Technologies of Wonder: Rhetorical Practice in a Digital World

SECTION	Chapter 1
TITLE	Reading Pictures, Seeing Words
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OVERVIEW	This chapter opens with a question: How do we strike a balance, continuing to value and maintain the quality and craftsmanship of print scholarship, while making room for new and vibrant methods of scholarly invention and production in digital media? It introduces three focus areas that guide the investigation of the role interactive digital media might play in classroom teaching and scholarly production. The first area addresses technologies of reading and writing and production of knowledge, and discusses the technological anxiety over the potential effects of digital technologies on access, literacy practices, and shifting relations of power and control. The second addresses the place of visual rhetoric and representation in academic discourse and argument. The third focuses on feminist epistemology which, by emphasizing social justice and equity, seems well suited to identify points at which underrepresented groups or individuals might be disadvantaged, or left out entirely, by technological change. Chapter One concludes with a preview of subsequent chapters.
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Reading Pictures, Seeing Words

Image: Artist unknown, Postcard (detail).

We stand at a unique moment of convergence in the humanities, when scholars in Digital Media Studies have the expertise and the opportunity to set the tone and to influence the direction of digital standards and practices for years to come. The growing ubiquity of digital media permeates all areas of our scholarly effort. Our offices, classrooms, and students are wired. Digital archives and scholarly websites are replacing travel to distant libraries and dusty repositories. Visual and audio presentations complement our lectures, and we routinely troll the Internet for examples and inspiration. We use wikis, blogs, and other social media for sharing our work and collaborating with colleagues. We compose our scholarship on computers with words in print, but also with images, sound, and video on CDs, DVDs, and scholarly online venues. At the same time, the traditional presses and journals that have provided the backbone of scholarly publishing face daunting financial difficulties, even as requirements for publication increase (MLA Task Force, 2007). ¶Yet this seemingly irreversible movement from print toward digital, and from words toward interactive multimedia, is accompanied by important questions, some old and some new: old questions about visual representation and argument and about the social and cultural effects of technology; new questions about production and publishing and evaluation of unfamiliar scholarly performances, and about the effects of this shift toward the digital on social justice, equity, and access. How do we strike a balance, continuing to value and maintain the quality and craftsmanship of print scholarship, while making room for new and vibrant methods of scholarly invention and production? ¶The goal of *Technologies of Wonder* is to investigate these questions, and provide one model of practical and theoretical scaffolding for rigorous and ethical production of scholarship in new media. In the chapters that follow, I develop, in digital print and visual media, a *techné* of interactive digital media production. I stress the importance of visual rhetoric and embodiment as key components of ethical representation and performance, and I argue that the mobility and visibility of arrangement in new media create a canvas for new forms of rhetorical production that value process over product, and wonder-induced inquiry over proof.

In this opening chapter, I provide a background and context for what follows by introducing three interconnected focus areas that guide my investigation of the role that interactive digital media might, or should, play in classroom teaching and scholarly production. The first deals with technologies of reading and writing and production of knowledge. Reminding ourselves that the codex book is a technology that itself evolved to our advantage from earlier tablets and scrolls does little to allay fears about the use of new, digital technologies. Questions about the potential effects of digital technologies on access, literacy practices, and shifting relations of power and control over the production and dissemination of academic discourse are pervasive, as are concerns about how new forms, organizations, and purposes for interactive digital media will meet rigorous standards for intellectual work in the academy.

The second area of concern is the place of visual rhetoric and representation in academic discourse and argument. When I speak of "the visual" here, I refer primarily to images, to visual representations and their cultural, rhetorical, and pedagogical effects. However it is not my intention, in concentrating on visual representation, to disparage or exclude other modes. It is always the case that visual representations are inextricably linked to the densely multimodal semiotic landscape from which they emerge. I advocate incorporating multimodal digital production as part of a robust rhetorical *techné* of invention and intervention (Atwill, 1998). Nevertheless, while important new media scholarship is already being produced by researchers and students in rhetoric and composition, there is still significant reluctance in English Studies to move beyond the historical privileging of the Word. This is understandable; words have been our legal tender for centuries, and we have been taught that images are slippery things. But in a visual
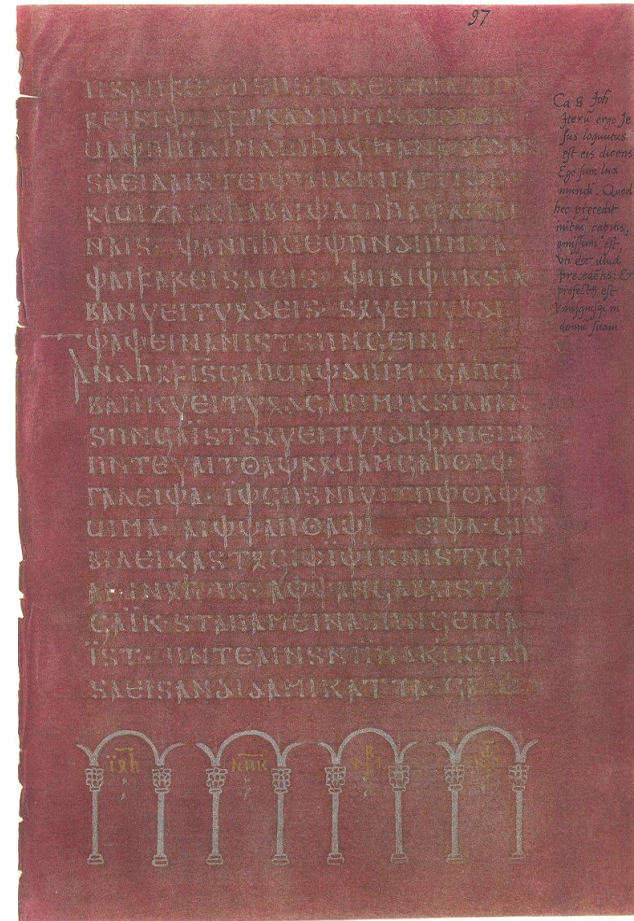
▲ 1.1 A page from the *Codex Argenteus,* ca. 500. One of the most extensive examples of early codices, it is inscribed in silver and gold ink on purple vellum. The black writing in another hand in the upper right corner, like *marginalia* in medieval manuscripts, is a harbinger of the poly-vocal nature of twenty-first century webbed texts.

culture, we risk redundancy if we do not engage with contemporary means of rhetorical persuasion. The questions we must ask now are several: How can we teach the ethical use of images? What exigencies require a multimodal response? What resources can we gather and what collaborations can we explore to produce interactive digital media that will satisfy professional design standards as well as the intellectual requirements of our profession?

The final concern is one of method. My perspective is feminist, not because I claim that women in particular are differentially affected by digital technologies, but because feminist optics, feminist ways of seeing that focus on social justice and equity, seem well suited to identify points at which any underrepresented group or individual might be disadvantaged, or left out entirely, by technological change, and to formulate principles and practices of digital media use that are more inclusive and fair. Interestingly, there are provocative similarities between digital design/production and feminist epistemology that make interactive multimedia a potential vehicle for promoting social action, a connection I will also explore.
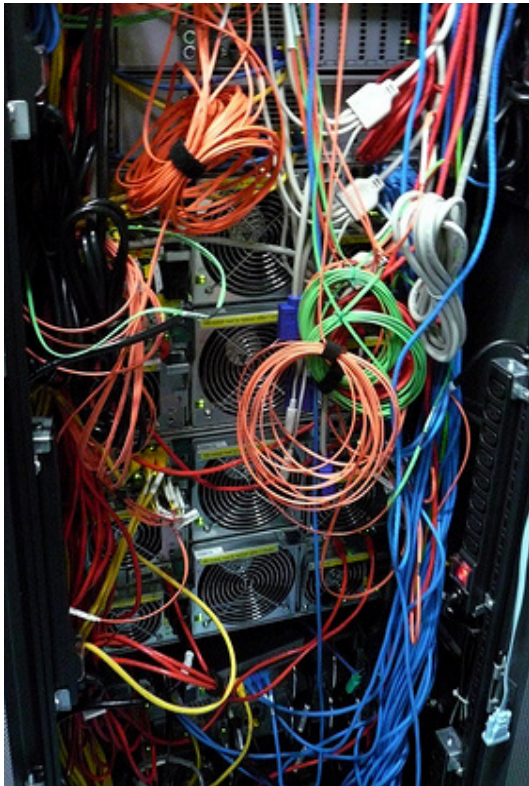
1.2 Wire Tangle, 2008. Photograph by Cory Doctorow.

Technological Anxiety

Technology is one area that creates anxiety not only among feminists, who see uses and values attached to technological proficiency that have uneven benefits for different economic and cultural groups, but also among humanities scholars in general, who are usually most comfortable using words as their tools. Later I argue that we should return to the concept of *techné* as a productive rhetorical art, but technology-as-tool is the prevailing contemporary definition, and the sense of technology that elicits the claims and responses discussed here. For the most part, the claims about digital media and technology, particularly in the popular imagination, have been heroic and progressive. Digital cheerleaders like Michael Lewis (2001) and Clay Shirky (2008) continue to represent the burgeoning digital realm in much the same way Howard Rheingold (1998) did in the early days of the Internet—as an "electronic frontier" populated with "heroes" whose goals are "neither national defense nor the profit motive but the desire to make a tool for changing the world" (n.p.); the heroism of these individuals is then transferred to the technologies themselves, which become "mind amplifiers" that "help people think faster, better, about more complex problems." These heroic accounts of technological change thus become part of a "grand narrative" of uninterrupted progress that obscures smaller and more local narratives that may not be so unrelievedly positive. Furthermore, shifting the agency for change from individuals and organizations to disembodied technologies promotes a seemingly inevitable determinism that hides from view the complex social contexts of technology that allow, for example, computer manufacturers like Hewlett Packard and Apple to flaunt the ever-increasing speed and versatility of their machines while taking no notice of the cheap and sometimes dangerous labor of the Asian workforce that produces their microprocessors and motherboards. These narratives pay homage to the culturally privileged status of digital technologies as the "new new thing" without sufficiently acknowledging that they have material effects which may or may not be as positive for their inventors, developers, manufacturers, end-users, and others. Although digital technologies like wikis, websites, and weblogs, and multimedia software programs such as Photoshop, Dreamweaver, Final Cut, and Flash, have the potential to be revolutionary and empowering for some, in the long run the uses to which new

technologies are put often re-inscribe previous culturally constructed norms of gender, race, and class, thus continuing to disproportionately empower members of the already dominant discourse community—which in technological fields in the U.S. consists primarily of white males.

An example: the first working "writing machine" was built in the early nineteenth century by Pellegrino Turri for his blind friend, the Countess Carolina Fantoni da Fivizzono (Adler, 1973, p. 56); other early writing machines were also developed specifically for the blind. But when E. Remington and Sons, purveyor of sewing machines and guns, began manufacturing the first commercially successful typewriters in 1874, the company redesigned and marketed them, not for the blind, but for businesses that wished to quickly produce legible, accurate, secure text. The first "type-writers" were men (at first, the noun described the person, and not the machine), but soon after the introduction of typewriting machines in offices, they were touted as opportunities for women to be employed in "respectable jobs" (Wajcman, 2004 p. 52). In fact, however, over time the typewriter became an engine of the feminization of office work, which was in turn accompanied by a decline in wages and an increase in work-related injuries. Discourses of and about other communication technologies have tended to describe a similar arc, from emancipatory enthusiasm (empower the blind, improve the economic conditions of women) through cultural and social re-inscription. Dennis Baron (2009), in discussing literacy technologies from the pencil to the computer, argues that despite the enthusiasm of early adopters for new technologies, many potential users remain skeptical, and it is only after a period during which people gradually gain access to a technology, determine its function (Is the typewriter a machine for the blind, or for secretaries? Is the telephone for business use, or personal communication?), and decide that it is trustworthy that they accept and use it (p. 245-46). In practice, this often means that new literacy (and other) technologies will only gain acceptance if it can be demonstrated that they replicate the same values and principles as the technology they supersede.

1.3 Fannie Bindon Bailey, clerk in the U.S. Coast & Geodetic Survey office, 1889. ➤
It is unusual for information about the subject to be preserved with workplace photographs. Perhaps this was an official photograph of the C&GS, or perhaps the name was recorded because Bailey would soon become the wife of Benjamin Colonna, assistant in charge of the Survey's Washington office.

These examples make it clear that technologies are not instrumental, but are embedded in social and cultural contexts that determine how they are valued and used, and who is helped or harmed by their use. They cannot in and of themselves determine our future social and cultural practices, a commonly expressed fear of those who argue that television and video games are "ruining our children," and an equally commonly expressed hope of those who believe that new household appliances or virtual reality or "personal" technologies will automatically and positively transform culturally inscribed roles or identities. In *TechnoFeminism,* Judy Wajcman (2004) chronicles several utopian hopes and dystopian fears involving women and modern technologies. For example, from a utopian perspective, the Web, which is not controlled by a single entity, can be "deployed by women for their own social and political purposes"; but from a dystopian point of view, the Web might also be seen as a place where military, corporate, and criminal groups can "evade social regulation, entrench political control, and concentrate economic power" (p. 3-4). Similarly, biomedical technologies like the birth-control pill may liberate women by "disrupting categories of the body," or they may work to usurp women's rights to self-determination of their bodies (p. 5). Each of these oppositions implies a broader, more ideological, social technology at work behind the uses of the technological objects themselves, and Wajcman argues for charting a critically aware path between "utopian optimism and pessimistic fatalism for technofeminism, and between cultural contingency and social determinism in social theory" (p. 6) based on the understanding that gender both shapes and is shaped by technology. Wacjman's analysis of the cultural hopes for and fears of specifically gendered technologies resonates here with broader anxieties about

potential disruptions of the status quo when interactive digital media seek legitimacy in the corridors of academia.

Other resistant rhetorics have emerged to challenge the many utopian claims for digital technologies. Christina Haas (1996) warns of the myth of technological determinism; Gail Hawisher and Cynthia Selfe (1991, 1999) question presumptions about the democratic egalitarianism of the Internet; Katherine Hayles (1999) contests the post-human assumption that information exists independently of location; and Anne Balsamo (1997) notes that the techno-body, like all bodies, is always already marked by gender and race. Across the disciplines then, the ubiquity of electronic communication and visual representation demands that we ask hard questions about who gets to use technology, how technological literacies are apportioned, and what beliefs and values are attached to such use. These questions are particularly pertinent for digital media technologies, because their cost (once one has access) is modest, thus enabling the production and propagation of *resistant* rhetorics that do not automatically reproduce dominant rhetorical and technological practices. This is not to suggest that the technologies and their infrastructure are cheap; universities have invested millions of dollars purchasing and maintaining hardware and software that provide access for their faculty and students. Yet cost may be less of an impediment than institutional and cultural constraints which limit critical technological literacy and the production of technologies to a select few, and allocate functional technological literacy and the consumption of technologies to the rest.

Without succumbing to overblown claims of my own about technological utopianism, I argue that in this extended moment of remediation from print to digital technologies, we have a unique

opportunity to see the media—digital and print—side by side, and to examine (and perhaps change) the cultural and social technologies in which they are embedded. The shift from one medium to another (termed "remediation" by Jay Bolter and Richard Grusin [2000]), is an ongoing process through which new media first replicate older forms, then develop their own unique capabilities, influence retrospectively the forms they superseded, and finally settle into an uneasy oscillation between where they came from and what they are becoming. Bolter and Grusin argue that all media "function as remediators and that remediation offers us a means of interpreting the work of earlier media as well" (p. 55). Given means and opportunity, we can examine the ideological frameworks that support specific forms and uses of media, and ask if those forms and uses, and by extension those frameworks, are equitable and ethical for as diverse a population as possible, and if they recognize and encompass the material needs and embodied presences of under-represented groups who have historically been excluded from the

means of production of knowledge and power. Examining this narrative of mediation and remediation with a skeptical eye will also help to identify ways in which dominant discourses are interwoven with the technology of "the book," so that we may begin to unravel the webs of text and knowledge and power that bind the social technologies of print culture. Furthermore, re-mediating traditional print-based academic performances—moving them into new (electronic) writing spaces and experimenting with innovative verbal and visual forms—might literally open our eyes to diversity and difference, making inequities visible and therefore available for ethical rhetorical intervention.

Rather than offering yet another heroic, progressive narrative, or arguing that *this* (model of visual/digital production) should replace *that* (current traditional model of print), I suggest that alternative arrangements and appeals that are more possible in/available to new media should become a viable and credible *part* of how scholars learn and teach and think.

Seeing Argument

To ask about the role of the visual in academic argument and scholarly professional representation acknowledges the current pictorial turn, the insistent presence of the visually saturated and spatially diverse landscapes of media that surround us, media in which people, places, events, objects, and related beliefs and values are represented by images more often than by words. It also raises the question of the relationship between images and words as sources and means of academic authority, and it focuses attention on the "visuality" of all texts, even those composed entirely of words. Finally, questions about the role of the visual underscore the fact that scholarly academic performances are embodied rhetorical acts and that our appearances—in print, on line, and in the classroom—have material effects, and this leads back to the question of available means and constraints on ethical (an indispensable attribute of an embodied rhetoric) pedagogical performances in all of these spaces, but most particularly, at this moment of remediation, in digital media.

The history of the development of technologies for reading and writing, including the reading and writing of visual texts like photographs and film and of multimediated texts on computer screens, makes clear that old practices and values are often mapped onto the new media that seek to replace them. As one might predict, institutions are heavily invested in the practices and values associated with print, creating an inertia that is difficult to overcome. When

1.4 René Descartes, The Pineal Gland, 1664.
Descartes believed that the pineal gland was the connection point between mind and body, where sensory perception was imprinted on the mind, and the mind could communicate with the body (1664/1972, p. 87-95, 113). Click image to enlarge.
Descartes was not the first to struggle with the effects of images on the mind, although his project to separate pure thought from the senses has had far-reaching effects. W.J.T. Mitchell (1994) notes that the current "pictorial turn," in which "pictures form a point of peculiar friction and discomfort across a broad range of intellectual inquiry" (p. 13) is not a concept unique to contemporary culture, but one that has emerged at other historical junctures when new media/technologies threaten to overturn established beliefs and practices. Whether such cultural turns are pictorial, epistemological, or linguistic, historically they have produced anxiety about the current "new" means of representation.

we examine how this plays out in an academic environment, we discover that logocentric Cartesian rationality, deployed by a seemingly distant and disembodied subject of knowledge, has long been strenuously defended as the most (or the only) credible and authoritative method for performing as researchers and teachers. In practice, this means that the demonstrations of knowledge that "count" in the academy are overwhelmingly books and articles in refereed print-based journals that develop linear arguments and rely primarily on *logos*-based evidence. Images, if any, are simply illustrations: pictures or tables or graphs that merely show what the words have already told. Using images as a substantive component of an argument is suspect; images are too vague, too "open to interpretation." In scholarly print media, even the margin widths and font styles are strictly prescribed so that nothing detracts from the putative clarity of the ideas represented by words on the page.

Many current texts and handbooks used for the teaching of writing emphasize a similar content and structure of argument that effectively limit the kinds of evidence, the media and modes of presentation, and the organization of elements that are acceptable and/or most valued. These limitations were articulated by Diana George (2002) in her foundational work on the importance of visual design and the legitimacy of visual argument. An early advocate of the production of visual argument in the composition classroom, she provided compelling evidence from the projects of her own students in a first-year composition class. But momentum for her trenchant claims was slow to build, and linear, propositional arguments made with words were (and often are) still presented, without discussion, as "natural." In fact, they are implicated in what Sharon Traweek (1988), in her analysis of the culture of research physicists, has trenchantly termed "the culture of no culture" (p. 162), a claim of objective universality which attempts to

erase any particularity of person or place from a text by insisting that the dominant culture, the dominant discourse, the dominant way of looking at (or rather through), is transparently neutral and unmarked. This disappearance of the knowing body—whose understanding of the world arises from embodied sensory perception and experience—behind a veil of distanced objectivity is secured by the further move of turning its arguments, its evidence, and its experimental results into disembodied texts that can be widely disseminated and archived in printed form. Thus was the scientific method born, and maintained. While several recent rhetoric textbooks emphasize innovative, media-rich analysis and production of both verbal and visual texts (Faigley, George, Palchik, and Selfe, 2004; Wysocki and Lynch, 2006; Ruszkiewicz, Anderson, and Friend, 2008; McQuade and McQuade, 2010), their presence has yet to have a measurable effect on the media and modes of scholarly production.

Feminist scholars have persistently questioned this refusal to recognize that knowledge is not general and universal, but is produced through embodied practices that are embedded in networks of social and cultural beliefs and have specific material consequences. Yet when visual rhetoric is excluded from argument, it becomes more difficult to recognize that those material consequences may differ significantly for some individuals and groups. Social, economic, and political policies derived from a supposedly "universal" standpoint of disembodied objectivity are not necessarily in everyone's best interests, although institutionalized discourses often claim just that.

Historians trace the dematerialization and rationalization of rhetoric to the period leading up to the Enlightenment, although its roots reach back to Plato. Women's bodies, invoked through images of their relentless materiality and putative emotionalism, have long been

used to deny them meaningful access to the public sphere. Fortunately, the binaries that identify women with the devalued term in such pairings as mind/body and culture/nature have been called into question by postmodern feminism, which recognizes that differences among genders, ethnicities, etc. have little to do with biology and everything to do with cultural constructions and constraints. In fact, these dichotomies function as technologies of surveillance and control that serve to degrade and pathologize those groups identified with the depreciated term (Foucault, 1990; de Lauretis, 1989). Balsamo (1997) and others have written of other technologies, including cosmetic surgery, fetal imaging, and body-building, whose rhetorics regulate gender and other difference (e.g. Susan Bordo, 1993, anorexia and fitness culture; Katharine Young, 1993, autopsy, and 1997, gynecological exam; and Kathleen Zane, 1998, plastic surgery).

Academic rhetorics of writing and of technology are no less innocent than other institutional discourses of specific cultural beliefs and standards. The values of discourse communities differ; that is much of the point here. But we should be aware of which values currently warrant our academic rhetorical practices, and we should be responsive to other models that support different values. What, for example, would be the shape of
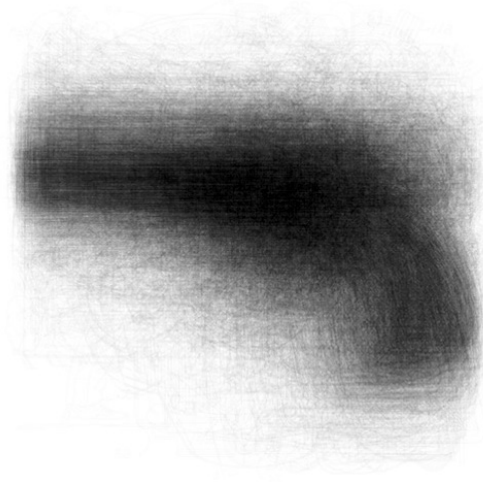
↑ 1.5 Christopher Baker, Final frame of *American Toys*, 2007.
Baker created a 37-second video that superimposes, one after another, drawings from every U.S. patent since the mid-1800s that contained the phrase "toy pistol." The video is haunting as it evokes, with its piling-up of images, the potential cumulative effects of violent "play." Click image to link to online video.

a text that valued the process of wonder-induced inquiry over the efficiency of propositional proof? Or one that valued the materiality of experience and image over disembodied, impersonal, academic prose? Unadorned text, written in plain style and organized in a way that can readily be outlined, has long been the paradigm for scholarly performances, and it has been presumed to fit all "legitimate" academic scholarship. Legitimacy, however, is a conservative, hereditary principle that protects the interests of those who claim it. Privileging hierarchical alphabetic argument over other forms protects against having to consider the compelling claims made through visual evidence and from multiple and often conflicting points of view, claims that expose the material consequences of argument and rhetorical action. But what does a predilection for words imply about the value of images in argument? What does linear organization imply about the value of circumspection and reflection? As we consider what kinds of thought and behavior are afforded or constrained by these practices, and who benefits and who loses when images and sound, multilinear associative arrangement, and lack of closure are proscribed in academic discourse, we can steer toward new, potentially emancipatory performances made possible in new media.

The tendency, as noted previously with utopian claims for technology, is for conventional, conservative practices to reassert themselves in new media spaces. Web pages, for example, offer expanded options for arrangement and navigation through hypermediated linking, and are equipped to take full advantage of multilinear connections to develop complex, exploratory, rhetorically rich, visual and verbal environments. This is not a negation of traditional print performances; but just as print takes its form from the specific rhetorical requirements of audience, purpose, and context, so too interactive digital media are shaped by rhetorical exigency and cultural imperatives in a relentlessly visual world. Yet the academy remains deeply suspicious of new media, often insisting even in multimediated spaces on the logocentrism and shape of argument characteristic of print. But if the digital work we and our students do is artificially limited in this way, we will be unable to take advantage of visual argument and inventive arrangement as rich rhetorical means for producing rigorous intellectual scholarship, means that should be considered complementary, not supplementary, to words.

Often this visual reticence appears to arise from a fear of images and a mistrust of the influence of an embodied presence. In discussing the immediacy of visual representations, Bolter and Grusin (2000) seem to suggest that visual immersion is potentially dangerous because the viewer may forget that such representations are mediated. The mistrust of images, and the emphasis elsewhere on alphabetic text as the most legitimate form of scholarly production, is evident in the ubiquity of the design principles of contrast, repetition, alignment, and proximity for web pages (Williams and Tollett, 2005). While these principles provide an initial framework for the novice designer of new media, they are in effect design's version of the five-paragraph essay. Contrast, repetition, alignment, and proximity construct an artificial efficiency and unity of

text and image that are a function of form, but not necessarily content, and that make complex visual invention and argument impossible. Like the print conventions of academic journals and monographs, these design principles also assert a claim for a "culture of no culture." Yet it is the hypermediacy of doing work in digital spaces, the insistent visibility of every act of representation, that encourages writers to question the supposed culturally transparent immediacy of traditional forms and their purported rhetorical neutrality. Allaying suspicions about visual representation and opening up scholarly performances to new forms and new purposes are the very reasons we should be teaching critical techniques for the consumption and production of visual rhetoric.

Reading the visual rhetorically is critically important. It is important as a critical strategy, and it is also critical culturally insofar as it encourages active engagement with, rather than passive consumption of, images. Scholars who continue to conduct ground-breaking work on the rhetoric of historical and contemporary images include W.J.T. Mitchell (1987, 1994, 2005), Gunther Kress and Theo van Leeuwen (2006, 2009), James Elkins (1996, 2003, 2008), and Barbara Maria Stafford (1996, 1999); and theorists of the visual including John Berger (1972, 1980), Gillian Rose (2006) and Marita Sturken and Lisa Cartwright (2009) have problematized practices of looking and seeing. However recuperation of the visual is much less evident in English Studies, which still privileges the Word as its preferred mode of performance, and linear argument as its preferred form. For this to change, more scholars must move beyond critical verbal analysis of visual texts and become active architects of intellectually engaged (and engaging) multimediated visual rhetoric. Until we and our students see ourselves as producers rather than just consumers of visual rhetoric, we are ceding the authority to speak and intervene in an increasingly multimediated world.

Feminist Epistemology

For me, the most fruitful approach to the dual problematic of recuperation of the visual and of remapping the spatial and conceptual arrangement of ethical argument in interactive digital media is through feminist perspectives on embodiment and space as they can be applied to questions of technology. The physical and theoretical arena of Digital Media Studies thus becomes the site for the complex re-articulation of the traditional rhetoric of academic performance with the embodied rhetorics of representation. Questions about embodied representation and visual argument have far-reaching implications for both our own pedagogical performances in our research and in our classrooms, and for the writing and hypermedia design that we ask our students to do. Moving scholarly production from page to screen raises critical concerns about what counts as rhetoric in the academy, particularly as it is taught in departments of English which, through their first-year composition programs, hold such sway over academic discourse as a whole. While visual rhetorical analysis is a guiding paradigm in some first-year writing texts, student assignments ask more often for written rhetorical performances than for analysis and response that are themselves visual. But acknowledging that visual texts are important to analyze implies that they should also be important to produce. Writing instructors can—and should—take advantage of new forms of digital media for creating texts, and assign web pages and other demonstrations of multimodal argument, thus encouraging a rich, diverse rhetoric that responds to contemporary multimediated contexts and incorporates ethical approaches to invention, arrangement, and style. Creating such assignments, producing our own multimodal pedagogical performances, and scaffolding them theoretically are essential if the shift from page to screen, and from alphabetic linear print to multimodal, multi-perspectival images and text, is to be understood and rewarded by our tenure-granting departments.

The hold of traditional print-based practices within the field of rhetoric and composition is strong, and is directly connected to the privileging of *logos* and rational justification in philosophy and science. Feminists have long questioned whether these supposedly universal and objective accounts of knowledge, "produced and authorized by people in dominant political, social, and economic positions, can apply to subaltern knowledges as well" (Alcoff and Potter,

▲ 1.6 Retorica (top) and Marcus Tulius (Cicero), 5th century.
The classical iconography of Lady Rhetorica is replete with swords, lilies, crowns, armor, tablets, quills, cherubs, horns (of the musical kind), and figures, both verbal and decorative. Here however, "Retorica" is a working woman, wielding a tool which, like *techné*, can be put to many uses. Click image to enlarge.

1996, p. 1). Linda Alcoff (1993) argues that abstract rational thought has historically been defined in opposition to "the desiring body" (p. 14). In practice, this becomes an opposition between the knowing male mind capable of transcending its corporeality and the suspect female body "preoccupied with the cares of the particular, more readily reminded of [its] fleshy limitations" (p. 15). Consequently the aim of feminist epistemologies has been to demonstrate that positivist accounts of a universal and general knowledge are insupportable because they do not consider alternative ways of knowing based on the embodied experience and lived events of women and other under-represented groups. Helen Longino (1993) contends that a systematic focus on the logic of justification in critiques of positivist epistemology goes only so far, and that we must also examine closely the methods of discovery that, prior to justification, "limit what we get to know about" (p. 101). While we cannot ignore the context of justification, nor "dismiss the accumulated knowledge . . . produced by the traditional methods" (p. 103), nevertheless feminist insights about "situated knowledges" (Haraway, 1991) and "strong objectivity" (Harding, 1993) lead us to ask hard questions about how and by whom objects of study are chosen and research hypotheses are generated.

Longino's argument for focusing on methods of discovery dovetails nicely with the project of developing a *techné* of inquiry and discovery in interactive digital media, a *techné* that makes visible the embodied objects of study and encourages consideration of multiple perspectives and alternative arrangements of evidence on the journey toward ethical rhetorical action. As we hunch over our keyboards designing new-media pedagogical performances, the intermingling of the body with technology reminds us that we are deeply imbricated in the social technologies

that de Lauretis (1989) argues shape our beliefs and behavior; but at the same time we are knowing, acting subjects who may through our work re-shape the social fabric in humane and ethical ways. Using the collection, arrangement, and manipulation of visual evidence in digital media as a method of discovery leads to a slow unfolding of understanding, an emerging intelligibility about the embodied relationships between the people, places, events, and material artifacts that are in play in a rhetorical situation. William Covino (1988) names this measured method of rhetorical discovery the "art of wondering"; in digital media, as I argue later, the intimate reciprocation between body and screen is transformed into an epistemic technology of wonder.

Feminist methodologies are particularly appropriate for grappling with the connections between an embodied technology of wonder and the rhetorics of visibility, materiality, and gender that have either improved or constrained women's lives and their participation in the public sphere. Rhetoric can determine what is and is not thinkable, what is and is not valuable. Stafford (2001) makes the same point about visual technologies, which she calls "media machines": "they not only constrain what it is possible to see but also determine what can be thought" (p. 1). Thus feminist rhetorical perspectives are central to the conversations about the place of the visual and about associative arrangement in academic rhetoric. Feminism can ask questions about what counts as knowledge and who can produce such knowledge (Butler, 1990, 1993; Haraway, 1991); it can refuse binaries that identify women and others with the devalued term (de Lauretis, 1989; Longino, 1993; Rose, 1993); it can offer a location for analysis that assumes difference without fetishizing it (Friedman, 1998; Stafford, 1999); and it can be used to critique culturally constructed systems and structures,

1.7 Camouflage Class at N.Y.U., 1943. Color transparency by Marjorie Collins. Others by David Bransby (1), Alfred Palmer (6) and Jack Delano (1).
Geographies of labor inflected by gender, race, and socioeconomic class undergo radical reconstruction in wartime. Rosie the Riveter was joined by thousands of women in both military and civilian jobs that were formerly exclusively male territory. Following the war, women were relegated to their previous domestic space, in large part by means of a spate of new Union regulations (Oberdeck, 2001). Click image to play.

an explicitly dimensional discipline opens up new ways to think about the materiality of rhetoric that reveal the importance of spatial and visual argument for groups whose interests cannot be properly heard or seen in disembodied linear print. Geography fills out the flat figures of text and activates them in space and time. In *Feminism and Geography* (1993), Rose pushes back against approaches to traditional geography studies which attempt to speak from the position of a knower who "can separate himself from his body, emotions, values, past, and so on, so that he and his thought are autonomous, context-free and objective" (p. 7). Rose argues for a more embodied geography that recognizes the lived experiences of individuals rather than simply their positions on a space-time map.

Vision is also central to geographic claims of knowledge, and space-time activation and vision are both central to digital media. Feminist geography critiques the language of power and the aesthetics of exploration and conquest of traditional geography, noting that maps and other visual representations rarely acknowledge the interests of their makers and users. These insights can be applied to visual representations of/in digital media, which may also fail to acknowledge that they are not exhaustive and universal.

both physical and rhetorical, that disadvantage not only women, but also many others who are not white, or male, or heterosexual, or able-bodied, or economically stable.

Two specific feminist analytical frames are particularly apt for exploring the potential of embodied feminist practice in digital spaces—feminist geography and body studies. The appeal of feminist geography as a theoretical perspective is that it keeps us grounded in lived space, thinking about lived experience in real bodies. Coming at questions of space and materiality in digital media production through

The second theoretical perspective—body studies—brings together productive ways of thinking about embodiment and representation from science (Haraway, 1991, 1997; Harding, 1993; Keller, 1985), philosophy (Hayles, 1993, 1999, 2003; Foucault, 1990; Young, 1993, 1997), gender studies (Grosz, 1994, 2001; Butler, 1990, 1993; Bordo, 1993), and other disciplines. As women's bodies have historically been either suspect, dangerous, or absent, and the objects of stringent social control, it is an essential task of feminist research and pedagogy to reclaim the knowing, material body as a legitimate source of authority and rhetorical action. Rhetorics of digital technology have often claimed that virtual reality, like Cartesian rationality, can free us from our bodies. Yet even virtual reality is experienced by material bodies. Digital media are technologies of vision, sites/sights of material practice and embodied representation. Certain kinds of bodies are produced by the rhetorics circulating in cyberspace, just as certain kinds of bodies are produced by the discourses on plastic surgery and fetal imaging analyzed by Balsamo (1997).

Judith Butler (1993) addresses the discursive production of gendered bodies, and calls attention to the performative nature of gender formation (p. 1-16). For Butler, the performativity of gender is analogous to a performative speech act, a discursive reiteration or citation "that produces the effects that it names" (p. 2). But gender and other culturally normative constructions need continual reinscription through performance to counteract their inherent instability, and therefore performativity becomes a means to "rearticulate the very terms of symbolic legitimacy and intelligibility" (p. 4). This performative aspect of subject formation is related to the pedagogical performances constructed through our research and classroom practices with digital media. Such performances may reinscribe conventional, conservative constructions of disembodied rhetoric, or they may challenge traditional rationalist, logocentric practices through non-linear, multi-perspectival, multimodal, and relentlessly embodied new media performances. The following chapters flesh out answers to the questions posed in the Preface—What is/should be the place of the visual in academic inquiry and representation? What means are available, and what constraints are imposed, for ethical pedagogical performances in the production of digital media?—through discussions of remediation from page to screen as an epistemically productive *techné*, embodiment as a guiding principle for visual argument, hypermediated linking and associative thinking as a material reconstruction of the canon of arrangement, and making new media as a means toward ethical embodied rhetorical practice.

Chapter Previews

Chapter Two, "(Re)Vision and Remediation," examines the implications for principled rhetorical action of moving seeing and writing from one medium to another in a process of recursive remediation (Bolter and Grusin, 2000). At first, an emergent medium looks much like its predecessor: photography initially resembled painting, and early film looked a lot like performances on a stage. The viewer experiences an oscillation between immediacy, the sense of immersion, or "liveness," in the medium, and hypermediacy, the ways in which the medium calls attention to itself. Richard Lanham referred to this oscillation between opacity and transparency as the bi-stable decorum of "looking at" the surface of the page and "looking through" that surface to the "'reality' our decorous trickery has created" (p. 81).

New media can recuperate images and other modes of communication as legitimate forms of embodied rhetorical argument, and this moment of remediation from print to digital allows close examination of the underlying values and assumptions of both. Unfortunately the tendency is for new media to eventually absorb and re-inscribe older forms of discourse. By arguing for hypermediacy, and the insight it provides about the way in which the desire for an immediate, transparent experience disadvantages women and other under-represented groups, we can move toward a multimediated feminist rhetorical practice in new media that gives "better accounts of the world" (Haraway, 1991).

Chapter Two focuses next on *techné*, or artistic knowledge, which provides a synthesis of rhetoric as a productive art with our modern idea of technology, and enables us to apply the term to social technologies that include both the material tools and the network of social practices that inform their use. As a rhetorical practice, *techné* enacts the paired feminist values of invention and intervention; and in new media production, the four characteristics of rhetorical *techné*—it is heuristic, situated, strategically mobile, and ethical—enable it to thrive in a multimediated, multimodal digital environment. The motivating force of *techné* is wonder, an attitude toward the world that predisposes us to amazement, and to desire to learn its cause. Wonder is primarily a visual practice, and thus the digital media through which we pursue an embodied *techné* of rhetorical inquiry and production are technologies of wonder.

In new media, rhetorical inquiry is also a visual practice, and vision ("Seeing") activates both embodiment ("Seeing Bodies") and arrangement ("Seeing Bodies in Space"). Embodiment depends upon visibility to sustain its claims for the unbreakable bond between materiality and all experience. Arrangement, often associated only with textual organization, is also a function of associative practices of discovering similarities and meaning-making affinities. Together visual practices of embodiment and associative arrangement provide a framework for ethical performances in digital media. Seeing vision as a technology of the body rescues the body and its representations from the passivity of "being seen" and recreates it as an active participant in making its own visual meaning, in insisting that "bodies matter." Arrangement as a spatial practice visually informs the placement and relationships of words, images, animations, sounds, and other media, and transforms visual re-arrangement on the landscape of the screen into an epistemic event.

*C*hapter Three, "Embodiment by Design," examines the gendered and classed turn to the mind of classical and Enlightenment rhetoric, and reveals the cultural and social consequences of the disembodied rhetoric that emerged with the ascendancy of Cartesian rationalism for individuals and groups less able to put their material circumstances aside. Feminist critiques of the Cartesian subject's claims of access to "universal truth" point toward a potentially more egalitarian rhetorical framework that values situated knowledges and multiple subjectivity; yet visions of virtual immateriality have re-emerged with the rise of digital technologies, visions that undercut feminist arguments for the necessity of specifically embodied perspectives. This chapter explores how discourses of immateriality in early anatomical drawings, nineteenth-century elocution manuals, women's rights speeches, and photographic documentation of hysteria function as "pedagogical performances," seemingly neutral and objective representations and arrangements of the body which, in fact, also teach cultural and social interpretations of bodies and how they are supposed to behave in the world. Applying these insights to contemporary representations of the body made possible by digital imaging technologies, this chapter argues that visual "technologies of the body" such as x-rays and fetal imaging are also embodied pedagogical performances that have the effect of surveilling and regulating the bodies whose images they mediate.

Chapter Three then turns to the implications of a newly visual and mobile writing space on bodies of evidence and practices of arrange-ment. Over the last few years, scholars in rhetoric and composition have created excellent models of how rigorous intellectual work can be accomplished in interactive digital media, and have addressed themselves to pressing questions in the field: What does it mean to be a technological body, to engage physically with digital hardware and software, and to represent our selves through those media? How do we enact our responsibility to represent the material conditions and consequences of our "objects of study" through the ethical collection and presentation of visual evidence and embodied argument? How can we develop concepts and practices of digital design that help us use digital media as tools of thoughtful critical inquiry and analysis?

But despite the potential for embodied pedagogical performances through multimodal, hypermediated writing and designing, current texts widely recommended in the academy for graphic and typographic hypermedia design fail to acknowledge visual argument as an embodied practice. Instead, such texts as Edward Tufte's *Envisioning Information* (1990) and Robin Williams' *A Non-Designer's Design Book* (2008) reify a discourse of visual performance that effaces the maker and foregrounds arhetorical standards of transparency and speed. The chapter concludes with a call to reject discourses that devalue the visual and thereby devalue the materiality of experience and knowledge construction, and argues for theory embedded in practice which demonstrates how to perform ethical, embodied, hypermediated teaching and research in new media. By frankly acknowledging that all visual representations, including alphabetic texts, are culturally constructed, and that it is neither possible nor desirable to extract the visual from the surrounding sensorium of meaning, we can interrupt the seamless narrative that holds up alphabetic textual performance as the privileged standard for intellectual work. We may then recover, as Stafford (1997) suggests, an eighteenth-century enchantment with visual demonstration and learning, and a more nuanced perspective from which to design and write within a feminist-inflected techno-strategic discourse.

*C*hapter Four, "Arrangement as Inquiry," turns to digital media and the rhetorical canon of arrangement, and considers how articulating bodies of evidence in new ways might help us to develop frames for scholarly production which expand those of traditional academic rhetoric. Arrangement is rarely treated as a visual practice or as a method of discovery in college research and writing, and the history of the canon shows us a possible explanation. Prior to the Enlightenment, a long and rich tradition of associative practices linked visual and verbal knowledge in illuminated manuscripts, secular and religious painting, sculpture, architecture, and other pre-digital multimedia texts. Furthermore, these practices were embodied; people gathered to read or listen in churches and town squares where they could see and make connections between the words, the speakers, the buildings, and other elements of material culture. The physical and mental rearrangement of evidence that privileges an associative model of thinking was embodied in the sixteenth-century *Wunderkammer*, or cabinet of natural, artificial, and scientific wonders, which served as both an embodied space and an object-to-think-with about arranging material artifacts to engender wonder and discovery. Yet by the eighteenth century, the Cartesian division of mind and body exemplified in the scientific method had turned toward a disembodied process of "objective" inquiry. The Cartesian knowing subject, claiming to speak from an omniscient and disinterested perspective, effectively erased the particularities of place and gender in the acquisition and dissemination of knowledge, while simultaneously obscuring the fact that women and other under-represented groups were excluded from any participation at all. In addition, the emphasis on "plain style," and the growing movement to educate the merchant class, resulted in the shift of the canon of arrangement from a verbal and visual process of rhetorical invention and discovery to an inflexible rubric for organizing parts of an already conceived discourse.

Postmodernism called into question many of the traditional assumptions about subjects and objects of knowledge, and the introduction of hypermedia into writing instruction in the early 1990s provided writing spaces that seemed up to the task of incorporating multimedia, polyvocality, and nonlinear provocations that were already informing rhetorical theory. Constructive hypermedia encourage writers to become designers of digital *Wunderkammer*, bodies of information "they map according to their needs, their interests, and the transformations they discover as they invent, gather, and act upon information" (Joyce, 1995a, p. 42). However, despite the promise of hypermedia for recuperating visual arrangement as a valued form of pedagogical performance, standards of efficiency and transparency developed for commercial websites are still often mapped onto web design criteria for academic professionals and their students.

Chapter Four focuses on two moves to counter the business model for hypermedia that prizes speed and clarity over reflective inquiry and generative ambiguity: emphasizing a feminist regard for multiple perspectives, and re-thinking the epistemic potential of the link. Hypermedia can effectively demonstrate feminist attentiveness to multiple subject positions. And links, re-defined as associative "lines of flight" (Deleuze and Guattari, 1987) rather than transparent and immaterial windows between nodes of information, transform them into connective tissue which creates the meaning of the words and images that it joins. This chapter concludes by returning to the digital *Wunderkammer* as a technology of wonder that reestablishes associative thinking, visual analogy, and embodied arrangement as a multimediated feminist pedagogical performance.

*C*hapter Five, "Media Machines, Devices of Wonder," turns to the process of making new media as an epistemic practice embodied in feminist perspectives on materiality and arrangement. It makes a case for an embodied practice of flexible hypermedia design in which we and our students become active producers rather than passive consumers of visual digital rhetoric, and advocates for pedagogical performances that not only lead us all to become more fully aware of visual representation and arrangement as culturally inscribed and deeply rhetorical, but that result in more generous, thoughtful rhetorical action. As Anne Wysocki provocatively asks, "How would a text look . . . that embodied the values of generosity, or slow rumination, or full-hearted justice—and what might we learn about ourselves in the processes of making and learning to read such texts?" (2004a, p. 15).

This chapter analyzes examples of new and not-so-new interactive texts, and proposes models for new media objects that demonstrate the principles of embodied visual argument and reflective conceptual arrangement in innovative digital formats. Interactive digital media invite the construction of electronic spaces that value process over product, and that have as their goal inquiry and discovery rather than proof. Returning again to the *Wunderkammer* as an epistemic space, I explore several mechanical, optical, and electronic devices of wonder which, by making the familiar strange, help us see (and think) differently, and I compare the visual tropes of reflection, refraction, repetition, distortion,

and magnification in play in both analog and digital *Wunderkammern* to their verbal rhetorical analogues in order to expand our potential associative rhetorical strategies. The habits of mind intrinsic to the construction of a *Wunderkammer*—collecting, arranging, reflecting, and displaying— work together recursively to shape epistemically active hypermedia which manifest feminist principles of embodied arrangement and inquiry, acting as sites for theoretically informed research and as constructive knowledge-making spaces for our students and colleagues.

Chapter Five next takes up the potential of several such spaces to demonstrate the application of these principles of *Wunderkammer* construction to the design and production of constructive hypermedia. The assemblages of Joseph Cornell—*Wunderkammern* in miniature—provide models for using bricolage and juxtaposition to create associative, multimodal environments that can be usefully applied to designing constructive, interactive, digital knowledge-making spaces. Shelley Jackson's "My Body . . . & a Wunderkammer" (1997) and Anne Wysocki's "A Bookling Monument" (2002) exemplify two very different approaches to embodying the theory of digital arrangement and visual representation in pieces designed as digital projects for which there is no analog equivalent. The chapter concludes with a discussion of digital arrangement in the classroom, focusing on visual strategies of invention and/as arrangement as they were deployed in two student projects in an intermediate writing course.