexing and cataloging, data and digital system maintenance, collection development, instruction, and assisting library users with their information needs. All these roles touch on some form of mediation of infor-

mation within technological systems. Much of the focus of professional literature is concerned with smoothing the way for "better" mediation and smoother information processing. For example, more efficient and smoother interlinking between collections, and the collection of metrics to measure the impacts of mediation in the delivery of services, remain central foci to professional praxis. Library literature frequently focuses on the problems of mediation, for example, pointing to the liminal status of library work as a particular problem of mediation (Logsdon, Mars, and Tompkins 2017), but there is little discussion of the material nature of technology and its impacts on affect.

As users engage with technology physically or virtually within the space of the library, library workers smooth the path. Winthrop-Young warns that

> to remain caught in an instrumentalist view of technology is to fail to understand that technology, far from being a mere means toward the ends, determined by an observer, defines the very ways in which means, ends, and observers are defined. The computer confirms the Foucauldian suspicion of media science that information technologies, like discursive practices, are so powerful precisely because they are not noticed; and they are most powerful when they themselves define the ways in which they are noticed and evaluated. (2000, 413)

While users might be taught how to recognize "quality" information, the material aspects of the technology itself and its impact on humans is not as evident. The processing of machines is in the background, intentionally invisible and silent. Drawing attention and engaging with the material nature of technology is critical given the enormous and growing power of information systems. They not only frame and determine what is and can be known but also shape human bodies.

Taking this view also invites us to consider the fraught relationship between technology and the feminized/gendered work of librarians, and especially the ways the characterization of women's brains and bodies within this work is intrinsic to capitalist systems. The "work" of librarianship requires the giving over of body and mind—to become part of the system. Aiding the efficient, smooth, and quiet delivery of information is the mark of a "good" librarian. To be noisy, critical, or otherwise frustrate the smooth operation and flow of capital is to be marked negative, angry, and not doing one's job. But if librarianship involves giving oneself over to the machines, all the more reason then for us to examine critically these systems to which we entrust our bodies and minds.

To examine these systems, we must start by acknowledging that the founding of the library profession within the conditions of the Victorian period and the industrial revolution continues to impact the ways library work is conceptualized and valued. Bureaucracy, mechanization, and efficiency are emblematic of the contemporary library. For example, even

initiatives that are wrapped up in the guise of "equity" and anticapitalism, such as the open access movement, can support the corporate university's neoliberal goals if undertaken in a purely instrumental fashion and without critique of structural inequality (Hudson 2017). In this context, rather than a liberatory initiative, open access becomes a means to increase the commodification of information, increase the productive capacity of the library, and increase mechanisms for surveillance and statistics in the technocratic corporate university

Open access initiatives, understood in this way, can offer a competitive advantage and give university administrators a tangible product, rather than being primarily about democratic access to information. Furthermore, the digital infrastructure of open access systems allows for easier institutional surveillance and quantification of output via production metrics and impact factors, making the connection between work and technology particularly fraught. Open access thus becomes a means to produce economic value rather than supporting less tangible and less lucrative pathways to equity and public goods.

Academic libraries are frequently responsible for the tracking of "impact factors" (Fruin and Association of Research Libraries 2019). In the neoliberal university, open access advocacy work is only useful if it fills the need for increased measurable positive impacts, thus proving the positive economic value of the library. This is an example of the ways library work reinforces structural inequalities under the guise of "good work" as it at the same time continues to subsume library workers into the information-processing machine.

Manoff rightly points to the tension in digital library systems and initiatives such as open access, stating, "New library technologies both support and subvert library values," and further that "key library values also conflict with those of today's neoliberal university with its emphasis on efficiency, entrepreneurship, and return on investment" (2015, 524). However, Manoff fails to recognize that the tensions between library "values" and capitalist enterprise have always been present in professional library work. The problem isn't simply one of external corporations putting pressure on "good" library values but is located within the library itself. Since the founding of the profession in the Victorian period, library work has been a site of production and complicit in the exploitation of labor to serve the needs of capitalism.

Further, I would argue that librarians, and by the nature of the profession, women librarians, take in quantities of information not for their personal use but to enable access and serve as a node along information communication channels. In the contemporary library, the librarian forms part of the complete media system of transmission, processing and recording, and it is the female librarian in particular who connects the system. She is the interface between the data flows. This is the technologi-

cal embodiment of the librarian, as brain, hands, and mouth are called to serve the flow of information through the system. In the next section, I will demonstrate that women involved in information processing and retrieval have historically been understood as bodies in tension with capitalist technological determinism.

History: Secretaries, Librarians, and Typewriters

German media theorist Friedrich Kittler's 1982 essay "Dracula's legacy" takes Bram Stoker's Victorian era novel *Dracula* and reads it as a story of technology and capitalism. For Kittler *Dracula* isn't a story about vampires but about machinery and information retrieval (2012). This reading locates a key breakage point along technological epochs in the Victorian period. Furthermore, he surfaces the power of hidden information systems through a focus on the importance of media, machines, and information processing in the story. Kittler suggests that Dracula is not defeated by the party of men who drive a stake through his heart and cut off his head but by Mina Harker, secretary, and her "discourse machine gun," a term Kittler uses for the typewriter. Her skills as a stenographer and typist allow her to take the masses of information contained in newspapers, train schedules, and audio cylinders to create a typewritten database that allows Dracula to be located and then killed. Dracula is thus defeated by feminine information processing (Partington 2006).

Kittler's essay considers the comingling of women's bodies and office techniques and machinery. He locates it as a site of tension and provides a compelling critique of capitalism, the drive for efficiency, and women's labor during the Victorian period. Charting the birth of the secretary as a profession for women along with the explosion in the growth of information processing and the need for cheap labor makes the connection between feminized labor and office technologies visible. Kittler further focuses on the relationship between power and control of discourse. As women joined the office clerical staff, the power related to office activities such as dictation and writing is reduced. When the use of office machinery such as typewriters is feminized, the conceptual power is reduced. The similarities between Kittler's feminized stenographer and her relations to and with the growing mass of information technologies and machinery and the similarly new professional and feminized librarian are striking.

Like the Victorian female stenographer discussed by Kittler, the professional female librarian was forged in the crucible of the Victorian information society. The increase in the bureaucratization of the office caused a rise in the development and use of office machinery and printed materials (and information itself.) The rapid growth in both office technologies and information required a new and literate labor force. This need for office laborers coincided with an opening up of educational opportunities to women. The presence of a more substantial number of educated women,

in turn, created a ready source of inexpensive clerical workers. The Victorian period witnessed the advent of the public library and the librarian as a figure of a feminized embodiment of "positive" cultural values and also a devaluation of labor in libraries (Garrison 2003). Like the office, libraries became equally invested in the bureaucratic and efficient handling of information, and similarly in need of an educated but inexpensive workforce. The coupling of women and information systems is foundational to the practice of professional librarianship.

In the nineteenth century, libraries became increasingly focused on methods of information management in the form of bibliographic control. Black states that Victorian England was "an embryonic information society in which increasing attention was paid to the creation of information systems within organizations and the evolution of bibliographic controls on publicly available information" (2001, 66). Black further cites numerous contemporary sources that recorded a sudden increase in the bureaucratization of office work, where "scientific" methods were applied to increase efficiency. He writes: "The work of Victorian librarians maps well onto the definition of the information society that emphasizes, paradoxically, the systematic exploitation of knowledge through liberating information systems (libraries included) in tandem with the operation of control through systems of knowledge accumulation and bureaucratic surveillance" (66). While Black's article focuses on the role of surveillance and power relations in Victorian libraries, it is only through bureaucratization and standardization that these activities can be carried out. Black pointedly writes, "Bureaucracy was the foundation of the culture of professional librarianship" (66). Recognizing the foundational link between bureaucracy and the gendered nature of professional library work is crucial to a reflexive understanding of the relationship between technology, women's bodies, and affect within the current library profession.

While the bureaucratization, standardization, and feminization of libraries took place in the Victorian "information age," libraries as institutions are, of course, much older and are perhaps one of the earliest forms of organized physical data storage and access technologies. Small writes, "[that] some kind of 'catalogue' existed in the library at Alexandria seems likely" (1997, 45), and the provenance of the scrolls was also carefully recorded (Small 1997). The library of Alexandria housed not only physical scrolls but also a physical access system. Thus, the library as a collection of materials for use must be coupled with a method of access. This access is acquired through the brain of the librarian, a printed list, or a computer. While contemporary conceptualization of the librarian profession as having a focus on efficiency and bureaucracy has its roots in the Victorian information age, the connection between libraries, technology, and librarian bodies predate this period.

In his piece "Universities: Wet, Hard, Soft, and Harder," Kittler con-

ceptualizes universities as information systems made up of "wetware" and "hardware" (2004). This view shifts the focus from universities as a human-centered site of learning to a posthuman viewpoint where humans are wetware and are "wired" into the university system. In this view, humans are nodes within a network of relationships that include numerous living and nonliving actors. This critical view reduces humans from the top of a hierarchy of autonomous action and forces an examination of the ways humans are acted upon by numerous forces we do not control, including technology.

Kittler writes, "This threefold hardware—the data-processing lecture, the data-storing university library, and the data—transmitting mail—enabled a cumulative and recursive production of knowledge for almost three centuries before two highly correlated events changed the whole infrastructure of academia: first; Gutenberg's invention of the printing press; second, the emergence of nation, that is to say territorial, states" (2004, 245). For Kittler, university libraries in the Middle Ages, with their Latin manuscripts, acted as "a kind of hardware, a storage device just as precious as our hard drives" (245). However, Kittler's data-transmission sequence of the University of the Middle Ages is reductive and incomplete without the librarian as intermediary or interface to the data stored in the library/hard drive. The intermingling of political developments and technology has impacts on the libraries as part of a more extensive system of knowledge transmission.

Bodies, Standards, and Inscription

Before the Victorian period and the advent of the standardization of information systems, libraries were full of the marks of the body. Librarians in this time were predominately men. The librarian left identifiable traces of himself through his script, organizational system, and other markers. He further inscribed the library with his bodily presence through his handwriting. In a historical survey of libraries published in the *Library Journal* in 1904, Biagi referenced a story where a librarian attempted to prove his predecessor had conducted "no work" in the library because only one scrap of paper could be found in the hand of that librarian ([1904] 2006). The work of librarians was measured by the impacts of individuals and by their contributions as evidenced by traces of individual bodies.

Further acts of male bodily inscription took place through the catalog. As recorded by Biagi ([1904] 2006), early library catalogs typically consisted of large books containing handwritten entries for items in the library collection. Larger and more advanced libraries organized their catalogs by author last name, title, or classification number. British libraries employed a system of pasting slips of paper into a book of listings when a new item was acquired, making them quite messy (Biagi [1904] 2006). The only requirement placed on the cataloger during this period was that

the hand be neat. Thus the tenure of various librarians could be traced through the catalog based only on the handwriting.

This "messy" system of control and access was further plagued by problems in standard forms of entry. In an 1876 article in the *Atlantic*, John Fiske, assistant librarian of Harvard, remarked, "To the student's unaided faculties a great library is simply a trackless wilderness; the catalogue of such a library is itself a kind of wilderness; albeit much more readily penetrated and explored; but unless a book be entered with extreme accuracy and fullness on the catalog, it is practically lost to the investigator who needs it, and might almost as well not be in the library at all" (Fiske 1876). The "trackless wilderness" became something to be cultivated and tamed through the work of both machines and women.

The creation of the card-catalog system is linked with the development of cataloging standards. Book-based catalogs were discarded in favor of index cards arranged in drawers to optimize retrieval. Cataloging theory, which had started to develop in the seventeenth century, took hold and gained widespread use in North America and England in the nineteenth century (Black 2001). Cards could be added to the drawer, or taken away, without doing damage to the order or condition of the surrounding cards.

Along with the development of the physical storage system of cards and the card-catalog cabinet and standardized methods of description, all knowledge and forms of media were now mediated through the single data stream of the index card. Looping back to Kittler's discussion of power, gender, and discourse, it is crucial to consider this as a significant shift not only in the development of standards but also in the control of discourse. Like Mina Harker's typewritten transcript in Stoker's *Dracula*, all discourse is codified, organized, and accessed through a single point in the card-catalog system.

The development of the card-catalogue system and other methods of data and information processing required a source of cheap labor, and women were sought out to fill this gap. Kittler connects the inclusion of Mina Harker in the fight against Dracula to new employment opportunities for women clerical workers in the Victorian period. The increase in the amount of work in offices forced the inclusion of women in jobs that were previously only done by men. He writes, "In order to gain technical information about the routes and landing harbors of a camouflaged enemy, the barring of women must become a new inclusion of women in the realm of knowledge" (2012, 78). In Stoker's story of vampires and secretaries, women became the source of much-needed labor in the new knowledge economy. However, rather than representing a shift to equity in both power relations and labor, this new inclusion caused feminization of work that was previously also done by men. Women were called to fit into these systems invented by men, not to create the systems themselves.

Melvil Dewey is a complex and problematic figure in the history of pro-

fessional librarianship (Sloniowski 2016). He is well-known for much of the development of standards and methods of bibliographic control in the United States. The inventor of the Dewey Decimal System and cofounder of the American Library Association, Dewey was a proponent of bringing women into the library workforce. He founded the first professional library program, housed at Columbia University (Dewey [1887] 2006). Dewey had a role in the feminization of library work. His methods of standardization and control were enacted on women's bodies in particular.

Before typewriters were used in bibliographic control in libraries, a standardized form of writing called "library hand" was used. Dewey characterized this awkward, cursive script as being especially suited to women. It was devoid of the signs of individual bodies, and thus suitable both for women and transmission of data. Kittler marks the transition from handwriting to the typewriter as a crucial moment of a division of gender roles in office work as "machines remove from the two sexes the symbols that distinguish them" (2012, 70). He further suggests that men were reluctant to take up the typewriter because the signs of the body inscribed through handwriting would be removed with the typewriter. "Library hand" forced the removal of individual signs of the body—women could not leave the marks of their bodies in the library catalog or on books.

Contemporary accounts of library hand remark on the need for library hand to be practiced in a machine-like way. The following was recorded in the minutes of an ALA meeting in 1885: "We want handwriting that approaches as near to type as possible, that will do away with individual characteristics, will be legible, and will allow a fair amount of rapidity and uniformity" (as cited in Kaminski 2015). The intimacy of handwriting and the bodies it is linked to are removed. By employing systems of control such as library hand, power structures were not disrupted by the employment of women in the library, and the presence of women's laboring bodies became invisible. Furthermore, the removal of individuality is highly connected to speed and efficiency. Although produced by hand, catalog cards must appear as if they were machine-produced within factory-like conditions. Women and their labor, as part of the library machinery, are quietly subsumed into data flows. This disciplining of women's bodies is a necessary instrument of capitalist labor and is intimately connected to the increased use of office machinery and systems of control. The removal of individuality is elided with efficiency and positive value. In contemporary librarianship, the intellectual labor of library workers tends to be suppressed or invisible. For example, bibliographic records are signed with an institution code, reference guides are not typically copyrighted. The work of librarians tends to be viewed as the work of the organization rather than the individual.

Efficient information processing is a vital concern of the last decades of the nineteenth century. Thus, "according to the conditions of 1890, all

that matters is the technological ordering of all previous discourse" (Kittler 2012, 73). Library hand was quickly replaced by the "uniform excellence" of the typewritten card. For "few librarians could ignore the usefulness of the typewriter . . . [the] advocacy of which by librarians was enthusiastic"; with respect to cataloging, for example, the typewriter was praised for its "uniform excellence of production" (Black 2001, 73). National and international rules and standards for description were developed toward the close of the nineteenth century, creating possibilities for data exchange between libraries and further removing individual marks. The opening of the library profession to women is intertwined with the needs of modern office technologies and techniques. Women's bodies became intertwined with these technologies.

Media, Materiality, and Data Streams

The distribution of typewritten catalog cards by the Library of Congress accelerated the process of standardization of media as well. While the growth of standards was a great boon to the organization of masses of information, it removed individuality, handwriting, and the use of custom forms of description. Black writes, "Information was crucial to the emergence of the large corporation at the end of the 19th century" (2001, 71). For Kittler, discourse is neutralized by the typewriter, removing physical differences created by the media of manuscripts, books, sound recordings, and photographs. The single data stream of the database changes the material nature of media and shifts human relationships along with the data (Kittler 2012). In libraries, all discourse becomes smoothed out and equal in the library information system. The librarian hooks into the processing system, takes the data in a multitude of forms, and moves it into a system of storage, processing, and retrieval.

In the shift toward the single data stream, the taint of physical traces must be removed to be made acceptable for transmission by women. Kittler writes, "Just as in ancient Greece where one and the same alphabet stood at once for speech elements, natural numbers, and music pitches, our binary system encompasses everything known about culture and nature, which was formerly encoded in letters, images, and sounds" (2004, 249). Since the Victorian period, libraries have made their way through all sorts of promised improvements to information retrieval, from books to cards, to photography, to microfiche, to the computer—each promised to be the future of information storage and retrieval.

As with the typewriter, the introduction of the computer into the library information-processing system marks a moment of structural change. Jesse Shera. American librarian and advocate for the inclusion of information technology in the mid-twentieth century, highlighted that in the rush to adopt "improved" methods of storage and transmission, there are often failures of foresight. He states:

> I hope the time will never come where a machine replaces the librarian and the book, but there is a computer in your future, make no mistake about that, and it will eventually greatly extend the librarian's capabilities for effective services. . . . Let us think of the computer, not for what it is at the moment—a thing of wires, transistors, and capacitors—but as a symbol of change. . . . The librarian and the computer exemplify the law of action and reaction between force and force—between mind and nature—the law of progress operating in a young profession that is, we hope, struggling to find itself. (1973, 76)

This characterization of the introduction of the computer as a positive force for change by a male library administrator and the linking between the computer and improved service is telling. As with other office technologies, women will be the principal users, and any resistance to this change becomes an affront to the values of the profession.

The founding of the profession of librarianship is thus coupled with the increase in office technologies, the development of scientific methods to create efficiency, and an increase in the generation of information. Women were sought out to manage this flow. The coupling of women's labor with new technology and the simultaneous devaluing of this labor are essential to remember in contemporary library practices. Maintaining a smooth and anonymous flow of information continues to be highly valued in contemporary librarianship, and our labor continues to be underrecognized in knowledge production.

Desk Set and Information Systems

To illustrate these points further, the 1957 film *Desk Set* presents a striking image of the feminized, bureaucratized library, and it is particularly compelling in its representation of computing. Katherine Hepburn plays the role of Bunny Watson, head librarian of a radio station reference department. Throughout the movie, she and her staff of three female librarians type, use the telephone, file, and access the books as they fill the information needs of what appears to be a large, modern corporation. They are a model of efficiency and female independence. Their ordered and feminine world seems to be threatened by Spenser Tracy's character, Richard Sumner, a computer engineer, and his computer, EMERAC, which the radio company is installing in the library. The resulting conflict between human and electronic brains provides the main thrust of the story.

A "battle" results in which Watson and Sumner try to prove that each method, the use of the human brain or the use of the electronic brain, is more efficient. Watson is portrayed as perpetually unmarried and overly independent, and there is romantic tension with Sumner. The film concludes with Watson fully adopting the computer (now feminized through the nickname "Emmy") as a part of her work. After finally putting aside her power and control of the flow of information and discourse, Watson, near the end of the film, sits down for the first time at the computer key-

board and is finally able to marry. There is a deliberate connection between Watson accepting the integration of the computer in the library and her work and becoming marriageable.

Desk Set can be used to evaluate the reception of computers and its impacts on library practices (Keilty 2018). Malone states, "Although it is fiction, in which the characters, computers, and corporate library are imaginary, it nevertheless can attest to the ways in which computers were perceived during the decade when they first became available for business (not just military and governmental) applications and open to public view via the mass media" (2002, 1). The film also provides a means to observe the continuing impact of the Victorian information society and the relationship between women's bodies, affect, and technology within libraries. Kittler observed, "The typewriter cannot conjure up anything imaginary; as can cinema: it cannot simulate the real, as can sound recordings; it only inverts the gender of writing. In so doing, however, it invents the material basis of liberation" (Kittler 2006a, 183). The typewriter cannot write its own story, but cinema can write the story of other media and inscription systems; thus, *Desk Set* enables us to "simulate the real" to examine the material consequences of the adoption of technology in libraries on library workers.

Desk Set, in part funded by IBM (Lang 2004), is a piece of propaganda. It was intended to quell the fears of anxious office workers and give a positive message for those concerned about the fate of the human brain. Malone suggests, "The script undermined the notion that a computer could think through a variety of scenes suggesting that thinking requires human bodies and human memories" (2002, 14). Despite this positive message about the necessity of humans, there is an insidious undertone to the film. The story positions the computer as a "positive" and a useful tool in the office environment, the impacts on the bodily and affective space of librarians is stark.

Shera cites a lack of scholarship on the part of librarians as a problem in the profession, writing, "Something that transcends technical skill is necessary if librarians are to be more than automatons trained to 'fetch and carry'" (1973, 291). We see hints of a "fetch and carry" future in *Desk Set* with the librarians bringing stacks of books to the computer for data ingestion. After the installation of EMERAC, the librarians are no longer seated at desks, answering questions, appearing quick, lively, and confident. Instead, they are now subservient to the technical needs of the computer, and they fetch books and other media to be fed into the system. They have become like "electronic stack-boy[s]" in service to the "electronic reference librarian" (Shera 1973, 100). The role of librarians is functional. Their focus is on filling the needs of the information-processing machine. In turn they are fully subsumed into a digital information-processing system. Rather than technology extending the reach of human operators,

the librarians have become extensions of the technology. In the film this role is reserved for women. In contemporary academic libraries, where restructuring initiatives are radically transforming workflows and job descriptions, we see echoes of this shift away from individual knowledge toward functional service models.

And yet for Kittler, the weapon needed to fight off the possibility of becoming a cyborg/automaton is intellectual stimulation, knowledge, and autonomy. In his piece on *Dracula*, Kittler suggests Mina uses a "discourse machine gun" to fight off Dracula. It is her understanding of words, texts, media, and her control of discourse that allow her to fight Dracula. Intellectual stimulus and subject knowledge thus become a "weapon" that provides one way to fight off the creeping, hungry wires of the electronic brain. While fighting Dracula might seem far removed from the radio station library of *Desk Set*, and even further removed from real world contemporary libraries, a critical examination of the relationships between women, technology, and the power of discourse is vitally important and is a common theme connecting these films to each other and to librarianship.

Computers and the Affective Space of *Desk Set*

EMERAC, located in the center of the *Desk Set* library, takes up a large amount of physical and affective space. The imposing machine's physical presence provides visual weight and impacts the librarians' embodied experiences. Katherine Hayles examines embodiment as a particular way to look at the technological change in systems. She writes, "Focusing on embodiment would help to clarify the mechanisms of change, for it links a changing technological landscape with the instantiated enactments that create feedback loops between materiality and discourse" (2002, 195). Thus the physical change in the library of seemingly simple things such as desk location, traffic patterns, and the ease of human movement to accommodate the computer in the space are manifestations of the ways technological change takes place within a network of relations that are physical and embodied as much as technical. The librarians are affected in a myriad of ways that go unremarked and must adapt themselves to the information system.

Miss Warriner, Sumner's lab assistant, has been brought in to assist with setting up EMERAC. She cannot treat Emmy as a lover, so must play the role of mother. In contrast to the colorful and fashionable dress of the librarians, she is dressed severely and in drab colors. She has a curt way of speaking and spends much of her time polishing the computer, frequently saying, "If there's one thing Emmy doesn't like, it's a speck of dust!" and giving the computer loving pats. She keeps an eye on the other women to ensure that Emmy is kept in the proper conditions (Lang 2004). The librarians refer to Miss Warriner as "Emmy's mother." The contrast is deliberate, and while the librarians mock Miss Warriner, they provide no real

resistance to the changes. The affective space of the office has shifted—the personal comfort of the librarians is secondary to the needs of the computer.

Where previously the librarians in the film were focused on interpersonal relationships with humans, they are now focused on the care and feeding of their electronic "child." Air conditioning has been installed, and smoking has been banned. The librarians are also now responsible for the wellbeing of Emmy and are engaged in the feeding of the computer with data that she can "digest." The librarians, displaced by the machine, are meant to enjoy their new role as "mothers" to the computer. It is difficult or even impossible to imagine a similar scene involving men. The librarian has long been "the merchant, the middle man, of thought" (Black 2001, 67). However, the hyperfeminized space of the technological library has reduced the librarian to the babysitter of thought. While this is a polemical stance, the way the computer becomes the focus of activity gives the distinct message that the overly independent women have been made "safe" by not only giving their brains and "thinking" to computers but also by becoming the caretakers of the information systems themselves. Patriarchal order and systems of control are kept in place.

Brains: Fleshly and Mechanical

Desk Set is thus easily read as a film about bodily and affective relations between human and machines. Computers are anthropomorphized, and people become mechanical. Circuits, brains, wires, and socks are displayed for our consideration—these shifts between flesh and metal blur the lines between human and machine. Reflecting on the bodily and affective states of the librarians in the film provides additional warnings regarding the place of systems of information control and flow within the library. Before the installation of the computer, the librarians are depicted as being comfortable, confident, and happy. There is an aura of camaraderie. The computer is a direct challenge to their relationships with each other, space, and their work. The confidence they had in their work and each other is shaken and replaced by anxiety. All their attention is focused on the needs of the computer. The anxiety, while seemingly rooted in the fact that they may lose their jobs, is also located in the shift in relations. The librarians become increasingly estranged from not only their bodies and thoughts but also each other. The blurring between gendered human bodies and machine allows for pathways to evaluate and critique the role of technology in the library and the office, especially as it impinges on affective states.

Human thinking and feeling is a barrier to efficient information processing. The job of the computer in the library is to reduce those errors caused by what Watson flippantly refers to in the film as the "human element." The use of machines as a means to solve the failings of human

bodies has its roots in the mechanizing spirit of the Victorian period. Black writes, "Victorian public libraries thus echoed the practical, machine mentality of day . . . for like a machine, it operates in a pre-planned, rational and systematic way, with the aim being to reduce or eliminate human error" (2001, 70). Human error is the scourge of effective information processing. The need to shift the movements and thoughts of the librarians to machine-like precision is repeatedly pointed to within the film. To receive the full benefits of the labor-saving machine, the librarians must see themselves as instrumental extensions of the computer; they must yield their unique subjectivity to the instrumentalizing force of the technology.

To demonstrate this point further, there are two particular brains of interest in the film, the fleshly brain of Bunny Watson, and the mechanical brain of the EMERAC computer. Both brains are objects of Sumner's affection. There is an overwhelming number of scenes where Watson's brain is demonstrated to be "computer-like," and the computer is shown to have a "woman's brain." When Watson questions Sumner about what happens when EMERAC does not get an answer, he replies, "She becomes frustrated, and her whole magnetic circuitry goes off" (Lang 2004). EMERAC is also not stable technology and is described in a gendered way as being "testy." This feminine "testiness" of the computer is contrasted in the same scene with the computer-like precision of the answers Watson gives to a test Sumner gives Watson. An even more forceful example is when Sumner states that Watson and EMERAC are alike in that they are "single-minded and relentless and go on until you get the answer to whatever it is you're trying to get the answer too" (Lang 2004). In the UK release of the film, it was retitled "His Other Woman," and there is ambiguity as to which of the two, Watson or Emmy, is the "other" woman.

The film is a postwar mixing of romantic love and office politics. The focus on fleshly and mechanical bodies mixes labor and love. Margaret Toye suggests, "Materialist concepts of energy as labor and love as labor are connected, which is a topic to which materialist feminists of all kinds could contribute" (2018, 79). What does it mean when a librarian is called to "care" about the smooth flow of information and for technical and digital infrastructure? There is a danger in a lack of critical examination of the material conditions of labor as it relates to the emergence of digital and information systems in libraries.

In another intersecting area of analysis, in *Desk Set*, love and sex become confused with information retrieval. Love is bureaucratic and mediated through office machinery. The romantic comedy elements of *Desk Set* are played out through the two love interests of Watson: Mike, her boss, with whom she has been involved for seven years with seemingly no prospect of marriage, and Sumner. Mike treats Watson "like an old coat hanging in his closet," and the seven-year "no strings" relationship has become an office joke (Lang 2004). Their romance is almost entirely mediated through the

office environment. When we see Watson and Mike physically together, it is often in her office where she sits behind her desk and is usually going over his report with a pencil or accepting another weak excuse for a broken date. It is clear that something about this relationship is out of order, and this is expressed through the dynamics of work. In contrast, Watson and Sumner are rarely pictured in her office and are more frequently out in the main office, or among the library book stacks, or out on the rooftop of the building.

The physical placement of these desiring bodies within the office space is deliberate. After seeing a demonstration of the computer, Watson remarks that she feels that "people are outmoded," and Sumner quips that they should "stop making them." This joke plays with references to sex and reproduction but also points to tension with women in the workplace and the place of humans within the human/machine relationship. Kittler writes, "Computers may be copying machines, but, thanks to Aphrodite, we are not. The way from here to now and back must always be gone over and over" (2004, 255). At the end of the film, Watson is forced to choose between Mike and Sumner. Sumner sits at the computer to propose to Watson by typing "the question" into the computer. By mediating the proposal through the computer, Sumner has united his two loves, Watson and Emmy. However, as Watson sits down at the keyboard to give her answer, it is a final giving over of her body to the productive flows of the machine. It is an exchange, and it is through this sacrifice she has become suitable for marriage and motherhood. By sitting at the computer keyboard at the end of the film, Watson has finally ceded her body to the electronic information flows.

Desk Set is striking as a depiction of physical and affective relationships between information technology and library workers. In this story, the librarian becomes a relay within the information system. Siegart writes, "As long as processing in real time was not available, data always had to be stored intermediately somewhere—on skin, wax, clay, stone, papyrus, linen, paper, wood, or the cerebral cortex—in order to be transmitted or otherwise processed" (1999, 12). It is vital that those working within library systems are aware of their own bodily and affective position, particularly as contemporary workplaces demand increasing amounts of affective energy (Toye 2018).

It is unclear if it is a happy ending for Watson, or if it is a happy ending for the librarian. Gone are the messy books, with their pasted in strips, the marks of the bodies, having been replaced by the vampiric typewritten cards, each card punctured by a hole, or two, and finally even Dracula's tooth marks are gone, leaving only the silent computer retrieval system as we enter the realm of the possible/impossible/thinkable/unthinkable (Kittler 2006b). In this way, computer systems seem far from liberatory. The increased focus on efficiency not only transformed the relationship

between librarian bodies and machines but between each other. Despite being touted as laborsaving, librarians shifted further into caretaking roles, ensuring the computer is adequately fed a constant stream of information and kept in working order, and also ensuring the ongoing docility and invisibility of library workers.

Though this film is now over sixty years old, it continues to hold lessons on the relationship between humans and technology for contemporary library work. The film exposes the affective space of this technological relationship. In the course of the film, the women move from seeming self-sufficiency and pride in their work precomputer to accepting the role as "helpmate" to the computer as well as to the lead male character. This shift is not merely a change to new office machinery, and is not ultimately about "change management" issues, but is instead a story of forcing women workers from positions of power back to subordinate roles required by both patriarchy and capitalism. Seen in this way, technology becomes a tool for discipline and control. These technological innovations are all done with the idea that they will make women laborers' work better, and we are also given a not-so-subtle message that obedience to the machine makes the workers more attractive as sexual partners. In contemporary library work, these same forces continue to exert control over the affective space related to library and information technologies.

In *Desk Set,* the closing scene acts as the final divorce of the body from the profession of librarian, as even the brain (now taken over by the "electronic brain" of the film) is no longer needed to store information for transfer. Gendered structures of power are present in the interrelationship between technology and work and the efficient flow of capital/information through the library, and this necessarily includes the bodies of women workers. While this view of the state of the librarians in the film might seem apocalyptic, it is vital to consider that at its most extreme, neoliberalism's interest in the bodies of workers extends only so far as to keep capitalism functioning efficiently and not the well-being, education, or "betterment" of human workers or society. While Bunny Watson has traded her brain, power, and her autonomy for marriage and an electronic child, the question as to whether the computer has improved her work life—or indeed the library itself—remains unanswered.

Implications

Finally, it makes sense to ask what mechanisms are at hand for combating systems, policies, strategies, and standards in digital information systems that are invested in the smooth and quiet flow of information over ethical and moral considerations and the recognition of human bodies and affect within these systems? Sloniowski (2016) contrasts the "immaterial labor" of liaison and reference work against the quantifiable and measurable work of more technical library work to critique the ways the femi-

nized work of care and labor in librarianship goes unacknowledged and undervalued. However, other areas such as scholarly publishing and communication, metadata work, and data management also have aspects of immaterial labor in the form of consultations, meetings with faculty, and collegial discussions. This work tends to be invisible. As stated in the opening of this article, library functions related to digitization, metadata, and open access are frequently conceptualized as being related to the positive production of public goods. The emphasis on the smooth and productive flow of capital to provide quantifiable outputs can be at the expense of individualism, creativity, and knowledge.

Sam Popowich suggests that a critical approach to technical work in libraries is necessary as a means to resist the full implications of capitalism, where human bodies and brains become fully subsumed into the capitalist information-processing system. Popowich sees "library workers as occupied with what Gramsci called the 'war of position,' that long, drawn-out conflict between capital and human beings which can end only with the overthrow of the inhuman" (2018). How do contemporary library workers escape the deadlocks of the library digital information system? Where are the opportunities to disrupt the ways these systems continue to exploit librarian brains and bodies?

Kate Milberry offers a way to think through the idea of digital network technologies (DNTs) as a means to establish a bulkhead against capitalism's need to capture "the fixed capital that resides in the human brain" (2017). For Milberry, it is not enough to establish digital networks as a means to support transformative change. It is at the same time necessary to create and reinforce a "digital ethic of care." Ensuring this ethic of care within systems can work to keep the possibility of a "radical potentiality of DNTs for civilization transformation" operational (299). She suggests that through love, we can genuinely affect transformative change in our digital networks.

Milberry calls attention to the embodied nature of digital labor. She describes "the embodied nature of digital labour, its grounding in the material world, in the flesh casings of workers who get up from their devices and live out their lives under the gruelling conditions of a capitalism that is not merely cognitive" (2017, 298). Digital labor within the context of library work also concerns both affect and bodies. Furthermore, as opposed to the nosier interactions involved in face-to-face affective connections between human bodies in the library, the quiet processing of machines means the affective impacts of digital labor go unnoticed. These encounters are critical to consider given the fundamental role played by digital systems and platforms in the work of contemporary libraries. Milberry reminds us to give greater attention to the systems involved in digital labor (2017, 299). Library digital information systems should not be treated as

immutable, the sole dominion of the librarian technocrat, or go unrecognized as sites of both oppression and power.

Toye (2018) points to the problematic tension between love and work in a capitalist environment, where work has increasingly become the focus of human relationships at the expense of love. Luhmann critiques the rise of work in the system of romantic love, with work frequently replacing love as the focus of energy for contemporary subjects. The emotions of love and care around work tend to be characterized as "an opiate for the masses" and, due to connections to the feminine, are considered to lack value (Toye 2018). Theories of affect "care" are often tangled up with ideas of exploitation and alienation. These few examples point to the fraught nature of love and care—affective labor—within the library workplace. A call for care and love is a provocation in the context of affective labor.

Philosopher Martha Nussbaum believes there is a link between love and justice. She writes, "Love, then, matters for justice—especially when justice is incomplete and an aspiration (as in all real nations), but even in an achieved society of human beings, were such to exist" (2013, 380). For Nussbaum, activating the emotion of love in the context of community is a means to ensure a just society, one that recognizes human needs and ethical rights to a "good life" (Preskill 2014). Toye demonstrates how affect is linked to issues related to justice and power. She writes, "While the increasing intimacy in the public sphere calls for new theories of the personal as the political, and more attention is being paid to 'everyday' feelings, these thinkers are careful to question the extent to which personal affect can have a revolutionary effect on global structures. Earlier work on transnational capital, bio politics, and legacies of colonialism are being extended by an analysis of how power often circulates through affective relations" (2018, 80). Love has strong connections to the work of justice and the recognition of humanness. The question is, How can the concepts of love and justice be activated in relationship to digital information systems within library work without further exploitation?

This challenging question has no easy answers. In library work involved with digital platforms, as well as a focus on user needs, the need to work within library standards create barriers not faced by activists working toward more emancipatory practices in digital production practices such as critical making, open-source software, or other areas of digital platform work. Furthermore, Milberry points to the Internet's role in social control as well as its roots in military technologies as a means to temper the idealization of the Internet as an inherently democratic space (2014, 59). In her work on "Generous Thinking: Sustainability, Solidarity, and the Common Good," Fitzpatrick quotes Tressie McMillan Cottom in her discussion of the problem of the mismatch between the value of public goods and the pressure for prestige and production in the contemporary university,

stating, "This is not a problem for technological innovation or a market product. This requires politics" (2019, 161). Thus the means of creating bulwarks against the flow of capitalist systems comes in the form of people and community and changes in policy as well as praxis. Creating connections between community, a commitment to solidarity and justice, while challenging, are nonetheless potential pathways to positive disruptions.

Conclusion

As with the librarians in *Desk Set*, contemporary librarians fit the way they work into technological systems. Issues related to digital information systems are frequently couched in terms of fitting standards and best practices, and policy needs to ensure efficiency, treating, for instance, "search" as a technological problem created by the tension between precision and recall, rather than looking at the affective dimensions of research practices. Employing critical and affective approaches to technology in library work creates possibilities for hope, not only for librarian bodies, but also for others using our systems. Sadler and Bourg suggest embodiment needs more considerable attention within our library systems and that feminist theory offers a means of bringing this to library systems (2015). Taking affect into account alongside feminist approaches can provide greater possibilities for justice. We need to look at the source codes for patriarchy, capitalism, and colonialism, the conceptual maps underpinning these systems, and demand feminist and democratic systems that deploy technology in service to justice, not humans in service to technology.

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