
Virtually Uninhabitable: A Critical Analysis of Digital Environmental Anti-Toxics Activism

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Dissertation submitted to the Faculty of Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
In
Science and Technology Studies

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10 June 2004
Blacksburg, Virginia

Keywords: anti-toxics activism, online activism, Internet, World Wide Web, environmentalism,
technology, identity, digital identity, empowerment, cyberstudies, expertise, right-to-know

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Abstract

In this dissertation, I analyze online environmental anti-toxics activism. Environmental activist groups have created a presence on the World Wide Web to help empower people to become aware of and struggle against pollution. The sites that I explore (<http://www.epa.gov/tri/>, <http://www.epa.gov/enviro/wme/>, <http://www.rtknet.org/>, and <http://www.scorecard.org/>) serve as devices of this empowerment and by extension recruit people to the political goals of anti-toxics activism.

In my analysis, I focus on a series of questions germane to this context. How can/does this movement go online and utilize that presence to sway others to their cause and ideology? How then is that cause represented digitally, in the online medium? What are the reciprocal impacts of that representation on the movement itself? Most importantly, what form of activist identity is being promoted through the mediation of the online interface? That is, how are the identity of the self as activist and the related understanding of space and place altered through their translation into a digital environment? What are the parameters and limitations of digitally mediated, informed empowerment?

I undertake to critique empowerment as found through the digital translation of environmental anti-toxics activism into the virtual space of the Web. I show that particular uses of this Internet application invent (reinvent/ reinforce) versions of environmental anti-toxics activism, digitized versions which must be understood in terms of their wider assumptions and implications. I break the study into three main parts. The first part lays theoretical groundwork for studying Web-based entities. The second part deals with more particular foundational elements for digital environmental anti-toxics activism, especially in terms of information. In the final section, I analyze and critique the forms of digital identity and empowerment that the websites create. I conclude that digital empowerment, defined primarily through access to expert information, actually represents an impoverished version of empowerment which may do little to aid real-world toxic struggles.

My goal involves not dismissing or discouraging this form of online activism, but rather paying careful attention to emerging trends in technological use that may, over the long run, undermine the intentions of users and subvert opportunities for more fundamental change.

Acknowledgements

Without the help and encouragement of many people, I would not have been able to finish this project. While my attempts to do justice to the contributions of various people are ultimately doomed to be too anemic, I will at least offer a small recitation of those to whom I owe so much.

I would like to acknowledge the help of many faculty in STS whose instruction and examples guided my development as a scholar. In particular, I would like to start by thanking Tim Luke for his guidance and patience, helping me both through his considered comments on the drafts of this work and through his example of what it means to be a productive and engaged scholar. The other members of my committee also deserve special recognition. Mark Barrow continually offered invaluable advice and input on initial drafts of chapter four and finally on the document in its entirety; he also made a point to focus on my goals as an academic-in-training. Saul Halfon provided lots of encouragement and showed an honest interest in the work, allowing his own intellectual curiosity to prompt mine. Joe Pitt not only offered his input on the current work, but also took time to support me more generally in my career through teaching assignments and advice on applications and interviews. He showed a genuine concern and interest in keeping me involved in the Philosophy Department and getting me employed, for which I am very grateful. Finally, Skip Fuhrman displayed his indefatigable style and sharp wit in keeping me intellectually honest - while hard to track down, well worth the effort. Overall, I am most grateful for the general support of the committee. They proved to be collegial, congenial, and supportive. I would also like to thank Martha McCaughey, an original member of my committee, who now stirs minds in other climes. She always offered enthusiasm, energy, and encouragement for my work broadly conceived, and was instrumental in shepherding this project in its earliest stages (whether she realizes it or not). A paper representing the germ of this work appeared in her co-edited book *Cyberactivism: Online Activism in Theory and Practice* (see Bibliography).

I also owe notes of acknowledgement to the graduate students in STS. I have shared many a discussion space with contemporaries in various classes, meetings, and coffee shops as I began working out my own theoretical trajectory. Piyush Mathur, Jane Lear, Andrew Garnar, Frankie Bausch, and Jody Roberts have been especially valuable for their intellectual curiosity and friendship. I feel I also need to single out a few other people who have really helped me with this project in particular and my scholarship in general. Chikako Takeshita came along for at least two short-lived writing groups and proved a generous listener. Ben Cohen challenged me to work in new ways and allowed me to take risks and leaps in thought. Finally, Tyler Veak, without whom I would most definitely not be here now, provided friendship and faith which was instrumental in my becoming who I am today - finished with my degree and in possession of a future.

I would also like to recognize the support I received outside of academia. My family (Ed, Lynn, Preston, Tyson) accepted my many retreats into academia, and provided a safe place to engage in thought experiments. My in-laws (John and Pat) gave their support and interest. I would also like to voice my appreciation to Kenny Lefkowitz (in memory), Mr. and Ms.

Arrington, Leon, Zachary, and Chicken for helping to make my homes outside of school so happy and restful.

Finally, I would like to thank Kelly Ann Nugent. It is hard to capture in words all of the support, insight, and faith that she has provided for me in this project and in life. Aside from me, she is closest to this work and has provided countless hours of close reading, unfair grammar corrections and cute icons, and patient attention as I worked out various parts of my thoughts. She had to put up with those demands on her time and also with my absence as I cloistered myself in my office for hours at a time. Her unwavering faith that I could finish and that my work was valuable bore fruit, and for that I am forever indebted and grateful.

Preface

It is customary to begin a dissertation or book with a less formal, personal snippet that reveals some of the background behind the journey or the motivation for the current research. A chance to let the guard down and be casual with the reader. Story-telling.

The story I am about to tell, however, isn't my own story, really. Well, it is and it isn't. Quite far along in my research, I went to hear Ralph Nader speak at Hamilton College in upstate New York. He was there to tell stories about the impact of pollution and corporate greed on individual social well being. To tell stories about the power to change the toxic reality of our lives and our futures. To inspire. He related his experiences with DDT which had killed birds on his campus and with smog in Los Angeles and the automobile industry's efforts to avoid liability. He noted that the word pollution is actually a euphemism for a very ugly reality, a process of "silent violence" that decimates peoples, natures, hopes. A true weapon of mass destruction.

He went on to claim that the silent violence was itself permitted through a form of invisibility – in political discourse, in personal experience – that needed to be reversed. Imagine, he said, if we could add an indelible, non-toxic red dye to all airborne toxic pollutants. Imagine the outcry that would be heard if we had to walk around, stained red by the suddenly very visible, still harmful substances that we encountered every day. Assuming, of course, that we didn't start really liking red.

He then pointed to some real world instances of promoting visibility, encouraging people

to seek them out. One such example was [scorecard.org](#), a website that aims to show people information about toxic emissions, and a very large part of my present research. Scorecard.org, he said, took loads of information and distilled it down so people could understand it. Promoted visibility. Made noisy the silent violence, so that people would take notice. He went on to talk a while longer.

The work that follows is, in large part, about just this kind of visibility. About being able to see pollution. About the efforts of environmental anti-toxics activism to paint the sky red, as it were. However, it is not simply about visibility, but also about vision. It is not enough to see the color red; people have to learn to despise the color, to want to get it out, and to learn how. This form of activism wants to teach people how to see the world, and thus how to act in it. To achieve this goal, anti-toxics activists has to tell stories about the world, with heroes and villains. My story is about these stories.

In an effort to tell their tales, some anti-toxics activists have turned to the World Wide Web as a broadcast medium. Sites like the aforementioned [scorecard.org](#), along with [rtknet.org](#) and [epa.gov/tri/](#), use the power of emerging digital technology to convey their vision of the world to others. They want to spread the word that pollution is bad, is destroying communities, bodies, and ecosystems. So, they create interfaces that link people and communities to information about pollution and encourage people to use that information to make a difference. In using the Web to tell stories about the problem of toxic substances and the need for people to do something about it, these sites also, in a way, tell stories about the Web. What the medium is, what it can do, and what people should use it for.

This narrative confluence works both ways, however. The Web also helps to shape the

story the environmental activists tell, helps to assign roles and to bequeath powers. The user, the empowered individual who inhabits the interface and makes it work, becomes empowered through the one thing the Web really has to offer – information.

What becomes of the digital citizen then is a tale of transformation – how the citizen will be able to transform the world through the use of the Web, and how the Web transforms the citizen into someone who needs information and little else.

My story is also about this story. About how the Web impacts environmental anti-toxics activism, for good and for ill. I want to show both why the story can be told this way and suggest other means of thinking through this technologically mediated narrative, beyond simple empowerment through information.

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Chapter One

Introduction: Digital Interaction and the Question of Technology

In a good mystery there is nothing wasted, no sentence, no word that is not significant. And even if it is not significant, it has the potential to be - which amounts to the same thing. The world of the book comes to life, seething with possibilities, with secrets and contradictions. Since everything seen or said, even the slightest, most trivial thing, can bear a connection to the outcome of the story, nothing must be overlooked. Everything becomes essence; the center of the book shifts with each event that propels it forward. The center, then, is everywhere, and no circumference can be drawn until the book has come to its end.

Paul Auster, City of Glass

Emergent communication technologies contain many conceptual and analytical challenges. The rapidity with which these technologies change makes them difficult subjects of study. What seems universal with these emergent technologies, however, involves the very concept of “change.” Whether it is the telephone, television, radio, or computer, these technologies portend great upheavals to the current state of society. The Internet and its related applications represent some of the newer entries into modern modes of communication. They continue to evolve rapidly, with new functionalities, new applications, and new users added everyday.

Rhetoric surrounding the Internet has changed almost as rapidly as the technology itself. With the advent and popularization of the Internet and the World Wide Web since the early 1990s, theorists have sought to understand, forecast, laude, or condemn the coming digital age. These analyses have dealt with the possible futures that such an age may promise – cybertopias of egalitarian public spheres or cyber-purgatories of isolation and social dysfunction. Early academic hype about the transformative power of the Internet (good and bad) has since morphed

into more subtle and sober accounts of the complexity of this technology; at the same time, specific groups and individuals have imported the ideology of change into their use of the medium. The promise of positive possibilities have translated into digitally mediated action by groups wishing to have a say in these new and different futures – using the Internet *to* change. All manner of activist groups, from indigenous peoples groups like the Zapatista movement in Mexico to anti-globalization groups like Global Exchange, have utilized the Internet and its associated applications as a force for transformation – transmitting messages, reporting events, coordinating strategies, and connecting individuals. Some groups have emerged within this digital framework; others have sought fit to take established discourses and ideologies into the digital sphere. Whatever the origins of these activist groups, the Internet and the World Wide Web have provided an emerging medium through which activism can occur. For each of these groups attempting to foster change through the use of this digital medium, important challenges lie ahead. Most critically, activists must be able to assess the impact the medium itself has on their (and other) forms of activism, as well as the basic effectiveness of this form of intervention.

For my part, I want to aid in the assessment of the Internet for activist purposes, teasing out the implications, alterations, and connections – evident and hidden – which facilitate the use of this medium. To do so, I have chosen to focus on a specific Internet application – the World Wide Web – and the digitization of a preexisting activist ideology – environmentalism. Despite engaging in an apparent paradox, environmental groups have sought the aid of the virtual and digital to defend the real and natural.¹ Well-known mainstream groups like Greenpeace,

¹ These concepts – virtual, digital, real, natural – all carry complexities. Part of the current work involves teasing

Environmental Defense, the Sierra Club, and the National Wildlife Federation all have large websites which promote their respective causes and enable action to various degrees.² Of course, each group has their own agenda, and they should be lumped together only in the most general sense. They must face their own challenges and dilemmas in representing their respective causes online, and thus it would be a mistake to be too broad in one's analysis. To avoid such difficulties, I have chosen to focus on one specific form of online environmental activism – anti-toxics activism in the United States – and explore the particular digital presence that emerges in this context.

Anti-toxics activism confronts the problems involved with the production and (usually unequal) dissemination of toxic substances into the environment and the subsequent impact of these substances on humans and places. The modern form of activism emerges from historical cases such as those in Love Canal, New York, and Woburn, Massachusetts, where uninformed individuals, families, and communities found themselves exposed to toxic substances and suffering from that exposure. These events led to the formation of community activist groups like the Center for Health, Environment, and Justice, which seek to make *more* people *more* aware of the presence and effects of these chemical pollutants. A main goal of these groups involves empowering people to affect change by becoming informed about the presence and impact of toxins (see Jamison 2001; Szasz 1994). Groups like Environmental Defense and OMB

those complexities out.

² Whether to exploit a new medium or for fear of being left behind, the entire original “Group of Ten” mainstream environmental organizations (see Gottlieb 1993, Ch. 4) have websites: the National Wildlife Federation (<http://www.nwf.org>), the Izaak Walton League (<http://www.iwl.org>), the National Audubon Association (<http://www.audubon.org>), the Sierra Club (<http://www.sierra.org>), the Wilderness Society (<http://www.wilderness.org>), the Natural Resources Defense Council (<http://www.nrdc.org>), Environmental Defense (<http://www.environmentaldefense.org>), the National Environmental Policy Institute (<http://www.nepi.org>), and the National Parks and Conservation Association (<http://www.npca.org>).

Watch have taken this goal of empowerment through information and filtered it through the unique characteristics of the World Wide Web. The Web, with its capacity to lower the cost of information distribution and increase the scope of the audience reached, represents an enticing possibility to groups seeking to get the message out and share information. These groups have produced sites that allow individuals to input small bits of information and receive detailed accounts of pollution in their vicinity. True to the activist vision, they provide information as a prelude to action, so that the individual users who have visited the site may be empowered to do something about the flow of toxins into the(ir) environment.

Environmental anti-toxics activism is in large part premised on two important assumptions regarding the growing spread and unequal impact of toxic substances. In this work, I will not be arguing these assumptions, but rather taking them as, well, assumptions. The current analysis does not explore whether environmental anti-toxics activism presents a sound argument³, but rather what happens when that position becomes digitized. For anti-toxics activism, then, the central problematic is defined by an unwanted toxic world – that human-made or human-concentrated⁴ toxic substances exist at unprecedented levels in history and cause harm to human beings and communities. The existence of human-produced chemicals in the environment faces little opposition; the debate (not directly engaged here) surrounds the extent to which those chemicals cause harm and who bears the brunt of exposure. That all people face

³ My personal bias – that environmental anti-toxics activism does basically have a sound position on the spread and impact of toxic substances – enters into this work as a motivation for the specific analysis. The substance of the analysis on the implications of digital intervention, however, I believe holds regardless of the underlying reason for it.

⁴ The idea here is that naturally occurring substances like lead and mercury are not novel compounds like DDT and PCBs, but can be toxic when placed at high concentrations in close proximity to humans.

some risk from the presence of these toxins in the air, water, and soil represents a modern phenomenon. The current inhabitants of the (Western) world cannot escape the reality of large-scale risks necessarily associated with modern life – exposure to toxic substances, potential nuclear catastrophe, global warming (see Beck 1992). Feenberg (1999) captures the sentiment well, noting that in the current toxic-filled world, “[t]o be a citizen is to be a *potential* victim” (120). This sentiment exemplifies the environmental anti-toxics activism baseline position with regard to toxic substances – all people are at some risk from chemicals in their daily life. How much risk and to what end are open questions. This toxic condition grounds the basic position that anti-toxics activists seek to communicate and act upon – chemicals harm people and should be abated. In subsequent chapters, I will evaluate/critique the efficacy of the digital message so presented, but not its truth value.

A corollary to the notion of universal risk is the unequal distribution of those risks. That is, certain socioeconomic and racial groups bear a larger amount of the burden of toxic exposure. Even if chemical exposure has become a necessary part of living in the United States, poor people and members of ethnic minority groups tend to live in areas subject to greater amounts of exposure than others (see Adeola 1994; Bullard 1994, 2000; Hofrichter 1993, 2001; Szasz 1994). As such, the push for environmental justice exists as a subtext for much environmental anti-toxics activism, especially to the extent that the complete elimination of these chemicals appears unlikely. These points of understanding – that toxic substances put all people and environments at risk (some more than others) and that such risks result from human activity – are the driving forces behind much of the anti-toxics activism here in the United States. Groups strive to make these risks known as a step toward challenging them, and have seen the Web as a potentially

powerful tool to aid in the struggle. Here the story begins.⁵

The main point of departure regarding this analysis involves how a new medium of communication (the World Wide Web) enters into a specific historical stream of action and ideology (environmental anti-toxics activism). I say enters into a stream, not impacts or alters, in an effort to emphasize the fact that the process of change the Web brings is ambiguous and multi-faceted. It is not the case that the availability and use of the World Wide Web simply changes the shape and vision of this form of activism; nor is it the case that environmental anti-toxics activist groups simply appropriate the Web as a ready-made tool and continue business as usual. One may be tempted to assume otherwise – after all, the struggle against toxic substances can easily be represented as a struggle against a lack of information (see Chapter 4), and the Web is obviously a new form of media that enables the cheap and wide-scale distribution of information (see Chapter 5). A perfect match.

This easy partnership, however, masks the extent to which both components are very much fluid and susceptible to influence. Treating the Web as a neutral thing to be used or abused ignores the impact technologies have on the people and organizations that use them – opening possibilities, emphasizing forms of organization, valuing certain qualities. Treating environmental anti-toxics activism as an organization attending to the obvious value of the Web in promoting a pre-existing message ignores the extent to which different media can impact the form and the content of messages. I will address those general concepts below. For now, I just want to emphasize the fact that *both* the technology and the organization/ideology alter in their

⁵ Starting with the Web does not imply that I will offer no history; rather, I will use the Web to *condition* the type of history I offer (see Part II).

contact with each other. In using the Web to spread their message to potential enrollees, environmental anti-toxics activist groups adapt that message and their own positioning partially in response to the mechanism (and its resulting constraints) that allow the transmission. In being used in this way, the Web becomes at least in part a specific cultural entity. More specifically, this new technology influences the historical narrative of the movement, along with its architecture for interaction, through the movement's understanding, use, and modification of the Web. For good or ill, both have portions of their possibilities augmented, while having others muted and still others denied. Both *become* something and not something else through their interaction. The purpose of my analysis is to ferret out those characteristics, and with a critical eye examine what both the Web and environmental anti-toxics activism are becoming.

In order to flesh out this evaluation, I will take as the center of my analysis websites which provide information on toxins as a prelude to action. These sites⁶ – Environmental Protection Agency's Toxic Release Inventory website (<http://www.epa.gov/tri/>) and Window to My Environment website (<http://www.epa.gov/enviro/wme/>), OMB Watch's Right to Know Network website (<http://www.rtknet.org/>), and Environmental Defense's Chemical Scorecard website (<http://www.scorecard.org/>) – serve as devices of empowerment and by extension recruitment to a way of seeing the world. As such, I am less focused on the use of the Web as a means of communicating between already committed members of an organization. Rather, I am interested in how the Web can be and is used to promote a certain way of interacting with the world and establishing a certain identity. How can/does this movement go online and utilize that

⁶ Please see footnote in the Referenced Websites section of the Bibliography for information on how to ensure access to links referenced in this work.

presence to sway others to their cause and ideology? How then is that cause represented digitally, in the online medium? What are the reciprocal impacts of that representation on the movement itself? Most importantly, what form of activist identity is being promoted through the mediation of the online interface? That is, how are the identity of the self as activist and the related understanding of space and place altered through their translation into a digital environment? Do users really become empowered? What are the parameters and limitations of digitally mediated, informed empowerment?

Dissertation as Interface: Organization of Presentation

These questions, of course, are implicated in the ambiguous process of becoming I discussed above. As such, before I can even begin to answer them, much work remains. I need to establish a context through which they can reasonably be answered. Part of that context involves what I want to call, following Foucault, fields of utilization and stabilization.⁷ Foucault developed these terms primarily to talk about concepts – how certain terms become employed within particular social structures and come to appear natural. I want to use the terms here to emphasize how Web technology emerges out of larger social, political, and technological contexts and then turn to enable new and particular meanings for concepts like empowerment, identity, and activism.

First and foremost, however, is the problem is finding my “center of analysis” within/throughout that process. The epigraph quoted from Paul Auster that begins this chapter

⁷ See discussion of Foucault in Davidson (2001, 185).

points toward the difficulties inherent in studying such a shifting entity as digital media. Like any good mystery novel, the evolving trajectory of websites takes many twists and turns. Crucial uses today may turn into tomorrow's red herrings and false leads. What elements should one focus on? Which should one ignore? Worse still, though my dissertation will end, that ending is an artifact of analysis and not the necessary termination of a good story. I do not have the narrative license afforded to authors of mysteries – no solid center. The best I can do is be suggestive about the implications of the trends that I observe and the space I would like to see the center occupy.

Thus, in the next part of the dissertation, I can at least lay out the theoretical influences that guide me in seeing the story that I do, in focusing on the elements that I do, in making the conclusions I do. Part I represents my attempts both to contextualize the Web in terms of the rhetoric surrounding it (why someone might seek to use this medium to alter the world) and to articulate the Web as something to be analyzed. Chapter Two deals with the rhetoric that encompasses the World Wide Web and forecasts the supposed change that it brings. In this chapter, I explore why I chose to focus on the Web in relation to other forms of media. Chapter Three addresses more theoretical concerns about conceptualizing the website as an object of study and relating that object to broader questions about the nature of technology. In particular, I situate the design and development of technology within a broader social and historical context which helps to analyze what a technology is designed to do and why. I also begin to bring into focus the structures and relationships that comprise the Web or at least make it possible as a stable entity. In this chapter, I strive to show why it is important to study and critique the Web now before its center is more fully drawn.

I have organized the remainder of the work into two main sections – Part II and Part III. This structure, and to an extent the dissertation in its entirety, can be read as attempted answers to a linear series of questions. From this perspective, Part I asks the general question, how might one understand the Web as a medium of communication, a technology of transformation, and an object of study. Part II, on the other hand, poses the more specific question, how did the online form of environmental anti-toxics activism emerge? Emergence – from what, to what.

From what? As David Silver (2003) notes, studies of cyberactivism need to be historically situated to contextualize fully the ways in which groups are using the Internet and changing in the process. To that end, Chapter Four fleshes out about a century's worth of anti-toxics activism in the United States, starting with the industrial hygiene movement of the late 19th century, to key environmental catastrophes that emerged in the late 1970s and early 1980s and the small community-based organizations that grew out of them, to the passage of major environmental legislation (Title III of the Superfund Amendments and Reauthorization Act) in 1986. The Right-to-Know legislation in particular created the data necessary for website intervention. Far from offering an exhaustive history, this chapter instead provides an historical narrative that lays the groundwork for the receptivity of Internet technology by environmental anti-toxics activist groups. This history, easily characterized by a lack of information (either unknown or withheld), lends itself to the exploitation of new communication technology.

To what? Chapter Five lays out the present-day web interfaces that have sprung up to provide for the information needs so conceived. First, I give a brief history of the Web itself to demonstrate how it became a valuable Internet application. Specifically, I examine the birth of the browser interface and the rise of graphics-laden windows that emphasize viewing over

writing. Then, I offer an account of why, from the perspective of Web-based intervention, the history of environmental anti-toxics activism might be told *as* struggles for information. That is, I argue that the technology itself favors a particular historical narrative that highlights missing information as the main problem of pollution. Finally, I move to the specific uses of the Web by environmental anti-toxics activist groups. I inspect three main websites that form the core of national database-backed sites aimed at empowering the individual. Those sites – www.epa.gov/tri, www.rtknet.org, and www.scorecard.org - present portals of access for the online citizen seeker of information and potential intervention.

Part III asks the question, what impacts do these digital forms of information delivery and potential intervention have on the identities of the digital citizen and community member? The organizing trope that I employ in this part involves the concept, or rather concepts, of identity. That is, I explore the extent to which these websites comprise technologies of identity – both in terms of enabling qualities and conferring sameness. Chapter Six looks at the individual and her interaction with the interfaces. I start by introducing ideas about digital identity facilitated by computer-mediated communication. Wanting to deal exclusively with the Web application, I then advance a way of grappling with Web-based identity construction. Here I borrow heavily from the concept of reflexive modernity found in Beck and Giddens. Next, I explore the implicit relationships formed around the digital citizen in these activist interfaces. I do this by contrasting the digital manifestations of the informed citizen with the informed consumer. I contrast the primary websites with two others aimed at the individual wanting to avoid making a bad real estate investment rather than protecting her community. Ultimately, I seek to uncover the assumptions that are built into the specific activist interfaces which offer empowerment

through access and intervention. These relationships involve the individual and information, the individual and the expert, the individual and her own community.

Chapter Seven looks more closely at the limitations contained in the offered form of digital empowerment. Empowering a user through access can distort the complex requirements of political action. Web-based technology can also promise a kind of deceptive or limiting particularness, offering the specific individual tailored information. Ties to generic expertise can rob the user herself of a unique political voice. Also, translations of place (community and environment) into representations of pollution and digitally transmittable code ignore or even undermine complexities involved in generating specific community, place-based identities and movements.

In Chapter Eight, I pose the difficult question, what might one take from this analysis? The chapter engages this question seriously, but does not attempt to provide definitive answers. Rather, I simply suggest the importance of revealing embedded assumptions and challenging any presumed technological or historical necessities.

Another means of understanding the structure of the work involves attending to the cyclical nature of the explication. That is, the dissertation should be *read* in the linear fashion illustrated above. Much like the technology it attempts to describe, however, this work should simultaneously be *understood* cyclically – where the order of the chapters is itself an artifact of the presentation, not a necessary product of the analysis. Whereas the technological interface of the website both sets conditions for and is conditioned by relationships that are inherently multivalent (a constellation of unequal forces – see figure 1 below), this work too emerges in

total from the reciprocal and contemporaneous tensions between chapters and parts.

Chapter Four does assess the historical legacy of environmental anti-toxics activism, but only and inescapably in the context of its current digital manifestation, explored in Chapter Five. The chapters in Part III may contain analyses of the formation of digital environmental anti-toxics activist identity – the contours and limits of empowerment – but it would be a mistake to assume that the analyses unfold in a linear fashion. The conclusion in Chapter Eight provides a summary of the preceding analysis, but the ending prescriptions have also influenced the path that the previous chapters have taken. Written. Rewritten. The dissertation can be conceived as a whole by means of the boundaries of its presentation where each chapter can and should be read in the context of that whole.

Such a description of this work may be considered by some readers as a truism. Books always have this characteristic, read critically. My reasons for calling attention to this characteristic of the work involve both a method and an irony. Regarding method, I have filled the text with small eddies and asides that (presume to) disrupt any strict linear understanding of relationships and interactions so described. These interruptions are not meant to detract or distract from the analysis as presented, but rather to highlight the movement and tensions implicated in the understanding of this technological interface and the people who use it. As such, I wanted to be explicit about my motives, at the more mundane level of presentation and at the grander level of purpose.

As for irony, I feel that it is important to point out the way in which I am using a technology of information transmission in my critique of another technology of information transmission. Book critiques website. There are unavoidable parallels to be made between each

mode of data distribution, and I find it important to establish up front that it is not my intention to critique the website in favor of the book. Rather, both being technologies, websites and books each confront the world with their own prejudices and assumptions.

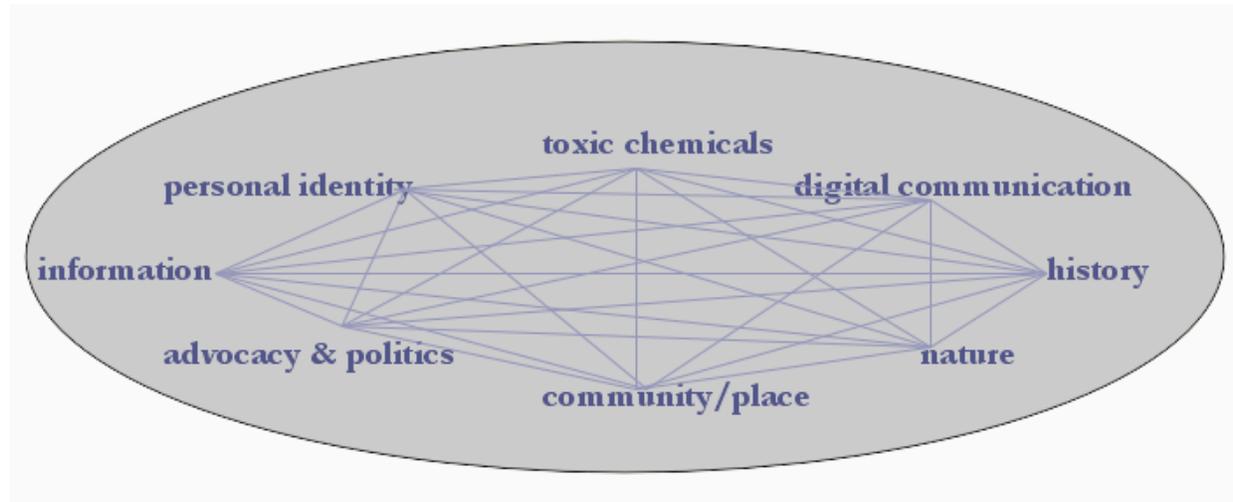


Figure 1: constellation of digital environmental anti-toxics activism

Throughout the course of this dissertation, I undertake to problematize the concept of empowerment as found through the digital translation of environmental anti-toxics activism into the online space of the Web. I will show that particular uses of this Internet application invent (reinvent/ reinforce) versions of environmental anti-toxics activism, digitized versions that must be understood in terms of their wider assumptions and implications. In engaging in this analysis, I do not wish to dismiss or even discourage online activism of this sort. Rather, my goal involves paying careful attention to emerging trends in technological use that may, over the long run, undermine the intentions of users and subvert opportunities for more fundamental change. I offer this dissertation as constructive critique of efforts aimed at the goal of achieving a less toxic, more just world.

Part I

The Web in Context: Understanding a Changing Medium

Chapter Two

The Web as an Element of Change: Parsing the Rhetoric Surrounding New Communication Media

*You don't need a weatherman to know which way the wind blows.
Bob Dylan, "Subterranean Homesick Blues"*

For virtually all emerging communication technology, there has also emerged a kind of millennial fervor, heralding the end of the world as we know it. From the book and the printing press, to the telegraph, the telephone, the radio, the television, and the computer – these technologies met with promoters and detractors, all assuming that dramatic change was coming. In retrospect, such inventions and interventions proved complex phenomena – in turns altering certain social relations and reinforcing others.¹ If anything, the histories of these communication technologies indicate that one must be careful in being too hasty in making broad conclusions about any emerging technological system.

The Internet and the World Wide Web themselves both seem to contain within them motion, dynamism, and change. They emerge, they improve, they overcome. In the present context of the hype about these media, then, I want to sort through the different ways in which the idea of change is used to describe and influence the use of this medium. In particular, I suggest three interrelated ways of thinking through and theorizing the relationship of the Internet

¹ For historically situated depictions of various mass communication emergence and social impact, see: Pool (1977); Marvin (1988); Deibert (1997); Fang (1997); Standage (1998); Winston (1998).

and the World Wide Web to the concept of change – as a technology that itself changes, as a technology that necessarily changes the world, and as a technology that can be used to change the world.

Specifically, though I have chosen to study the use of the World Wide Web by environmental anti-toxics activism groups, I have not defined an easy task for myself. It may be the technology itself that resists easy classification and understanding, given the rapidity with which it evolves. Namely, given that the Web was an ever-changing and increasingly ubiquitous medium of communication and cultural phenomenon, any analyst faces several imposing challenges. In particular, given that the Web and the Internet change so quickly, how much can really be said about the technology? How much of the technology will actually still be the same tomorrow? What part of the technology should/can be studied? Is the only thing worth saying about the Web is a broad comment about the speed of its apparent alteration?

Talking about a Webolution – Digital Media & Change

The Internet in general has been linked since its inception to the concept of change. Whether heralding the liberation of human consciousness or the demise of authentic communication, the Internet promised to alter the world as we know it. Even as such “millennial” (Sterne 1999, 259) conceptions of the Internet have given way to more complicated stories of how the Internet and the Web will impact experience, the basic revolutionary nature of this technology has been imported into more specific uses. Many groups and individuals who choose to present their messages and themselves on the Web often did so through promoting the Web’s promise of something better. New and improved consumption, activism, and experience filtered through the

ephemera of the digital were presumed to expand the realm of the possible.

The premise of this work, however, is that while this rhetoric of change is powerful, it is also perhaps overstated. That is, the morphing context of this new medium of communication leaves out the meaningful ways in which the Internet and in particular the World Wide Web remain connected to less novel and less adaptable contexts. Part of the challenge involves reconceptualizing Internet technology as co-extensive with life experience, at least to assess soberly the elements that may truly mark novelty. Thus, to understand the Web (or, more precisely, the website) as an object of study, one has to assess not just its digital presence, but also those fields that make that presence possible: physical infrastructure, organizational infrastructure, information regimes, other forms of media, digital innovations. All go into the composition of a website and affect what one might be able to do when surfing the Web. Websites, then, exist as points of convergence for those elements. In invoking the idea of convergence, I am specifically problematizing the question of influence – does the Web influence preexisting entities or vice versa? The answer to such a question is obviously both and neither. As I will illustrate below, all parties are effected by this digital convergence. So, at one level people and social organizations *are* changing because of their online intersection. But rather than simply revisit the notion of change, I also want to show that websites tend toward a stabilization of their internal configurations. This trend toward stability exists in technological systems more generally.

As a means of getting at the impact of emerging digital context, below I address how change is implicated within this form of technology. In particular, I explore strong revolutionary rhetoric associated with early Internet use, and in so doing, clear up some conceptual confusion

about the Internet and the World Wide Web (and address the importance in this study of dealing exclusively with the latter). I then examine how the Web itself has been imagined as a revolutionary implement and adapted through use to fit this mold. Finally, I place the Web in context with other media to address how all forms of media interrelate with each other. I want to establish bounds through which to begin to understand the wider context of the Web – its influences and influence.

Parsing the Rhetoric of Change: Some Conceptual Clarifications

Since the ascension of the Internet into the popular consciousness in the 1990s, thinkers and dreamers of all stripes have attempted to parse the meaning and impact of this new tool of communication. Research questions of monumental profundity emerged: will the Internet lead to a resurrection of true democracy? Will the Internet sound the death knell of authentic communication? Will it be the bane or the boon of community, of identity, of thought? The Internet appears to evoke all manner of utopic or dystopic pronouncements. Foremost popular heralds of the coming digital age include Negraponte (1995), Dyson (1997) and Gates (1999). These prognosticators of digital progress would have the world gilded by digital communication technologies. The Internet will bring untold wealth while eliminating physical barriers to human experience. On the other hand, people like Birkerts (1994), Stoll (1995) and Talbott (1996) find that everything honest and pure, like reading and communication, will suffer irreparable damage from the push toward digitization. While certainly dramatic, both varieties of a mediated future approach the Internet as one monolithic thing that runs over everything (positive or negative) in its path. There are several problems with this view.

Whether suffering from “information euphoria” or “information ennui” (Valovic 2000, 16), these thinkers appear destined to represent digital experience as a kind of necessary break from normal experience. Not just sped up or pixilated, but qualitatively different. In order to conceptualize this break, however, they have to also disconnect the Internet from the lives of those who may put it into practice. As Jonathan Sterne has observed, “[b]oth positions [whether utopic or dystopic]... take for granted the relative autonomy and agency of technology – its transformative power – and often, they separate technologies from the contexts in which they are developed and used” (1999, 259). The resulting declarations often portray the Internet as summarily good or bad outside of actual use or engagement. The need for assessing the Internet requires a finer analysis of the specificities of the technology and its deployment by actual actors.

Part of the difficulty with regard to analyzing and broadly summarizing this technology involves some conceptual confusion with regard to the many and varied applications that the term “Internet” covers. That is, defining the Internet proper (in its most technical sense) would involve reference to the basic infrastructure that enables communication between computers – server hardware, computers, cables, phone lines (see Gauntlett 2000, Berners-Lee 1998). Most users of the Internet, however, do not directly interact with cables and servers. Rather, they access that infrastructure through the help of software applications that provide an interface for the networked computers. These applications, from Multi-User Dungeons (MUDs), to Multi-User Dungeons, Object-Oriented (MOOs) and Usenet and e-mail and the World Wide Web, all have different ways of structuring the experience of that user. Some are more text-based, others enable graphical interfaces, and each idiosyncrasy makes broad pronouncements about the influence of the Internet in general less robust.

Tracking the current and continuing impact of the Internet, then, requires careful attention to the application at issue. Many of the earlier studies of being digital dealt with applications that dominated nascent online experience. MUDs, MOOs, and Usenet, for example, helped define what it meant to be online up to the early 1990s. Because of the relatively technical, text-based interfaces, however, along with the novelty and cost of computer equipment, the Internet remained “a very elite realm” (Reid 1997, 5). For reasons I will discuss in more detail in Chapter 5, the Web application increased the number of people who could use the Internet and changed the way the Internet is used. As such, work done prior to the wide-scale adoption of Web browser interfaces likely dealt with more specialized, computer-literate populations than the many more millions who access the Web currently. Studies like Hauben & Hauben’s which focused largely on Usenet traffic and celebrated the computer as a possible “democratizer” (1997, 315) are important in suggesting possibilities for certain online applications. Likewise, Sherry Turkle’s (1995) work on MUDs helped to show how people were able to de-center and play with identity (see also Poster 1995). The applicability of these analyses to other Internet applications and current Internet populations should not be assumed, however. Pre-Web studies make valuable contributions to online experience, but the Web has altered the perception of the Internet and increased the numbers of people perceiving it.

More and more, in fact, the World Wide Web has developed a larger impact with regard to online experience. Increasingly, the Web has become more dominant in terms of accessing and even understanding the Internet and cyberspace (see Reid 1997; Graham 1999; Gillies & Cailliau 2000; Swiss & Herman 2000). This application, which in a sense made the Internet more user-friendly by simplifying the interface and making it more graphical, has altered the way

people get online and how many people are trying, and can even operate as a kind of hub of online experience, providing access to other applications (see Salter 2003). Thus, the World Wide Web, in a sense, can be viewed as the interface of the Internet. As early as 1995, Cailliau (1995) claimed the two words were interchangeable. That observation continues. Weinberger makes the following claim about the terms: “I purposely conflate the Internet and the Web... The distinction is very real from the technical and historical perspectives, but it isn’t being observed in the public consciousness: email and home pages seem to be part of the same phenomenon even though the former is on the Internet and the latter is on the Web” (2002, 8fn). I would add that, for many using free email clients like Yahoo and Hotmail, email is very much on the Web, as one’s mail is received only through a website interface.

Regardless, the World Wide Web is an application that has special features and deserves special attention (see Gauntlett 2000, 6). I have chosen to focus my analysis on the Web in part because of its rhetorical ubiquity as the online application of choice, and because of the impact it has had in terms of how many people use the Internet and how they conceptualize that use. However, the tendency to focus on the revolutionary power of the Web (often just as the proxy for the Internet) can still infect analysis and cloud judgment. Even as the Web becomes a predominant mode of interaction within the Internet schema, one has to be careful to avoid simply slipping the Web into the millennial rhetoric wishing to announce a new digital age (see below).

Two factors complicate any analysis into what the Web changes. One factor involves the

added complexities of design and use.² A person can *use* the Web in two ways – designing interfaces which produce and contextualize content (publishing), and interacting with that content (surfing). While not overlooking the surfing aspect of use, I want to focus primarily on the publishing component and how it *imagines* use in the interface. In particular, depending upon who designs it and for what purpose, websites may exhibit a great deal of variability and may interact with people, groups, and businesses differently. Another factor involves placing the Web within the spectrum of existing media. To understand the impact of the Web in this sense, then, one must be able to conceptualize how the Web interacts and impacts and is impacted by other forms of media. As such, any analysis of this application must be willing to parse differences in design and intended purpose, while still situating the study within a broader framework that conceptualizes the Web in the context of extant media. What the Web has changed cannot be understood in isolation from use and the existing media context.

The Web and Change: Empowering the User

The World Wide Web really changed the (inter)face of the Internet, but retained the revolutionary rhetoric associated with digital media. That is, people attempted to design specific websites both to facilitate broader change and to augment traditional roles – consumer,

² The concepts of design and use must be applied to the Internet carefully. Design occurs at many levels, establishing the context in which other design interventions can take place. Thus, one can witness the following types: infrastructural design – computer hardware and protocol elements that must be put into place (e.g. Abbate 1999); application design – the code which establishes how the Web will function (e.g. Gillies & Cailliau 2000); interface design – people using the conventions established for the application (e.g. hypertext mark-up language or What You See Is What You Get – WYSIWYG – programs) to create pages which can be accessed by Web browsers; and even Web experience design – users creating their own unique experience through choosing a novel array of hypertext links (e.g. Shields 2000). Each step involves more people creating under constraints established by the previous step. As such, each designer must also be understood as a user – computer network user, Internet user, Web application user, interface user. I will return later to the flexibility of design this process demonstrates, to explore the importance of not overstating the freedom and empowerment users are promised.

entrepreneur, citizen. After exploring the presumed transformation of these roles, I want to focus more finely on how the vision of activism has been altered digitally.

Of course, use matters. What the Web looks like and what characteristics it possesses depends in large part on who is using it. The Web has been fruitfully conceived as “the library, the encyclopedia and as the display window for corporations, organisations, businesses and individuals” (Green 2002, 194). The variety of these roles is not insignificant - it matters whether someone has designed the site to communicate a message, sell a product, testify to an obsession, or support a cause (or an admixture of any of them). However, businesses, groups, and individuals have often designed their websites with the promise of something meaningfully new.

Within the context of design, the rhetoric of change remains, but becomes more contextually specific. Anyone who witnessed (was a part of, was crushed by) the economic digital media boom of the 1990s in the United States can testify to the myriad ways the Web *would* change the world. In the context of business and corporations, small vendors could compete with large corporations, customers could shop from the comfort of their homes, price comparisons could be done amongst an exponentially expanding number of such vendors – in short, the e-consumer would win out in the hypercompetitive, hyperchoice of the cyber-marketplace. Hence the appearance (and in some cases rapid disappearance) of online only vendors like amazon.com, pets.com, and travelocity.com. The Web would facilitate consumption through the creation of 24-hour digital shop fronts operating as clerk, cashier, and delivery service. Bill Gates promised “business at the speed of thought” (1999). The world of the consumer would never be the same, because shopping online marked a change for the better. In

the context of governance, participation could reach an all time high, as information and governmental services could be handled online. People could access basic services like paying fines and renewing licenses through government websites like Washington, D.C.'s Department of Motor Vehicles (<http://dmv.washingtondc.gov/main.shtm>; for second party parking ticket services, see ParkingTicket.com). The Web could facilitate an increasingly informed populace because of the wide-scale and instant availability of information on candidates and issues. Groups outside the mainstream could present their message (see Sachs 1995) and recruit members who might have otherwise remained oblivious to marginalized opinions (see Bonchek 1995). Media could also be thoroughly altered by the ascension of digital applications, with the Web becoming the hub not just of Internet traffic, but of all media. Television, cinema, print, radio: all would find expression and presentation through a Web interface. Freed from the tyranny of media conglomerates, individuals could become their own mini-media mogul, marshalling all manner of news and information on their own broadcast site. Bandwidth and imagination exist as the only limitations to what the Web could offer.

True to their promise or not, the websites possess a common expectation – the Web will facilitate the empowerment of the individual user. Any person accessing the Web can, in theory, become a better consumer (increased knowledge of products and prices, increased ability to comparison shop and find the best deal, increased choice), a better entrepreneur (can establish their own digital shop front theoretically accessible by millions), a better citizen (more direct access to issues and candidates, exposure to more and different viewpoints and news sources). All of these improvements depend upon the context in which users seek to express their newfound empowerment. As such, determining what kinds of changes have occurred requires

attention to what kind of changes are trying to be effected.

The basic underlying concept regarding the power inherent in the World Wide Web is that it upsets – or even inverts (Deibert 1997, 198) – the traditional power structure and limitations in existing models of broadcast media and the de facto geographic monopoly of local business areas (more on the relationship between the Web and other media below). No longer would individuals be beholden to tight reins on audience and information content imposed by the traditional press. Nor would they be limited to local merchants and local patrons when conducting business. Individuals could be freed up in a changed, digital world. This world changing was not left to technologized fate. Rather, people began to use this digital medium with the idea of making changes themselves.³

The concept of subversion also infected the use of the Web for more explicit acts of change – activism. Activist groups of all stripes saw the Internet and the Web as tools for revolution. In fact, the very “transformative” cachet of the Internet helps to explain why many were willing to attempt to exploit the technology to further their efforts. In bypassing traditional media and reaching out past geographic boundaries, activist groups used the Internet to establish contact with ideological compatriots to help envision new possible futures.

In terms of activism, there are four main and interrelated ways⁴ digital media have been

³ I want to note here the meaningful relationship between (and attendant debate surrounding) design and use. That is, there are many studies that have captured how technologies have been appropriated by groups and have adapted them to use contrary to explicit design. One notable example is the French Minitel system discussed extensively by Feenberg (1991). I will discuss this interaction between design and use in greater detail below. For now, I will ignore the more subtle implications of the relationship for the sake of clarity.

⁴ Of course, these uses are not in anyway limited to activist pretensions. Many people and groups use digital technology to operate as bases of fandom, as sites of like-mindedness, as shrines to themselves. I focus on activist uses because of my current frame of analysis and because of their often explicit invocation of change and revolutionary rhetoric.

used in efforts to pursue change. The first involves using the Internet to communicate among geographically dispersed yet ideologically like-minded individuals, and the sense of empowerment that comes from a common sense of identity or purpose. A few of the many examples include Lou Gehrig's Disease discussion groups (see Feenberg, et al., 1996), gay and lesbian sites used by Taiwanese and Korean youths (see Berry & Martin 2000), women worldwide (see Harcourt 2000), and many other identity-based chat rooms, discussion boards, and websites. As the studies referenced above show, the Internet provides a force for political change by empowering disparate people, at the very least, to have a more collective, if digitized, voice. This capacity for enabling collective voice is not limited to talking amongst each other, but can be used to facilitate direct action aimed at existing power structures.

The second way activists use this medium for change entails coordinating action. Groups can organize protest rallies to take place in a physical space or can restrict their action to the digital sphere. The most paradigmatic example of this kind of action, of course, is the Seattle protests of 1999 against the World Trade Organization (see Murphy 2002; Vegh 2003). Organizers of the protests were able to mobilize thousands of protestors largely through the use of digital means of communication based on the Internet. This digital mobilization trend continues, with groups maintaining websites and listserves which continually work to impede and disrupt the alphabet corps of globalization, like the World Trade Organization, the World Bank, and the International Monetary Fund.⁵ Other forms of protest are both organized and carried out online, taking advantage of the value of the medium both as a site of protest and as a

⁵ Globalexchange.org maintains two websites dedicated to their campaigns against these organizations: <http://www.globalexchange.org/campaigns/wto/> and <http://www.globalexchange.org/campaigns/wbimf/>.

vital tool for business and government. One form includes petitions circulated through email, as well as petition and email-generating websites (see [Fisher 2002](#); Gurak & Logie 2003), the efficacy of which are still highly contentious. Other versions include the Million Modem March of 26 February 2003, a “virtual march on Washington” (["Actors Promote..." 2003](#)) which registered protest in message (against the possible invasion of Iraq) and in means (clogging phone, fax, and email lines of communication for members of Congress and the President of the United States). There also exist forms of digital direct action like so-called hacktivism, where protests against certain companies and governments are registered through viruses and interference with Internet traffic and computer activity (see, for example, Thomas 2000; [metac0m 2003](#); for an online manifesto of hacktivism, see [“The Hacktivism Declaration” 2001](#)). And finally, there are still other more subtle examples of protest which include parody sites of existing media and of existing political personalities, like CNN.com (see [Kumar 2001](#)) and George W. Bush (gwbush.com).⁶ Interestingly, these forms of protest do not work entirely outside the traditional domain of news media, but actually can benefit from more mainstream press coverage.

However, a third method of utilizing the Internet and the Web to attempt to effect change involves the technology’s ability to subvert the established media, or at least demand its attention. Because of the relatively cheap means of publishing (the cost is basically the same whether a website is copied⁷ one time or thousands) and the potential audience being worldwide,

⁶ In fact, the trend of parodying campaign websites has become so pervasive that many candidates register as many variations of the official domain name as possible in attempts to negate this form of activity (see [“World Wide W. Web” 1999](#), for information on George W. Bush’s efforts).

⁷ When a website is requested through a browser, the originating server essentially sends a digital copy of the site to

groups can use the Internet to make their plight heard. Here the paradigmatic example is the Zapatista Movement, which was able to use digital technology to publicize their case and establish a network of supporters (see Garrido and Halavais 2003). In digitally relaying what was happening to this indigenous people's group, the Zapatistas were able to establish a worldwide following. This upswell of support generated by their online presence led to more mainstream press coverage of the events. Their ongoing struggle is catalogued at <http://www.ezln.org/> (in Spanish) and at <http://flag.blackened.net/revolt/zapatista.html> (in English). Another general use of the Internet to subvert mainstream media involves sites like <http://www.indymedia.org/> and related independent media centers (see Hyde 2002; Kidd 2003). These Web-based entities pool together stories that usually are not given play on more traditional media channels.

Finally, the fourth means of using digital media involves its ability to be fashioned as a recruitment tool. Related to issues of popularization discussed above, users of the Web can emphasize encouraging people to adopt a certain worldview, join a certain political group, engage in certain actions. The Internet can be used both to communicate with existing compatriots and also to create new ones. To simply borrow from examples used previously, the Zapatista Movement publicizes their case, and in so doing hopes to convince people of the importance of supporting indigenous groups against national governments. Indymedia.org hopes to sway people toward the typically progressive political bent of their stories and subject matter, or at least to call attention to the importance of independent media. A website can be a site of

the requesting browser, which is then organized in the browser window to be browsed.

recruitment as well as a place of news casting and a means of organizing action. Importantly, all four of these uses can work in concert.

For the purposes of the current analysis, I will focus specifically on how environmental anti-toxics activist groups design their Web interfaces as a tool of recruitment for their activist worldview and as a tool of action, enabling people to become more informed and to use that information to act in the world. In taking as my starting point environmental anti-toxics websites, I can examine how they hope to alter the world and evaluate the rhetoric of change that they employ. Environmental anti-toxics activism seek to make people at least more aware of the chemicals that are potentially harmful. In addition, as we will see in Part II, this version of web-based intervention does appear to inherit an historical trajectory that implies the need for greater information and access to information in the fight against toxics. So, the big question will be how meaningful this rhetoric of change becomes in practice and design.

The Web and Change: Informing the User

Before getting to that evaluation, however, I still must deal with the overall novelty of the World Wide Web in the broader context of existing media. It is important to locate where there may be substantial differences between new and old media. In making a careful comparison between these mediated forms, both technically and aesthetically, one can explore the validity of the Web's claim to "new." The novelty of the Web interface, for all its value, can be questioned in the context of the change the Web brings. What exactly has changed? Is the Web simply a supplement to existing media, does it supplant that media, or is there some more complicated relationship at work? I would like to address this issue in some detail here, in an effort to place

the Web technology amongst existing media outlets to deal more fully with the idea of change, novelty, and revolution. As a “modality of communication” (Thompson 1990), how does the Web differ or borrow from existing modalities? To help in this endeavor, I will be drawing extensively from concepts put forth in Bolter and Grusin (1999), particularly remediation, immediacy, and hypermediacy. These authors deal more broadly with digital media and its claim to novelty, but I will focus more particularly on the World Wide Web.

Bolter and Grusin challenge the notion that the World Wide Web requires and delivers a qualitatively new media aesthetic. Instead, they argue that all forms of media – phone, television, print journalism (newspapers and magazines), movies, and the Web – relate to each other in a more dynamic, reciprocal, almost dialectic manner of *remediation*. Most simply, remediation is “the representation of one medium in another” (ibid., 45). To wit, remediation occurs when a medium of communication imports another medium in an effort to replace or refashion a message. For example, books can remediate speech (in presenting written dialogue) and paintings (through the use of plates or textual description) and even television (through the presentation of screen captures or scripts). Dissertations can remediate websites. Remediation can occur in term of simple reuse, where no claim of improvement is made – as when a text is digitized. On the other hand, remediation can tout improvement on older forms through qualities like increased speed of delivery and updatability, reproducibility and sharing, and even alteration of the original text.

The process of remediation occurs most evidently in emergent communication technologies, in part because of the at least implicit competition between the forms – the new seeks to prove its superiority to the old (else why have the new?). This process, for Bolter and

Grusin, is structured through two goals – immediacy and hypermediacy. Immediacy involves the drive to remove all forms of mediation – to put the viewer “there” by rendering the medium of (re)presentation transparent. No sense of remove or distance will interfere with the perception of the event (just as a glasses-wearer seeks to be unaware of the glasses – see Feenberg 2002). The logic of immediacy looks to produce transparent mediation.

Hypermediacy, on the other hand, involves an opposite trend, where multiple forms of mediation are juxtaposed in a single setting. For example, a newscast may simultaneously present text, video, and sound to give the viewer the impression that she is *immersed* in the story. By having many different data stimuli, media can project a sense of being complete. This hypermediacy creates a kind of immersion, presenting the most possible detail to complete immersion. This kind of hypermediacy – presenting text, pictures, moving images, voice recordings – often works in tension with the goal of immediacy, at least in the sense of pitting all manner of mediations on a single page. On the other hand, the more modes of information are provided, the greater the possible sense of immersion in the story.

In interpreting the Web in this way, we can begin to see how these remediations occur. One prime example would be a news source – print newspapers as an example. For sites like <http://www.nytimes.com/>, the Web-based interface remediates the newspaper by offering the same information (even allowing the user to download a print-formatted version). But the site offers stronger claims to both immediacy and hypermediacy by being constantly updatable (even whether the user likes it or not⁸), and adding pictures, audio, and video files to compliment

⁸ Websites like www.nytimes.com have a string of code (e.g., “<meta http-equiv="Refresh" content="900">”) which

stories (or even *be* stories). It can also simply reposition stories in the interface to call attention to different news items. This form of remediation shows that the website is not fundamentally disconnected, but relates to other, more established mediated forms: “What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media” (Bolter & Grusin 1999, 15).

Thus, following the logic of remediation, the Web seeks to extend or highlight certain qualities of news delivery already extant. Information can be had instantaneously, not limited to certain times of day (once or twice for newspapers, half a dozen for local television news, even in thirty minute chunks for CNN Headline News). There are fewer constraints in time (news segments) and space (newspaper pages). Information is immediate – on demand, delivered at the desires of the user, always available. Thus the Web seeks to become transparent by amplifying certain features of media and reducing others (see Sobchack 1996). For Bolter and Grusin, this push for immediacy highlights the basic desire of media to disappear as a mediating factor. The goal is to provide authentic experience, sans editorial content, sans bias, sans anything that interferes with the perceived direct experience of the reader.

By placing the Web within the context of existing media, one can identify important elements of this digital interface with regard to immediacy/hypermediacy. First, the Web has the ability to compress space and time (see Castells 2001) which does increase the sense of immediacy. People can access information from disparate sources almost instantaneously,

causes your browser window to resend for the page after a selected time interval, so that the window will reflect updates and, in many cases, new advertisers (see [Lam 2001](#)).

calling it to the singular space of the computer screen. This immediacy does not eliminate bias, however. Despite the tendency to disappear, interfaces still filter the information so presented. Second, the Web also works to achieve a sense of completeness. It offers a bounty of instantaneous information, by increasing the number of possible voices broadcasting an event or providing information. The more perspectives that can be accessed, the more a user may feel like she got the *whole* story. Projects like indymedia.org help create the presumption that all biases are accounted for.

This kind of immediacy/hypermediacy that the Web provides – of the potential instant availability of disparate voices – can lull the user into a sense of complacency about the truth of the mediated messages. This complacency increases when one factors in the ability to reduce ideological dissonance. That is, users can produce their own mediation by selecting the views to which they want to be exposed. Thus, as Jones describes it, “[t]he Web doesn’t impart importance to the news; it makes news out of what the reader looks for” (2000, 177). What the Web promotes is a sense of experiencing events first-hand through exposure to different media (hypermediacy) and to different or accepted perspectives (one can stick to or find worldviews congruent with one’s own). Negroponte (1995) promotes this facet of Internet experience, which empowers the user to be able to filter their daily media experience to include only those particular bits of data (opinions, news, products) that suit her.⁹

By understanding the Web in this way, we can begin to place the technology within a broader constellation of media technologies. The Web helps to enframe the world, becoming the

⁹ For a critical view of this phenomenon, see Sunstein ([2000](#)).

means to more immediate, more “complete,” and more palatable information. For Bolter and Grusin, this drive is not unusual in the context of media – all forms of media have sought to provide this service and adapt to the challenges from newer forms of mediation. And it is an open question regarding the extent to which the Web actually allows for novel forms of mediated experience and expression, or the extent to which it simply replicates existing power relations though perhaps masking them better (for a view on the former, see Poster 2001; for a view on the latter, see McChesney 2000). What is important here is the impact the Web seeks to make/to change with regard to mediated experience. The *drive* is not novel, but one must be aware of that drive in efforts to track the subtle influences the Web may have on those enabled to use it.

Analyzing the Web requires one to confront the rhetoric of change that accompanies it – not only in getting a handle on how the Web may influence society, but also to understand the extent to which the *concepts* of change have influenced *why* and *how* the Web is utilized. In the sections above, I wanted to show how the rhetoric of change has infused the Web in terms of empowerment and information, as well as provide some perspective on those claims. In subsequent chapters, particularly Chapter Six, I will explore the means by which particular websites can partially enframe the experience and influence the identity of the potential environmental anti-toxics activist. My goal will be to evaluate further the extent to which the Web provides newness and difference, and the hidden choices masked by that rhetoric of change. In the next chapter, however, I turn to some theoretical foundations involving the Web and technology in general to help further ground my analysis of Web-based environmental anti-toxics activism.

Chapter Three

The Web as an Object of Study: Attending to Digital and Non-digital Users, Designers, & Networks

Art is always the replacing of indifference by attention.

Guy Davenport¹

Understanding how the Web becomes infiltrated with the rhetoric of change is helpful in terms of situating that mediating technology among others; turning to analyze a specific instantiation of that medium, however, presents other problems. Having chosen an application (the World Wide Web), a use (activism), and a case study (environmental anti-toxics activism), I appear to be set up to launch my study of digital technology and its impacts. Simple. Well, maybe not quite so simple. There are two interrelated and very substantial questions that might have some influence on exactly how I conduct this study: *What exactly* is it that I am studying? *How* might I understand the impact of this thing on those who use it? These are questions which involve the development, or at least description, of a theoretical framework.

On the surface, the question of what I am studying appears already answered – environmental anti-toxics activist websites: the Toxic Release Inventory website (<http://www.epa.gov/tri/>); the Right to Know Network website (<http://www.rtknet.org/>); and the Chemical Scorecard website (<http://www.scorecard.org/>). The question of what, however, involves more than a uniform resource locator (url) or a domain name. Rather, one must be able

¹ Quoted in Mason (2004, 90).

to conceptualize websites as objects of study (see Sterne 1999). That is, how precisely might one understand a website as *something* to be analyzed? What characteristics are vital (or at least relevant or useful) for parsing the development and impact of a website? What metaphors or tropes might be called upon to shed light on this medium? In short, I need to make explicit use of a theoretical framework within which to situate websites as something to be studied. I want to make use of particular media comparisons in an effort to highlight the various relationships and connections websites emphasize or diminish. To this end, I will draw on the discussion of remediation above and make some explicit metaphoric juxtapositions in order to power an analysis of websites themselves. I will argue that these websites can be meaningfully conceptualized as a point of convergence between disparate discourses and roles, including environmental anti-toxics activism, mediating technologies, government structures, and user and community identity. In so doing, I will examine the effectiveness of the concepts of text and screen as useful analogies with regard to the composition and influence of websites.

The how question deals with issues of use and impacts on users. That is, as one starts to understand the website as an object to be studied, as a point of convergence between disparate discourses, one needs to anchor that understanding to a theoretical conception of the relationship between technology and people. How does the Web organize the interaction of all its many variables? Does the technology bring with it certain constraints that confine use to limited expressions, or do actors bend the technology to their will? To get clear on this question, I must grapple with two distinct conceptions of the term “use” and then explore how they themselves converge on the bounded reality of the website. In the context of the present analysis, environmental anti-toxics activists use digital technology to create sites aimed at making a

certain version of the world visible to many others. They develop and use Web-based technology to design the sites that people can then visit. Use₁. In addition, people who visit these sites are expected to engage in their own use – exploring the site to gain knowledge and act in the world. Use₂. So, in attempting to conceptualize or theorize the interplay between those that design technology, those that use technology, and the technology itself, one must remain aware of the levels of use the Web implies.

One needs a language to understand the extent to which the object (Web as text/screen) and the various users interact. To this end, I engage work developed in the philosophy of technology and science and technology studies that explores the importance of both technological design and use in the context of creating technological systems and techniques. I briefly identify two poles of understanding the technology-human interface – determinism and constructivism. Independently, neither adequately addresses the impact technologies have on societies and that human activity has on technologies. Technological intention (design) and technological application (use) are both vital in constructing a stable system. Thus, I examine in more detail philosophical frameworks that emphasize both the political consequences of technological design and the contingency manifested through use. In particular, I use the work of Andrew Feenberg, whose theory on instrumentalization comes at technology from both directions. Finally, I extend out from Feenberg's theory in two directions – history and identity. The first question that drives this extension involves the extent to which technologies stabilize over time – as part of an existing system and/or as foundations for newer technologies – and the resulting impact on flexible use. The second question delves deeper into the interplay between use and user. What ways exist to understand not just how users change technologies through

their use, but how users themselves change in the process? In the end of this section, I hope to have produced a sophisticated framework for the study at hand, in order to make evident not only the study's trajectory and boundaries, but also its value.

The Website as an Object of Study

One of the central problems regarding an analysis of the Web and websites involves precisely defining the object of study. That is, what are the characteristics/variables that are necessary and meaningful in studying a particular social object? What relationships does the Web challenge, augment, or ignore? The question of object, while relevant for all manner of social inquiry, is especially acute for Web studies (see Sterne 1999). Knowing that the Web exists does little to define the pertinent qualities that need to be examined when attempting an analysis of this technology. Many theorists have attempted to parse the general identity of the Web and websites. For Swiss and Herman, the Web itself is “a complex nexus of economic, political, social, and aesthetic forces” and thus should be studied as a “unique ‘cultural technology’” (2000, 1). This cultural technology provides a medium for the networked exchange of meaning amongst social actors. Here, meaning could involve explorations and alterations in concepts of time, space, self, community, and knowledge (see, for example, Weinberger 2002). An excuse to reexamine politics and society and economy. But these grander glosses of the Web as a whole does little for any study that seeks to engage in specific analysis. After all, the toaster, the dishwasher, and the bicycle are cultural technologies in their own way (see Cowan 1983; Pinch & Bijker 1987). Importantly, we must be able to define the unique elements of the Web proper in order to pursue this technology as an object of study.

If the Web is technically anything, it is a networked of interlinked bits of digitally coded information (aided, of course, by the physical infrastructure of the Internet). One can assume, as Swiss and Herman and many others do, that the Web is an entity unto itself. As a source of metaphoric power, this technology is more than the sum of its parts. It may be more fruitful, however, to focus on the specific manifestations/instantiations of the Web rather than taking on the entire technological space. For the sake of understanding exactly how the Web works and considering the space where people most directly interact with it, websites themselves may constitute a more complete subject. For studies like this one, the website provides a place where the Web is made manifest for users and developers alike, allowing us to begin to assess specific trajectories of use shaped by the specific individual or organizational histories and intentions fed into this new technology (see Silver 2003 for discussion on the importance of this level of focus).

Even when narrowing down one's focus to the website, however, the analyst is still left with challenges in comprehension and construction. Any random surf through the World Wide Web will produce innumerable examples of sites differing both in terms of design and purpose. One will find simple text-heavy pages with no graphics and few links, a page which essentially is a collection of indexed and organized links to other content, up to highly intricate pages containing any or all of the following: frames, java script, images, flash movies, links, or other forms of interactivity. Additionally, one may have any combination of the above forms and combinations dedicated to various purposes, from depictions of self to shrines of others to the distribution of information to the hawking of wares. A virtual panoply of possibilities exists – but in describing these possibilities we depict elements that represent what websites contain more than what they are. For the latter aspect, I still need categories like those developed by

Wakeford, who identified websites as “simultaneously computer code, cultural representations, material objects for consumption and the outcome of skilled labor” (2000, 31). With her list, I think that Wakeford provides a nice overview on websites – less for the sufficiency of that list than for the emphasis on simultaneity. The concept of simultaneity highlights the underlying multivalent nature of the website.

At the same time, one must reconcile this multivalency with the singular, apparently static face of the website. That is, when a user visits a Web interface, they confront a *webpage* with or through which to negotiate their experience. For all the things that websites are, they are still singular interfaces where all of the various elements are made manifest – some more explicitly than others. And here a main element of the difficulty in conceptualizing the website as an object of study is revealed. That is, at the risk of sounding too Buddhist, websites are both one thing and many. To anchor this discussion to more contemporary theory, I can borrow a concept favored by de Certeau (1984), the palimpsest, which conveys the sense of a surface that just manages to cover all the teeming possibilities beneath it.

Further still, websites involve more than just content and context; they also include the very connectivity, the node in a network positioning that makes a website a part of something bigger than itself – this sense of “between-ness” (Shields 2000, 151) which premises passage from the current webpage to others. Thus, even in moving toward a study of specific websites, we by no means leave the Web itself behind. The Web re-enters each website as an enabling rhetoric, influencing what each website is designed and expected to be (see discussion above on empowering the user). And beyond the overt Web network connectivity, there are other relationships that influence what the website becomes (the emergent digital domain, the shifting

cultural context). As such, the task ahead involves finding metaphors that help shed light on the complexities of website and provide a means to understand its relationship with the context that feeds it and the users who interact with it. In particular, one can examine the extent to which metaphorical comparisons with other mediating technologies might prove fruitful, especially through an examination of similarities and differences.² I will deal with the implications of these theoretical insights for the specific websites and environmental anti-toxics activism in subsequent chapters. For now I just want to enumerate and develop those qualities of websites generally which may aid in the present analysis.

Texts

One possible means of negotiating all of these conjunctions and convergences is through the intervention of the text. For our purposes here, “text” encompasses more than just the written word, but expands to include the “many different kinds of visual and linguistic elements” involved in the process of reading (Kirschenbaum 2000, 127). Thus, even traditional texts so labeled, like newspapers, books, and magazines, contain all manner of cues – layout, design, graphics, words – which help provide meaning to the overall reading experience. The concept of process is equally important, as it is even possible to conceive of text as not a thing, but rather a “social space” (Barthes 1979, 81), where meanings are created and contested, and the act of the reader is privileged. For the web-as-text metaphor, then, two important qualities of the website

² One thing I want to avoid at the outset is any notion that the “originating” technologies which produce the metaphors – books (texts), television (screens) – are themselves final and unchanging. Rather, as discussed in the section on remediation above, media react to each other and thus are subject to change. As such, metaphors are evoked not to see how websites, say, compare to Codex books, but rather to examine how both reveal and challenge our notions of how a text anchors or facilitates the exchange of information.

stick out: hypertextuality and intertextuality. These qualities relate to the process of reading and writing (the relationship between the user, the site, and the designer), the primary means through which that relationship is established (hypertext), and the relationship of that text to other texts (intertextuality). Each quality does not exist in isolation, but rather remains influenced by the others.

Viewing the website as text allows one to analyze the elements characteristically associated with texts to explore the extent to which those elements are altered or challenged by the digital medium. The two primary roles assigned to textual meaning are those of the author and the reader – or, in the parlance of websites, content producers and users. How might one understand the relationships of authors and readers to the text in this digital context and how does it differ from other kinds of text?

The metaphoric juxtaposition of Web and text has been quite common, in congruence with the idea of webpages (see, in particular, Mitra & Cohen 1999; Kaplan 2000; Shields 2000; Kirschenbaum 2000). In particular, some theoretical analyses of the Web have engaged with a long-standing debate in literary theory about the control afforded the various roles in the process of assigning meaning to a text – the reader and the writer. The Web becomes the technological instantiation of the theoretical promise of the demise of authorial control. To understand this debate, and the Web's place in it, we need to briefly address the basic positions involving the importance of the author (and her intent) with regard to interpreting texts. Rather than delving too deeply, however, I will point to questions that have been raised about the respective relationships between the author, the reader, and the text, especially those that appear to have the most pertinence to the digital domain of the website. The discussion below is distilled and

simplified, and meant as introductory.

The casually understood relationship between writer and reader is one of direct transmission – writer creates meaning, encoded in a text, and the reader seeks to receive that meaning through engagement with the text. In this model, the writer determines meaning and the reader is charged with deciphering it. The simplicity of the model notwithstanding, the reader’s task here is to decipher the knowledge inscribed by the writer in an effort to reach some ultimate interpretation. The perceived hold by the author over textual meaning is not, however, without its critics. For thinkers like Barthes, the reader occupies the space where meaning is created. That is, the reader takes the words and filters them through her own context, expectations, experiences, to generate what those words actually come to mean. The author here has no real control over received meaning; instead, she simply helps set up the conditions for the construction of meaning. The reader, through the intervention of reading, produces some coherence to the text. As Barthes puts it, “a text’s unity lies not in its origin but in its destination” (1977, 148). The technology of the book retained some structural control through certain conventions, like linear presentation and narrative progression, but reader interpretation could still vary wildly from the author’s intent. At least in theory. Debate still rages over preference – whether readers should be encouraged to bring their experiences to interpretation or whether authors’ intent should comprise a standard through which, or at least a context by which, interpretation is judged (see for example Keefer 1995). In any case, such an understanding of the role of readers in the creation of meaning, and the subsequent unshackling of words to authorial control led many to herald the death of the author (see Potter 2000).

Within this context of challenge to authorial domain, the Web has been championed as

furthering the author's demise (see for example Allen 2000; Poster 1995; 2001). Elements of the Web appear to increase this leveling or inversion of the relationship between reader and writer. It's not just the typically anonymity associated with websites that is at issue³ – it is the necessary, technical qualities of Web construction and browsing that alter what the reader/user controls. The primary culprit in this alteration is hypertext.⁴ But what exactly is hypertext, and why is it so influential?

Gauntlett and Silver define hypertext this way: “Text [and images]⁵ which includes links or shortcuts to other documents, allowing the reader to jump easily from one text to related texts, and consequently from one idea to another, in a multi-linear, non-sequential manner” (2000, 222). Considered by many to be the foundational element of the World Wide Web (see Poster 2001; Shields 2000; Kirschenbaum 2000), hypertext enables the Web to possess its unique, networked qualities that may have the greatest impact on the reception of text. Because they link to other content, hypertext links make explicit the connections one text has to another, and at the same time encourage users to *pursue* those connections in efforts to fill out the present experience. Hypertext acts as “semiotic pointers to a fuller presentation that they announce, indicate, or prefigure” (Shields 2000, 146). In their functionality as links to other information

³ Potter (2000) explores the extent to which, like magazines in the mid 19th century, the World Wide Web strains accepted ideas of authorship and copyright. Both formats tended to (re)produce work without any named author, hindering the usual commercial and proprietary gains expected by creators of that work.

⁴ Hypertext predates Web technology (see, for example, Kirschenbaum 2000) and can have many specific uses, particularly in literature. However, for the sake of clarity, I will limit my discussion to hypertext employed in Web-based settings.

⁵ Though some people, including Gauntlett and Silver, make a distinction between hypertext and hyperlinks, the latter including graphic images, I will employ no such distinction, allowing hypertext to stand for all forms of website links.

content (or even recursively to themselves⁶), hypertext creates a Web text that emphasizes reading as nonlinear and intertextual (see Mitra & Cohen 1999).

The nonlinearity of websites comes from the construction of a viewing *interrupted* by hypertext links. As Shields notes, “links always disrupt the static quality of a webpage” (2000, 146). At any point on the screen, a user is confronted with links out of the present space – moving up or down the current page or out to other sites. Hypertext not only enables divergent reading strategies, but is suggestive of that “fuller presentation” because of the extra content implied by the link. For example, many news stories or e-zine articles do not just reference other stories, but link to the originating document through a link embedded in the current text. Linearity is broken up not just in terms of flow, but also in the very real sense that Web-based readings may not have an identifiable end (Mitra & Cohen 1999). Whereas a straight narrative has a termination point or at least a last page, Web surfing could be theoretically endless.

In this technologized context, reading becomes something different (Hayles 1999, 47-8) – whether better or worse is an open question (Kaplan 2000). On the one hand, readers exert much more explicit control over the text they read. Because electronic data is called forth and copied into the browser, not only do users see the text, they essentially possess a copy. This copy can be saved and then readily manipulated by the user. In fact, the easiest way to construct a website has long been to scan the Web for interesting ideas and copy the source code into one’s own website. Thus, people can subject texts to redistribution, alteration, or (as many classroom instructors are well aware) plagiarism. With print books, such manipulation was possible, but

⁶ Shields (2000) discusses the uses of links by the defunct site suck.com, which would ironically link to itself through specific highlighted words, like sellout.

not as easy – copies were harder to make and likely possessed many differences (in form if not content) from the original. With digital media, the copy may be indistinguishable from the so-called original. On the other hand, users also provide a direction to the narrative that is created by surfing the Web and creating personal meaning and relevance through choice. Reading becomes browsing, characterized by movement through links. The reader can choose for herself which links are worth following and for how long. While the novelty of this form of reading may legitimately be questioned, such hypertextualized interaction is fundamental to the Web (Shields 2000). Designers can presume to have an agenda – a preferred reading of a website – but such presumptions can be betrayed through the standard introduction of links, the very things that have come to define websites as such.

It would be presumptuous to assume that links in and of themselves betray content producers' designs. After all, those producers install the links and thus have at least implied a connection between the content. At the same time, it would be presumptuous to assume that designers reestablish their control over meaning through the selection and placement of links. However, one does need to examine the impact of this connectivity on the meaning of the originating website itself. This phenomenon – the fact that links establish a relation between texts – points to the *intertextual* nature of websites. Intertextuality presumes that no text exists in isolation; most broadly, the concept “foregrounds notions of relationality, interconnectedness and interdependence in modern cultural life” (Allen 2000, 5). This foregrounding is important, because texts of all kinds are inherently intertextual (see Barthes 1979, 77). For websites, intertextuality derives through hypertext's role in calling overt attention to other texts/pages that are in some way connected to the originating site. The very linked nature of the site contributes

to meanings that can be gleaned from it. For example, associations are made between sites *because* they link to each other (see Rogers & Zellman 2002 for an exploration on the value of link maps). These networks comprise a necessary component of the site itself.

Importantly, intertextuality is not something completely novel to the Web. Mitra and Cohen rightly point out that all texts have connections to other texts/cultural institutions (1999, 184).

Traditional links tend to be more hidden. Web text, on the other hand, is overt in its intertextuality by virtue of the conspicuousness of hypertext links. A person visiting a site cannot ignore the embeddedness of the current page within a larger network or digital context. In fact, the very expectation of connectivity, of movement, becomes integral to the Web experience (Shields 2000). Websites become, by definition, intertextual.

In viewing the textual elements of websites, then, we can begin to see how this digital medium has accentuated some elements of reading/writing and diminished others. The reader/user must exert more input into the reading process. On the surface, at least, they become producers themselves, not just consumers, of text through their browsing – producing their own stories through the choices and interpretations they make. The Web facilitates this change through their distinct technological configurations and utilities like hypertext. The network of the Web pulls people into a new set of relations with the text/webpage. Thus, the Web as text points toward a dynamic, evolving relationship between the user/reader and producer/author. How these relationships play out within this networked space will be important to analyze through specific content.

Some of the problems with conceptualizing the Web as text involve a tendency to reduce the

understanding of Web connections to the digital realm. Thus, before moving out of my discussion of text and websites, I need to address two related issues in this theoretical context. In particular, the concepts of both the author and intertextuality deserve greater scrutiny. Such focus is necessary to ensure that they are not too highly limited, taking into account the tendency of Web discourses to render all experience digital.

First, the role of the author. Web technology can disrupt the information flow pattern from writer to reader in the many ways discussed above. On the other hand, the Web may not have eradicated the wider cultural importance of *authorship*, especially as a derivative of *authority*. There still exists an important social distinction between information and *credible* information. In this sense, “on the Web” does not carry the same resonance of truth as, say, “in the newspaper” or “on the news” or especially “according to Dr. Hawking, the famous scientist.”⁷ The Web may privilege the power of readers in the process of creating meaning from text, but does it really undermine the broader cultural power of authorship?

In his work “What is an Author?,” Foucault (1979), tackled the issue of authorship by problematized the basic answer to the question “who is speaking?” He did so by examining the political and social import of the question itself, rather than attending to the particular content of the answer. That is, he appears less interested in the actual personification of the author than in the social power of the idea of “authorship” itself. For Foucault, the author concept itself serves an important social function, namely the establishment of (the idea of) authority and expertise. The generic figure of the author has cultural resonance because it connotes the power to speak

⁷ In fact, a savvy Web surfer would do well to develop a healthy skepticism for the veracity of information found online. As such, books have been developed to help people out with this problem. For a guide on finding and evaluating “credible” Web sources, see Alexander & Tate (1999).

for others, and subsequently renders certain groups without the right to speak for themselves.

Most conspicuously, the guise of the author can be seen to function in the domain of science and its claim to knowledge (see for example Latour 1987). Individuals can be told what is right or at least normal through, for example, scientific declaration.

By looking at Foucault in this context, I can note how the technological intervention of the Internet does not in and of itself confound the basic function of authorship. “Who speaks” is not simply a question of copyright attribution (see Potter 2000), despite all of the press about the challenges to traditional assumptions built into ownership of digitally encoded data. The Napster debate highlights one element of that challenge. Instead, one must still be able to appeal to widely known media outlets to have their information deemed credible. Thus, as I shall explore in the more context-specific analysis of environmental anti-toxics activism information dispersal, much care is taken to associate that information with scientific expertise.

Foucault does envision a possible future, where the negative and inegalitarian consequences of “authorship” are overcome - what Poster calls a “postauthor utopia” (2001, 69). In this imagined space, texts/discourses are opened up to ethical questions regarding their impact on people and possibilities and not simply deferred to as authorial. Gone is the “tyranny of truth,” the official certification given locutions generated from authority, regardless of social impact. Ultimately, however, such possibilities remained a future potential, not a destiny.

More recently, Poster (2001) has extended Foucault’s concepts into the extant digital domain of the Internet and the World Wide Web, with the intention of demonstrating that present technology provides a means to actuate this death of the literary author into a real social consequence. To establish how the new digital medium of writing paves the way for a new, less

singular conception of authorship, he differentiates between analogue authors and digital authors. Poster makes the distinction this way: “Analogue authors configure a strong bond between the text and the self of the writer, a narcissistic, mirroring relation as the text is fundamentally an expression of the author – his or her style, mind, or feelings. The digital author connotes a greater alterity between the text and the author, due in part to the digital nature of writing” (69). Perhaps overplaying the metaphor, Poster implies that traditional forms of writing (pen and paper, printed book, retained copyright) did a better job of maintaining the analogy between what an author wrote and the author herself. In a digital context, however, there is a switch in how texts are composed and copied/distributed, which creates a necessary disjunct between an author and her text. The digital screens, binary codes, endless replication, and hyper-connectivity of modern, computer-aided composition makes it difficult to maintain a sense of authorial presence. Importantly, Poster’s position on authorship relies heavily on his thesis that new digital technology problematizes traditional differentiations between subject/object and humans/machines, which in turn undermines the idea of the autonomous subject (see specifically 1995, Ch. 3). Thus, people entering into a digital matrix may be unable to legitimately distinguish between themselves and their products, from themselves and the tools that enable expression, from themselves and the others that connect to them. Digital media make these distinctions untenable. As such, the Web creates a medium which may also disempower the *author function*, and not just the author.

In offering a more sophisticated take on the cultural position of the author within a digital context, Poster suggests a glimmer of hope that this technology will provide for a disruption of the author function. He explicitly disavows any interpretation of his position as one of

determinism – that the Internet will necessarily produce the kind of changes he would like to see (2001, 76-7). However, Poster sees reason for optimism in the transformative power of the digital medium.

I am not so optimistic. Poster’s optimism appears premised on an implied restriction of authorship to more traditional notions of texts. That is, his vision of the digital author seems most comfortable in the realm of literature, and not science (particularly as a political entity). As mentioned above, the presence of information on the Web does not carry with it the air of authority, while certain institutional associations, especially with regard to traditional outlets (news agencies) and professions (science) still impact credibility in assertions of fact. The assumption that digital media and hypertext can disrupt the power of authors relies on readings that are not meant to have their value anchored to the “real world” in the same way that scientific prescriptions are presumed to. In fact, messages may retain their validity to the extent that they remain unchanged from the originating authority (see Latour 1987).

The issues here involve the idea of intertextuality discussed above. That is, as Mitra and Cohen have pointed out, websites are overtly intertextual – connectivity is a founding feature of the Web. However, there are still elements of intertextuality that remain hidden from view and that cannot be represented by a simple hyperlink. If someone makes a claim on a personal website, and links to an originating story at nytimes.com, the claim made is bolstered by its ties to the nytimes.com website in large part because of nytimes.com’s connectivity to a non-digital entity – the *New York Times* daily. The same is true for scientific data – the political viability of science relies on its network of associations and connections to the (non-digital) world for whom it presumes to speak. While true that websites do not hide their basic intertextual *nature*,

it would be a mistake to assume that all connections are easily visible. As Feenberg (1995a) notes, information that is retrievable online does not require the immediate presence of another person – the data is in theory permanent and available for access on the command of the individual user. But a lack of immediate presence does not equate to no presence. The information as coded and made available carries with it normative decisions about proper knowledge and appropriate modes of access, decisions made by those who created the interface and produced the information. We must recognize the overt digital connections, while still seeking out those connections to entities and expectations which cannot be or have not been digitized. Those non-digital connections influence what a website is and thus how much the author function can be undermined, especially when the author function does hold sway outside the digital context.

For these reasons, the basic empowerment afforded the user/reader in a digital text may be limited by where the user seeks to employ that power. The creation of meaning through nonlinear choice and connectivity may permit the reader to create personal meaning through their engagement with Web-based texts, but personal meaning is not the same as political meaning. In order to operate in a political context, where decisions are made, some appeal to the author function (expertise) is still currently required. Thus, exploring the Web-as-text foregrounds relationships between the producer and the user regarding control over interpretation. The mechanisms that guide these interactions are hypertext links, which connect sites to each other and highlight the active role that users have in navigating the Web. However, while the Web-as-text conjunction emphasizes the user, we must recognize the perhaps more subtle ways the author retains influence. In part, the producer creates the architecture which can

be explored. Also, the author *function* retains social importance that has not been digitally whisked away.

Screens

Another metaphor that can be invoked when considering the website as an object of study involves the screen. The two metaphors (texts and screens) share points of overlap, but the emphasis of different roles and positions are worth pursuing. Whereas the text metaphor highlights the contestation involved between the creative intent of the author and the interpretative activities of the reader (emphasizing the process of reading words and images), the screen metaphor highlights the space where the user interacts with the website and emphasizes the process of viewing a network. To pursue this connection, I want to adapt the concept of screen as developed by Knorr-Cetina & Bruegger (2002). While not specifically targeting the World Wide Web, but rather computer-mediated financial markets, they produce a concept which has the benefit of emphasizing a wide network of associations explicitly not limited to the digital sphere. In introducing the concept of the screen I am not attempting to displace the value of the textual metaphor, but rather I am interested in exploring what relationships are revealed through this new manner of seeing websites.

Before turning to the exact contours of the screen metaphor, I want first to examine the components that make such a screen present to the user. To wit, the screen serves as a representation of the Web as a network. Network imagery (especially as worked out by Latour 1987 and Law & Hassard 1999), explores how various nodes are connected to each other, often focusing on the strengths of connections and the relative prominence of certain nodes. The

power of the network concept lays in its attention to how nodes are organized in relation to other nodes. Actors or items within a network can achieve more or less significance depending upon how central they are to its functioning. Rather than delve deeply into actor-network theory, however, I want to explore new investigations in how people interact with networks. Notably, Knorr-Cetina & Bruegger have pointed out that, while powerful, network imagery emphasizes the connections between nodes and “leaves out the details of how the connections are implemented” (2002, 392). In particular, how does the network become visible to those who would use it? For the two theorists, more attention needs to be paid to the particular means by which the various facets of the network are represented to those who might interact with it. In their analysis of financial markets, Knorr-Cetina & Bruegger note that these networks “provide not only linkages, but project local interest, events, and activities onto a common symbolic space, that of the computer screen” (ibid., 392). This projection enables people to grasp hold of the network as some *thing* – the screen. This space works by making the vast elements of the network comprehensible: “the screen ‘appresents’ the[network]: [that is] it brings the territorially distant and invisible [components of the network] ‘near’ to participants, rendering it interactionally or response-present” (ibid., 392). This “appresentation” stands in for the network as a whole. In this sense, screens play an important role in being the place where users can interact with the network.

By calling attention to particular symbolic spaces within a network, Knorr-Cetina and Bruegger reveal the ways in which these spaces bring together aspects of that network and make them available ‘on screen.’ The Web shares these symbolic characteristics, not least because it exists on a computer screen. More importantly, the Web is the virtual *space* where the Internet

becomes visible and ‘interact-able’ for most people (on this point, see [Berners-Lee 1998](#); Salter, 2003). The Web as screen has its own integrity as something – “a wired, programmed, and content-filled, textually elaborated *surface* that fascinates through its ability to frame and present a world” (Knorr-Cetina & Bruegger 2002, 397, italics in original). In focusing on the surface, the actual limited space where the network is made visible, Knorr-Cetina & Bruegger demonstrate the importance of the *interface* for conditioning online experience (see also Ihde 2002, 86-7).⁸ The interface presents a world through which people interact.

What a user sees on the screen depends upon the sites that she visits. As mentioned above, specific sites are highly variable. These interfaces organize information differently and enable various types of interaction. When on screen (or in a browser window), websites stand in for the entire Internet, but also have more particular networked connectivity. Importantly, for Knorr-Cetina and Bruegger, screens stand in for the network, but in so doing may hide more than they show. The Web itself, and also each website, emerge from the more stable elements of the network that allow these applications to exist but that may not register on the screen itself. As Janet Abbate puts it, “communicating media often seem to dematerialize technology, presenting themselves to the user as systems that transmit ideas rather than electrons” (1999, 5). Thus we must still take care to analyze the network components which make the screen as such possible.

First and foremost, the Web requires the very system that makes the surface possible – the Internet infrastructure. But this technology just begins the requirements. In fact, one could

⁸ Shields (2000) argues that webpages should be understood primarily through movement – clicking through links, scrolling through text. I would argue in this context that the Web as a dynamic enterprise is still found, or made manifest, as such an enterprise at the scenic interface. Understanding that different worlds require different actions does not militate against seeing the Web as a world in which motion predominates.

view the Internet itself as a network of elements of varying stabilities – from the physical architecture of the computer systems and Internet backbones and electrical grids, to operating systems that make those systems functional, to the organizations that engage those systems for their own designs, to the interfaces that put the content in its digital context, to the information itself.⁹ The user explicitly engages the latter two digitized levels, but requires all of them. In this sense, these networked connections, though absent from the screen and the world it explicitly represents, prejudice and constrain the projected world of the Web by *requiring* certain technologies (particularly in terms of infrastructure) and literacies (in the broad sense of ability and economic means, but also in terms of what the user is expected to be able to do with their digital explorations) to enable that world to exist and be navigable. In focusing on the “virtual” realities that these websites produce, then, one must *also* be aware of the physical realities they tend to reinforce. Thus, the screen frames and presents a world of interconnected physical and non-physical entities for the user, providing a digital context for exploration. It helps to locate the user’s interaction in a continuum of connectivity, while only making visible the digitized elements.

Invoking the concept of the screen, however, has some obvious liabilities. The screen, in foregrounding the act of viewing, seems to privilege an analysis that focuses on the consumption, rather than the production, of images; it also downplays the interactivity that is involved in Web browsing. In part, this emphasis comes from the screen’s ties to the bane of all culture –

⁹ Of course, even these elements gloss over the necessary labor (programmers, day laborers, computer assembly workers, truck drivers) and basic infrastructure (highways, ore deposits, heavy machinery) that are required for the establishment and maintenance of the computer network.

television. This medium, after all, privileges passive consumption of images, information, and products designed by others to capture a certain, valuable demographic group. Unlike the Web surfer, television viewers cannot exert the same level of interactivity or choice. People may change the channel, but only to expose themselves to other forms of canned programming. However, while there are valuable differences involved with consumption, production, and interactivity between the networked Web screen and the televisual screen, one may find that they are more different by degree than by kind. That is, mediated experience of all kinds involves the active participation of the viewer; the trick is in identifying the places and limits of that participation. The most pronounced difference between the two media appears to entail the role of production – more people on the Web possess the ability to produce their own ‘screen.’ In the era of television, however, the number of producers was necessarily limited. Not so with the Web – the number of people who can participate in the production process is exponentially greater.¹⁰ The role of explicit production of content for display on the Web is not the only, or even the most pronounced, role a user has in interacting with the Web. Much online activity involves browsing and the perusal of images (see Chapter Five). As such, we still need to explore the important activity of viewing within the context of online experience.

In this case, another challenge emerges – interactivity. In order to deal with the reception of images and the related interactivity in which people engage, I want to briefly engage with the ideas developed by Thompson (1990). In particular, Thompson focuses on the receiving end of communication technologies and provides a nuanced version of the individual as the subject of

¹⁰ As mentioned above with regard to authors and texts, however, the value of various sites may still be tied to larger, wealthier, traditionally-established entities (see also Kirschenbaum 2000).

ideology. For him, ideology connotes meaning which “serves to establish and sustain relations of power that are systematically asymmetrical” (7), by reinforcing concepts and forms of social organization that enable some groups to dominate others. Media, particularly mass media, is the means by which such meaning is transmitted. In the context of developing a model of transmission, however, Thompson seeks to complicate the direct broadcast model – where the viewer (white male, 18-35) passively receives the messages emerging from the blue glow of the television screen – and recast the viewer as a more active participant in the experience.

Messages enter a “field of contestation” (10) in which individuals process these received symbols and import them into local contexts. In so doing, the individual produces a sort of feedback loop, whereby the image-producers have to continually tweak the images to have the desired effect, due to the many various ways individuals may interpret and use the images. For example, viewers can turn a clothing catalogue or a Super Bowl halftime show into a cause for protest or even simply change the channel, informing the symbol makers that the message must be repackaged. To a degree, this examination of the activities of individuals echoes work done by de Certeau (1984), who perhaps more than anyone tried to give voice to the activities of individuals within a context of presumed domination. Importantly, Thompson shows that all “modalities of communication” (his term) allow for interaction by others.

Still, the interaction must occur in a setting that operates under distinct conditions. Transmission requires a technological medium, an institutional apparatus to deploy the media, and a space/time relationship (see Thompson 1990, Ch. 1). For television, these requirements translate into restricted access to the production of symbols, relatively unrestricted access to the reception of symbols, and a new mediated social reality that becomes disconnected from spatial

congruence. The third quality emerges due to the ability of televised media to erase the necessity of proximity for interaction – a viewer can interact with an actor, a newscaster, or even an event that may be geographically far distant yet present for the viewer on screen. These forms of social interaction – what Thompson calls “mediated quasi-interaction” (228) – possess a reality for both parties, but a reality removed from face-to-face interaction. That is, the viewer responds to the world of the screen in various ways and, based upon the feedback loop that is created, those in charge of the viewing alter that screenic world accordingly. Interestingly, both parties are also idealized for the other – becoming a mythical demographic or a talking head. However, those on the viewing end are constantly at risk of being left behind or deemed irrelevant by those empowered to broadcast their messages to a selected if idealized audience, so power inequalities still exist within the medium. Traditional broadcast media privilege the broadcaster.

Thompson does not explicitly deal with the Internet; however, his discussion of television rendered above can be readily applied to the Web. First and foremost, the Web as technological medium does tend to level out the access to production and reception of symbols. A person does not have to have broadcasting equipment and access to airwaves in order to produce images for consumption. The question of institutional apparatus is more complex, however. As the discussion on authorship above explored, there are still institutional boundaries that rate or value images from particular sources even as more people are empowered to disseminate them. We have also begun to see a larger concentration on certain sites (e.g. yahoo.com, netscape.com, aol.com, google.com) as portals to Web content, which run their own institutional logic in sorting and valuing spaces (see, for example, Elmer 2002; for a look at the limitations of search engines, see [Johnson 2003](#); for the increasing cultural cachet of google.com, see Hochman

2004). In fact, the very ubiquity of symbols on the Web creates a different problem – a kind of information overload that must be sorted through (see Jordan 1999). So, enabling *access* to production does not by itself create means for equal valuation of those productions. Finally, the “mediated quasi-interaction” described by Thompson still occurs online, with some differences. Most notably, feedback loops are sped up and can be filtered through various channels (including site “hits,” email contacts, even link numbers). Also, people deal with each other in a real space, but a space that allows for digital self-representation (see, for example, Turkle 1995).

As the analysis of Thompson above shows, the screen metaphor can account for user interactivity while still emphasizing the process of viewing. Websites are interactive; they can be understood as portals to other places, interfaces to be both viewed *and* used. Thus, it’s not enough to describe the created, symbolic representation of a network, when that world is structured to involve interaction from the users viewing that world. While individuals may only interact with a screen, they are expected to pass through numerous screens in their cyber-travels. However, by analyzing the interactivity inherent in websites, one does not leave the idea of the screen/world concept, but simply augments it. Interactivity becomes part of the screenic reality. That is, no matter what link the user clicks, she is still confronted with a digital screen that conditions what is viewed. Connecting to the network so presented, achieving results expected by the user and/or suggested by the website itself, may require that the user be able to navigate the digital world in a non-arbitrary way – to achieve “results” and to decipher information that may be the most useful for the user’s goals. Thus, examining use allows us to begin to see how these websites construct the user. This movement is enabled to the extent that users become a part of the network.

In the end, one can consider the website as a text and a screen— each concept lends some insight into the characteristics, connectivities, and impacts of websites. Both metaphors suggest important relationships (digital and non-digital) of websites that one must attend to when conducting an analysis of this medium. The most obvious relationship involves the user/designer, reader/writer, viewer/producer. Each of these pairings suggest slightly different arrangements and roles, but all of these can contribute to understanding the website as a space of connection and contestation, over meaning and value. The website enables the convergence of these roles and facilitates their interaction. Each metaphor helps to identify this convergence but also retains questions regarding power asymmetries in roles and the fluidity of the relationships.

While these interactions take place in a digital format, we must not forget the importance of the non-digital entities that make that interaction possible and premise the website as such. The intertextuality of texts (understood broadly) and the networked reality of screens indicate that websites also require infrastructure, organization, standards, and other elements which do not translate well into digital symbols as such. Elements that have large impacts with regard to the constitution of a site remain outside the digital realm, but are not irrelevant because they do so. Thus, a website is more than a digital meeting space or billboard, but also a highly textured point of convergence for disparate discourses: physical architecture, operating systems, organizations, interfaces, and information.

The metaphors provide means for studying and analyzing websites, by calling attention to the roles and institutions which help constitute websites as such. Thus, in exploring the digital environmental anti-toxics activist sites, I can seek to identify those convergent elements and their

specific properties. Before I move to that level of specificity, however, I want to address the extent to which those open questions referenced above – which roles dominate and the fluidity of the relationships – are influenced by the evolution of the emergent technology itself. That is, what is at stake in addressing the current configurations that websites allow, and how might one understand how technology impacts those who seek to use it? To answer these questions, I turn to concepts in the philosophy of technology which try to theorize how technology intervenes in the world.

Using the Object: the Process of Making and Un-making an Artifact and an Individual

Conceptualizing the Web as an object of study helps us to process the ways in which it might reorganize experience, but the question remains as to whether or to what extent the Web *must* alter that experience. This question is embedded within the larger issues surrounding technological determinism and the importance of use. That is, what are fruitful means of understanding the influence technology has on society? Do technological systems impose totalizing imperatives on the lives of individuals, or do humans have flexibility in technologized encounters? These questions are caught up in issues of technological determinism and instrumentalism. I do not want to engage in a thorough rehashing of the determinism debate,¹¹ but I do want to pick up a thread of argument that will lead toward a complex understanding of the interrelation between design and use. In particular, I am interested in philosophical systems of thought that privilege challenges to prevailing inequalities and forms of oppression – either by

¹¹ For a brief recap, see Feenberg 1995b.

overturning, or by using, technology.

The thread on technology I want to pick up goes back to Marx, and his insights regarding the significance of the material conditions of existence for human consciousness. Marx's method for understanding historical development involved examining the material conditions that made human life possible. These conditions organized the elements of social existence (placing people in relationships of varying power and influence) which in turn give rise to modes of human consciousness. Marx engaged in an inversion with the typical assumption that humans, through their intellectual capacity, sought out particular kinds of social organization and material subsistence: "It is not the consciousness of men that determines their being, but, on the contrary, their social being that determines their consciousness" (Marx 1978, 4). The point here is not to get into a long and involved Marxian exegesis, but instead to explore the ways related ideas were imported into more contemporary theories of technology. Marx's own thoughts on technology contain many tensions (see for example Feenberg 1991); nevertheless, he set the stage for analyses that tied modern technology to the domination of humans.

Marx's importance in this context involves the connection between materiality and consciousness, as modern material conditions become increasingly actualized through technological systems. As indicated above, Marx argues that social conditions determine an individual's consciousness. In the modern world, where technological systems increasingly define/constrain/structure the human lifeworld, technology increasingly impacts how one begins to define/view oneself – as computer user, car driver, cog in the machine. This Marxian position carried through to more dystopian philosophers of technology like Ellul and Marcuse (see Feenberg 1995b; Ihde 1993). Both of these philosophers tended to see the growing dominance

of Technology (conceived as a totalizing system) as part of the modern experience, and both forecasted a related danger involved with the Technologized mode of thinking. Technological systems come to dominate the way society is organized and thus people's own self-conception.

For Ellul, technique becomes the way of thinking, rendering people unfree. That is, individuals become increasingly tied up with mechanical systems. These systems operate under their own mechanistic imperatives and thus compel humans – who now depend more and more on technologies for survival – to comport themselves according to the dictates of the machine. This comportment is not merely mechanical, but can discipline the human conception of self in terms of mechanical demands (see also Latour 1988). For Marcuse, Technology creates the potential for liberation from need only to impose new, false needs as a means of maintaining the system and enslaving people to it. That is, individuals come to define themselves in terms of stuff – Humvees, plasma screen tvs – which can only be obtained within the present capitalist system of relations and technological organization. This reliance on stuff emerges not from true need, but from a triumph of marketing which tells people what they must have to live the good life. Modern Technology renders human experience one-dimensional. Both express lament over an emerging totality that subverts the very utopian promise of Technology, of making life better. For both Ellul and Marcuse, the fundamental thrust of Technology militates against true human living. To affect change, people will need to challenge the dominance of Technology itself and rethink how humans organize life.

The idea of technological determinism expressed above – that Technology will slowly consume the people who seek to benefit from it – relies upon an autonomous view of technological development and expansion. Technology has an internal logic that overwhelms

and subsumes other forms of thought. Technologies are systems which grow in a linear manner and necessarily require entities (organizations/people) to comport to their imperatives (see Feenberg 1995b). While evoking a definite foreboding or at least ambiguity about the increasingly technologized mode of existence, these theories of technological determinism do not appear to hold up well to more finely-focused, microanalyses of technological artifacts. In particular, these small-scale analyses problematize the presentation of Technology as a totalizing, inflexible monolith, instead revealing fluidity within technological design. They show that people have input in all phases of technological development.

Early work in the social construction of technology (SCOT) demonstrated that technological artifacts are not technically determined but social constructed. Artifacts are often best characterized through the negotiations of various social actors and constituent groups (see especially Bijker, Hughes, & Pinch 1987). SCOT developed a conceptual vocabulary that enabled researchers to engage in micro-level analyses of technology. Terms like interpretative flexibility (the ability to produce different visions/versions of a technological artifact) and stability (the phenomenon exemplified by design controversies being forestalled through either rhetorical moves or redefining the problem) contributed to a conceptualization of technology as subject to social influence and not simply the inevitable outcome of best design (see Pinch & Bijker 1987). Studies involving technological artifacts such as Bakelite (Bijker 1987), electricity generators (Hughes 1983), and even Web browsers themselves have demonstrated that choice of design involves social variables not natural imperatives. Technologies are designed within a social context which helps determine when a technology “works.”

The focus on design helps to reveal a fluid process of negotiation, accommodation, and

adjustment¹² that occurs in the creation of a technology, and makes clear that technological systems cannot be thought of as asocial leviathans that bend society to their will. The important space to enter, at this point, will be one that integrates the social component of technological design with the vast social influences technologies can have. How do we understand what we can do with technologies and what technologies can do with us?

Many well-thought out and sophisticated philosophies of technology have been developed that attempt to deal with the social contingency and social impact of technological systems. Langdon Winner, Don Ihde, Albert Borgmann, Joseph Pitt have all developed sophisticated theories that offer means to grapple with the complex relationship of society and technology. Rather than offer an abbreviated summary of each one, however, I have chosen instead to focus more extensively on the work of Andrew Feenberg, bringing in the other theorists to help augment or complicate points found in Feenberg. I make this choice in part because of the explicit work Feenberg has done to combine the two trends of understanding technology and to use that understanding to formulate a normative position on how technology can and should be reformed. I also think that Feenberg's framework provides useful places of extension for the current analysis, as he pays close attention to computer-mediated communication.

Feenberg has spent more than a decade developing a very sophisticated philosophy of technology, and while I cannot hope to do the entire philosophy justice¹³, I want to explore the

¹² Strict adherents to SCOT claim that such negotiation and adjustment are wholly social processes. Others, like Pickering, Callon, and Latour, make explicit space for natural entities to be involved. In either case, the fluidity remains.

¹³ His philosophy is most fully articulated in the books *Alternative Modernity* (1992), *Critical Theory of Technology*

foundational elements that are most relevant here. Feenberg emerges out the critical theory tradition of technology, and thus has affinities for the Marxian position explored earlier. However, he is quick to avoid the pitfalls of a determinist position on technology and instead seeks to develop a political program that understands where the social inroads to technology occur while at the same time articulating how technological systems can still work to oppress people. To balance out the dual meanings of social influence, Feenberg focuses on the concept of technique, which highlights the integration of technical systems with modes of existence. Technique necessarily includes both artifacts and people in relation to each other, and can also include social apparatuses meant to organize people (e.g. bureaucracies). Thus, one cannot just look at how technologies are supposed to act in the world, but also explore how people take them up.

For Feenberg, technique is created and deployed through the process of instrumentalization, which is divided into primary and secondary instantiations (1999). This division occurs not between rational technical imperatives and social contingencies (both instantiations are to some degree social), but rather between design and use. Primary instrumentalization involves the first steps toward creating technique. It lays out the “basic technical relations” required for the creation of a technical object (2000). These relations must be articulated to include both nature and humans, and possess four moments: decontextualization; reductionism; autonomization; and positioning (1999, 203). The first two primarily involve nature – abstracting natural elements from specific contexts and simplifying

(1995a), and *Questioning Technology* (1999).

them to their most “useful” properties. For a hammer, ores are extracted and refined to make metal for the head. Trees are harvested, trimmed, and shaped to make wood for the handles. Metals and wood stocks are chosen for qualities like hardness, cheapness, and ease of manipulation. This process of “de-worlding” and “reducing” natural objects to abstract qualities helps to integrate them into a technological context (2000). The latter two involve positioning subjects strategically in relation to the technical object – isolating the subject from the direct effects on the object and putting the subject in place to benefit from the interaction. Most simply, primary instrumentalization involves the process of creating a technology as something *to be used*. This form of instrumentalization, for Feenberg, represents technology at its most abstract. If the designers of technology could control the world, and make everyone use technologies as intended, then technologies could create a totalized, integrated world of the kind that Ellul and Marcuse feared.

Creating something to be used, however, does not in itself enable a technique to become active in the world. No matter how exquisite the abstract design of a technology may be, the artifact/system must still encounter concrete reality – people, environments. Thus, Feenberg uses the term secondary instrumentalization to capture the process by which technique is “*integrated* with the natural, technical, and social environments that support its functioning” (2000, emphasis in original). All of the abstractions and disconnections which occur in the primary phase must be reintroduced into the world and taken up by users. Technology, to become technique, must enter into a social context and be subject to a new round of alteration and modification. The process of secondary instrumentalization has four moments which correspond to their primary counterparts: systematization; mediation; vocation; and initiative.

Here, the first two regard reincorporating objects into natural and social environments, retying them to distribution networks and electrical grids, as well as aesthetic and ethical preferences.

The hammer must be protected from the elements (through handle coatings) and may be made of a wood people find ethically objectionable. The second two explore relationships to individual users, as the technologies are taken into work-related identities and modified through use.

Despite the prescribed relationship people are to have with the technology, they may seek out alterations in that arrangement.

As addressed earlier, we should take note that Feenberg's theory of technology does not replicate the dichotomy between functional rationality and social application; both primary and secondary instrumentalization are social processes. Feenberg seeks to confirm the social processes that underlie technique in an effort to show that all technologies contain at their very core values and political choices. Technologies are not pure expressions of formal-rational exercises, where aesthetic and ethical questions represent corruptions of the system itself.

Rather, technologies enter society as *already* a part of society, reflecting the values and norms of people involved in both sides of the process. However, to claim that technologies are social does not mean that people can establish wholly flexible and free relationships with them.

To get at this distinction, we need to explore how Feenberg specifically relates the two processes through the idea of concretization. Concretization is "the discovery of synergisms between the various functions technologies serve and between technologies and their various environments" (2000). These synergisms are part of the process of technological development, representing the reification of a technique that operates in the world – a stable thing. To become stable, a technology must internalize the two modes of instrumentalization, thereby adapting to

and functioning within some range of social and natural environments. The range, however, can be narrow or wide. That is, technologies can strive to incorporate diverse organizations of human beings and environments or they can attempt to impose more limited constraints. Feenberg's emphasis is on process, so he claims that narrowly concretized technologies are still subject to secondary contestations – people can intentionally sabotage machines, for example, or environments can object to certain technological interventions by behaving “badly.”¹⁴ However, technologies can circumvent those challenges through appeal to the very technical necessity that Feenberg exposes as false. That is, what Feenberg calls the “Technical Code” (1995b, 14) of an object – that which establishes the parameters of its construction – often gets portrayed as a technical necessity meant to quash objections to technically driven policymaking. Decision makers appeal to the internal logic, the rational necessity of the design, as the necessary reason for making particular political decisions.

Importantly, appeal to code is not the only way that technologies can overturn dissent. Another involves a tendency of technologies to become transparent or invisible. In the context of scientific experiment, but drawing on wider phenomenological sources, Don Ihde (1991) discusses how technologies can become transparent. Their use does not bracket normal vision as much as it *becomes* normal vision (e.g. eyeglasses and telescopes). The images are not considered an enhanced view of an object, but the real thing. In both cases, the technique ends

¹⁴ For an example of individual contestation, see de Certeau (1984). Feenberg explicitly borrows from him, especially in noting how users engage in actions that constantly elude categorization. Whether simply walking or engaging in non-work related uses of equipment (*la perruque*), de Certeau's user always enters into a productive relationship with technologies – producing modified meanings from underdetermined encounters through everyday use. For an example of environmental contestation, see Richard White (1995). He examines how the Columbia River has been incorporated into technological relationships, but has objected certain abstractions through a series of refusals – to act in the way it was assumed to act.

up becoming stabilized in its form. Once a technique stabilizes, it hides behind functional rationality or technical objectivity – technologies had to turn out this way because it was the best possible design or lets people see phenomena as they really are – and thus serves to insulate those social choices from critique. Thus, technologies incorporate social choices that may seek to control workers, destroy environments, and increase inequalities. The danger here is one of disappearance of that social choice behind the veil of rational determinism.¹⁵

In the end, his project has a two-fold goal. First, in calling attention to the necessity of use in instituting technology, Feenberg depicts a counter-trend to the totalizing impulse of technological systems. This aspect of “re-worlding” technology can operate as a reveal, problematizing or at least calling attention to the ethical, political, social values embedded in that technology. Two of his favorite examples of the power of secondary instrumentalization include the AIDS activists and the French Minitel system. In both cases, groups were able to mobilize, by means of political will or technical know-how, and alter the prevailing understanding of a technological system. In the AIDS example, men successfully lobbied for access to experimental AIDS therapies, overturning and then more permanently modifying the institutional logic regarding acceptable subjects (for a detailed account, see Epstein 1996). In the Minitel example, hackers managed to add communicative functionality to an information distribution network, turning a news service into a huge social club (this functionality, while officially scorned at the start, proved so popular that it was officially incorporated into the design

¹⁵ Rational determinism is not just the internal logic of technological systems, but also includes some necessary alliance to what is “naturally best.” That is, the assumption that nature dictates a particular technological form also serves to hide social choices. For a sophisticated take on nature as constraining but not determining, see Soper (1995). As Soper relates, “[nature] may ‘recommend’ certain types of action, and it will always have its say in determining the effects of what we do, but it does not enforce a politics” (142).

[Feenberg 1999]). Both examples point to the potential power of use, of recontextualization, in altering the meaning of technologies. These are not corruptions of the process, but fundamental to the process. People can and do change technology.

The second goal stems, in a sense, from an understanding that power at the point of use is not enough. That is, the values and social choices that are expressed so freely at the point of secondary instrumentalization must also be promoted at the primary level. The process of design works to set the constraints under which users are able to act. Those constraints can be minimal or substantial. But there are some points where choice in use may only be displayed in terms of a binary yes/no. And, depending upon the associated social cost of opting out, a user may really have no meaningful choice at all. As such, people can be changed by technology. Thus, Feenberg is alert to the longer term goal of having social factors be both acknowledged at the level of design, and opened up to include more voices advocating for more inclusive technological designs (1995b, 19-20).

Feenberg's theory of technology sheds light on the *trajectory* of website-mediated relationships between user and designer, as technologies stabilize. He notes that the social contingency of technical choices and role assignments become less apparent as a technology resolves controversy and becomes a stable entity (1995b; see similar ideas in Bijker, Hughes, & Pinch 1987). Thus, the tendency exists for technologies like the Web to become *something*, for websites to offer certain prescribed means for interacting digitally. The social promise of change that attaches to Web technology (explored earlier in this chapter) presumes to empower and inform the user. What is at stake, then, is the user's role in empowerment and what form

empowerment takes. The social choices that went into conceptualizing and instituting websites as tools of change and position users in relation to those tools may become less fields of contestation and more conditions of action.

What Feenberg alludes to is a fundamental asymmetry in the designer/user relationship. The interface, as designed, constrains the action of the user at some level. In choosing what the site will look like, what the potential user will see when there, what other sites will be linked to (and how), and what the user is encouraged to do while there, website designers use the Web for something and also represent the Web as *being* for something. Latour calls this process “prescription” (1988) – the behavior or action that a technology requires from a user in order to get the technology to function. Users have a prescribed role that can possess varying levels of flexibility and can be accepted or rejected by the user (at certain costs). The levels of flexibility are important because the stricter or more limited the prescription, the smaller the number of people who might “fit” the role and the greater the accommodation to the technology required of the user. Thus, one must attend to design and the assumptions built into the interface because of its role in constraining action. And as explored above – in both secondary instrumentalization and reader/viewer action – the user can also enter into a feedback loop impacting design. However, tendencies toward stabilization can limit feedback opportunities as certain designs become entrenched (see, for example, Hughes 1983). Emergent technologies like the Web still retain elements of controversy, making the contestations over dominant design and use evident and meaningful. But the *level* of these controversies will likely diminish over time, making attention to design – before stability, before transparency – vital to ensure that users have roles that represent the promise of empowerment in a meaningful way.

I want to briefly identify a further complication to Feenberg's theory at this juncture, as a means of at least acknowledging the complexities involved with attempts to affect change to and through technologies. Focusing on the user's desire to influence the interface, even at the level of design, may only partially represent the impact of this technology. This limitation results from the embeddedness of technology within other technological systems and the identity of the user interacting with that technology. Embeddedness involves the technologies and social forms of organization that *enable* the functioning of an emergent technology (e.g., for the Web, Internet infrastructure and social organizations). Feenberg refers to embeddedness as systemization, the process whereby "technical objects must be combined with other technical objects and re-embedded in the natural environment" (2000). To work, objects are embedded within, and connected to, other existing technological systems (e.g. electrical grids). As Feenberg points out, the extent of systematization varies depending upon the technology. However, modern technologies frequently are embroiled in "tightly coupled networks" (ibid). The concept of systemization is valuable in this context because it helps demonstrate that all technologies function in highly involved networks. When someone uses a technology (like a toaster, for example), one also and at the same time uses other technologies (electric grids, power plants, resource extraction).

The realization that all technological acts involve other technologies complicates the process of affecting change through use. Contestations at the level of use occur at certain, not all, levels. The AIDS protests were able to contest trial protocols, while at the same time reinforcing other elements of the health care system. The reconfiguration of Minitel produced improvements as a network of communication between users, but only while fortifying existing

systems the computer network required to function. In the context of use, then, a paradox can emerge. For those challenging part of a technological system (a particular artifact or relation), they may at the same time be buttressing other parts of that self-same system. Why is this state of affairs a paradox? As Feenberg has pointed out, modern technology does tend to privilege control and inequality. Use of certain technologies are premised on the presumed functioning of others. Thus, at the level of networked use, we could challenge some forms of control while reinforcing others.¹⁶

The value of understanding the implications of embeddedness or systemitization does not lay in paralyzing action not premised on fundamental social change; rather, it lays in explicitly acknowledging or identifying those technologies and social roles that particular technology driven actions take for granted. When dealing with change through technologized empowerment, for example, one must seek to understand (and explicitly accept or reject) the social relationships on which such forms of empowerment are premised. Part of the current

¹⁶ This form of paradox is especially evident in the environmental justice movement. The very premise of the sort of justice engaged by anti-toxics environmentalism is complicated by the overlapping of systems of technology and social meaning. The desire is often simple – people should not be faced with exposure to toxins and their concomitant risks, because such exposure runs counter to the idea, and modern promise, of a healthy and meaningful life predicated on advanced capitalist lifestyles. Interestingly, the idea of what counts as a healthy and meaningful life is established and maintained by the very system of machines and values that causes the production and release of toxins in the first place. That is, the complaints that are lodged against the industrial system are done so from the same perspective that is produced *by* this capitalist, industrial system. The appeal of the anti-toxics activism, in becoming a “mass issue” (Szasz 1994, 38-54), has often laid in the ability to employ an advertised ideal of health and safety promised by advanced modes of production (which hide its toxic belches behind the veneer of this advertised ideal). Why are certain people denied this ideal, while others seem to be granted access to it? All people deserve to be this healthy. Some might contend that such an ideal can be reached through the proper administration of the current system, while others would argue that the system itself necessarily creates these paradoxes. The environmental justice position is not fatally flawed, but must be reflectively engaged. Taking the position that people can and perhaps must be accorded the level of health that has been made achievable can do two things – it can point out the systemic flaw that allows the ideal to be reached only at the expense of other people, or it can be used to ensure that the vocal minority may have their situation changed at the expense of other people. A dual need emerges: a change in the ideal and a change in the system that funds it. In the Marcusean sense, if the healthy, happy ideal that can only be achieved through the prevailing system of inequality remains unchallenged or unaltered, then people promote the perpetuation of the system, despite its failings (what is encouraged is not the rectification of systemic inequality, but a more sophisticated method of hiding it).

analysis will seek to lay those assumptions bare and suggest ways of dealing with the complexities of technological empowerment.

I began this chapter exploring two metaphors – the Web is a text and the Web is a screen – in an effort to conceptualize websites as objects for analysis. Particular digital relationships emerged around the interface: user/designer, reader/author, viewer/producer. Additionally, I pointed out the importance of certain non-digital relationships which condition the production of the interface itself. The website exists as a point of convergence for all of these relationships, as represented in the interface. By working through Feenberg, I sought to show three primary trends in technology relevant to the Web and its use. First, technologies move toward higher degrees of stabilization. Second, stabilization can occur only through the activity of the user. Third, an asymmetry exists in the process of instrumentalization which (at some level) privileges design by establishing the constraints and givens of technologized action. These elements of understanding have implications for the manner in which we confront the Web and how it might impact the larger world. Using the Web to change the world is not the same as changing the Web to prefigure a better world. In this analysis, I intend to tease out these differences with the hope of emphasizing, at least in the specific case of digital environmental anti-toxics activism, that the latter goal is a necessary prelude to the former.

In the next part, I focus more extensively on the particular environmental anti-toxics activist use of Web technology. Now that I have explored different ways of identifying and teasing out the constitutive elements of websites, I want to situate my analysis of digitized activism within that framework to see how the websites come into being, and engage the kind of

relationships they seek to change or take for granted. To that end, I examine the historical trajectory of this brand of environmental activism and how it coincides with and/or reinforces the technological trajectory of the Web.

Part II

Connecting People with Information: Defining and Combating the Problem of Toxic Substance

Chapter Four

A History of Lack: Environmental Anti-Toxics Activism and Information Poverty

...as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns -- the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones. (sic)

Donald Rumsfeld, [2002](#)

The present chapter serves one main purpose – to detail the emergence of the perception of toxic substances in the environment as resulting, primarily, from a problem of information poverty.

As anti-toxics sentiment and political mobilization rose in the United States since the end of the 19th century, the most prominent intervention strategy has involved the production and dissemination of information. Scientific knowledge about toxic chemicals – where they are, what they do – would provide the necessary catalyst for wide-scale change. This push for communication was subsequently imported into Web-based interventions aimed at modern toxic problems. Websites designed to empower the citizen to combat pollution continue the legacy of information distribution and act as a point of convergence for scientific expertise, environmental activism, and citizen involvement.

Before I explore the digital versions of environmental anti-toxics activism, however, I want to examine the historical legacy of this activist form in more detail. In part, how has activism against toxic substances emerged and been defined in the United States? I want to focus mainly on the mobilizations that occur and how they themselves act as a point of

confluence between scientific expertise, organized advocacy, and the need for information on toxic substances and their human effects. To do that, I will examine two specific periods of intense opposition against pollution and the resulting actions which helped define environmental anti-toxics activism and lead to present-day efforts. First, I lay out emerging concern over workplace hazards that coalesced to form the Industrial Hygiene movement of the early 20th century. In particular, I look at three advocacy groups that set out to motivate change in worker health and workplace conditions – the National Consumers’ League (NCL), the American Association for Labor Legislation (AALL), and the Workers’ Health Bureau (WHB). These groups labored to create scientific data to catalogue the impacts of toxic exposure on worker health, and then to communicate that data to unions, workers, companies, and legislators. Their collective efforts led to greater awareness of the dangers of chemical exposure in the workplace and resulted in some legislative successes. Later in the century, however, new community-based mobilizations occurred to combat the pollution problem outside the confines of the factory.

From the industrial hygiene period, I jump ahead to a renewed and more expansive focus on the effects of toxic substances. First, I explore three events that crystallized wide-scale attention to the problem of unknown pollution hazards – Love Canal, Woburn, and Bhopal. Each incident heightened public anxiety about the possibility of hidden toxic dangers that might slowly leak into everyday experience or suddenly engulf a local community. Then I explore the political and activist fallout from those events. Prominently, the Bhopal tragedy influenced modern legislation for Superfund Amendments and Reauthorization Act (SARA), which contained provisions for the creation of the Toxics Release Inventory (TRI), theoretically increasing the access individuals had to local polluters. Also, environmental justice groups and

community coalitions started to form, working against the siting of waste facilities and toxic industries. This modern form of activism also aimed to produce more information, more science, and more awareness about the presence of toxics in the wider environment. The main intervention strategy, the gateway to effective change, involved the production and dissemination of information on the presence and impacts of toxic substances.

In this chapter, I present two main historical arguments – one explicitly pursued and one implicitly suggested. Explicitly, I have chosen the two phases of activism (industrial hygiene and environmental justice/community groups) to demonstrate that as the locus of concern has shifted from the workplace to the environment, the main means of intervention has remained consistent. Activists have sought to generate and make available more scientific data about the threat posed by exposure to toxic substances. As I intend to demonstrate, industrial hygienists considered ignorance as the biggest barrier to a safe workplace. If company managers and employees understood the extent of the hazard involved with exposure to lead, phosphorous, or radium, for example, then they could and would take measures to lessen or eliminate the risk. For labor activist groups, research had to be undertaken and publicized to rectify the dangerous shop floor. As toxic chemicals spread to the larger environment in the form of emissions and dumps, people still sought remedy through information. The tragedies of Bhopal and Love Canal were compounded (or even caused) by an uninformed public who ran toward poisonous gas or sent their kids to play atop toxic sludge. Information could alleviate these dangers; governments enacted laws and groups mobilized to produce and disseminate that data. Thus, the history of anti-toxics activism can be defined by efforts to overcome and eliminate information poverty through engaging in scientific expertise and promoting wide-scale awareness.

The implicit argument I seek to *help* make with this chapter deals with the translation of this activism into the digital medium of the World Wide Web. As groups have sought to take advantage of the distribution and interactive capacities of the Web, they have also imported an understanding of information poverty into a technology. The websites empower users by connecting them to the data necessary for erasing the problem of ignorance and thus helping to mitigate the toxic hazard. My goal, in setting this historical stage, involves showing that this technological intervention inherits an historical trajectory. However, I am not offering a definitive history of environmental anti-toxics activism. I pick those events that best capture or explain the current digital manifestations. As such, I want to point to the specific historical narrative developed here, to imply that the technology also selectively understands the history that it inherits. Looking back from current digital strategies of intervention, the historical dilemma of toxic substances involves the need to produce and communicate information.¹

Toxics in the Workplace

Before exploring the present-day manifestations of an environmental anti-toxics sentiment, I

¹ A note on method: In what follows, I offer an analysis of the historical record on the emergence of systematic concern over toxics. I am interrogating the texts that have contributed to present day understandings of anti-toxics activism. These texts attend to the development of industrial hygiene, along with relevant policies and events that preface the present-day movement. Specifically, I examine advocacy groups or individual advocates who emerge in efforts to define and confront the growing problem of toxics. My main focus is not directly the growing professionalization and institutionalization of industrial hygiene and toxicology, though such stories do figure into the trajectory of activism; rather, I explore how groups have developed to define and combat the problem. The issue of toxics gradually broadens from the workplace to the larger environment, and comes to include workers and then community members. Interestingly, the texts themselves begin to shift with regard to relevant actors. Accounts of the early movements contain three main active actors: scientists/professionals, industries/manufacturers, third-party advocates. Who is missing? The people suffering from the exposure. They play even a more passive role than the toxic substances. Depictions of later episodes, especially Love Canal and Woburn (but less so Bhopal) carve out a larger role for the people actually living amid the chemicals. This trajectory will figure into the modern digital movement.

want to turn to those groups that helped to focus attention to the growing problem of toxic exposure. Gottlieb has noted that community-based anti-toxics groups have "a direct lineage to earlier urban and industrial movements" (1993, 170). This lineage ties the modern-day goals of confronting pollution and toxic waste near homes and communities to earlier attempts in identifying and limiting the harmful effects of industrial chemicals on both workers and the surrounding urban spaces. The novel exposures occurring in industrial environments generated its own scientific discipline – industrial hygiene – and established a method of dealing with toxic substances. This method included the involvement of practitioners looking to define and legitimate a new form of scientific knowledge, industry officials bankrolling the production of this knowledge in efforts to control it, and labor advocacy groups sponsoring their own research to aid the workers being exposed. The advocacy groups in particular set the precedent for creating technical information as the main means of intervention. Toxic substances became something know about and communicate to workers. In the following sections, I first explore the beginnings of the industrial hygiene movement. Then, I trace the activities of labor advocacy groups, especially the National Consumers' League (NCL), the American Association for Labor Legislation (AALL), and the Workers' Health Bureau (WHB), to explore how they organized intervention through a process of information production and worker education.

Industrial Hygiene

Starting in the late 19th century, concerned individuals looked to alleviate the emerging pollution problems found in highly industrialized spaces (see Stradling 1999; Sellers 1997; Gottlieb 1993). Industry began using substances like lead and phosphorous in high concentrations, and workers

began to suffer new illnesses which *might* have been correlated with their working conditions. For those early advocates of industrial hygiene, however, data on hazards associated with exposure to toxic substances was difficult to produce. Basic problems with methods and subjects confounded attempts to establish clear and reliable information about the effects of toxic exposure – reticent employers, reticent employees, disparate working and living conditions, and suspect, inconsistent medical care. While employers were interested in keeping workers healthy enough to work, they did not want to appear liable for long-term harm or admit to intrinsic hazards that might challenge the viability of the industry itself. From the workers' side, there existed the uncertainty of the hazards and a very real fear of losing employment if the complaints grew too loud (see Gottlieb 1993, 49). Additionally, the workers themselves did not represent a uniform group from which to cull more universal knowledge - many lived in squalor and suffered from a lack of proper diet. These conditions alone might be culpable for any illness the worker contracted. The creation of industrial hygiene as a scientific discipline proper awaited the transformation (in thinking at least) of the workplace into a laboratory.

In *Hazards of the Job*, Sellers (1997) traces the emergence of industrial hygiene as a response to work-place related illness. Specifically, he notes that the concern for industrial-related illness in the United States began as a sociological enterprise. Hygienists gained knowledge through taking surveys and engaging in extrapolations from common knowledge and widely dispersed data – that is, by undertaking “grassroots clinical science” (ibid., 55). The workplace – the site where the bodies of workers were already being experimented on – became the hygienist’s lab. Part of the dilemma, at least for industrial hygienists interested in both creating a voice for themselves and serving their understanding of the public interest, involved

producing general conclusions and wisdom. The scientists had to turn heretofore isolated cases of individual suffering based upon unhappy circumstance to foreseeable probabilities of poisoning due to systemic negligence or propensity for harm. Hygienists needed to survey geographically dispersed industries dealing with similar substances and production practices, in an effort to discover trends regarding the health of the workers. Underlying this approach was a belief, often explicit, that the biggest threat posed by toxins came from ignorance, rather than the willful endangerment of workers on behalf of industry. As related by Sellers (*ibid.*, 73), Alice Hamilton (one of the first scientists to systematically study occupational disease) found lack of knowledge responsible for many of the problems: “Neither ‘deliberate greed [n]or even actual indifference’ lay behind the ‘iniquitous conditions’ she uncovered in industry after industry...; rather, she placed most of the blame on ‘ignorance and an indolent acceptance of things as they are.’” For Hamilton, knowledge of the hazards was a necessary and perhaps even sufficient condition for precipitating change. Teach both workers and employers about proper hygiene in the workplace, and things should right themselves. Once knowledge was produced, then behavior would likely change in accordance with the safe practice that was indicated by the discovery.

Of course, questions regarding the lack of pertinent data tend to hinge upon the kind of information produced, as well as the social value of that information. The data that early occupational health workers produced at the turn of the century – from Alice Hamilton's "shoe-leather epidemiology" to worker surveys and doctor interviews – were challenged by the industries that benefited from the practices producing the poisons. There emerged, then, challenges over the validity of the information so gathered and presented (in fact, as we will see,

debates over the validity of the information and the indeterminacy of scientific efforts to fully establish a hazard rather than prove safety works as a conservative force for entrenched industrial interests and persists today [see Beck 1992]). In response to these challenges by industry, and to the internal dynamics of industrial hygiene itself, people interested in occupational health became more professionalized and relocated their field of study – from broad investigations to a strict discipline (Sellers 1997, 104). While previous attempts at cataloguing illness and generating knowledge came from sociological-type field studies, the new impetus was toward the laboratory (ibid.). The corresponding shift in locating the problem went from the idiosyncrasies of the individual worker body to the qualities and harmful effects of the substance on the universal “normal” human body. Thus, the push for scientific knowledge – to defend workers against the preventable toxic harms, to insulate companies and owners from specious claims of industrial disease, and to define a profession working to better understand the impact of substances on the people most often in contact with them – gained momentum. It also changed location.

Whereas before, people interested in the problem sought a way out into the world in the pursuit of “truth for the sake of utility” and engaged in “constructive research” which involved the sociological methods mentioned above (ibid., 49), later practitioners moved back into the lab to conduct more “properly” scientific analysis on the effects of the substance in general to be then applied out into the real world and the bodies of the individuals. From individuals (bodies and industrial sites) to knowledge (general prescriptions); from knowledge (general prescriptions) to individuals (bodies and industrial sites). The emphasis on toxicology of certain substances thus helped to propagate the illusion that risks involved with certain substances were

in some sense knowable and thus controllable (ibid., 183).

The scientization of the industrial hygienists led to an expert class that had a complicated relationship with both industry and worker advocacy groups. Many companies employed hygienists to conduct studies on potentially toxic substances involved in production but also sought proprietary rights to that research. In one such case, Cecil Drinker, a Harvard physiologist, was invited in 1924 by the U.S. Radium Company to investigate strange illnesses - typically located around the mouth and jaw – plaguing dial painters (Clark 1997; Sellers 1997). Beginning in 1915, these primarily female workers used radium in paints to illuminate instruments, gauges, and dials (Nugent 1987, 178). Often, to achieve a fine point on the brush, they would draw the tip between their lips. In studying the phenomena, Drinker concluded that radium was the cause of the problem. However, U.S. Radium Company refused to accept his findings and kept the results of the study confidential. Importantly, because of his relationship with U.S. Radium, Drinker decided against publishing them independently, that is until the company misrepresented his findings (ibid., 180). After the misrepresentation came to light, Drinker published the study without the company's permission. Drinker himself was never chided for acting unethically by withholding valuable information from the scientific community and the sufferers of radium poisoning; rather, the primary relationship of concern was between the physician and the company who paid for the study (Clark 1997, 92-3). Only after U.S. Radium Company violated Drinker's trust by misrepresenting the data did he feel entitled to publish without permission. The relationship between professional hygienists and industry was a complicated one of expert and patron. Importantly, hygienists often found their funding from the very producers of the substances they sought to study. The information produced, then, could

not be counted on to alter the working conditions in isolation. Owned by the industry that commissioned them, these studies could either be influenced by patrons or withheld from publics. Perhaps science created in the name of those most directly effected by the poisons – workers – would solve this problem.

Labor Advocacy Groups

The model of industrial hygiene funded by corporations had obvious drawbacks to workers. Despite Hamilton's declaration that information alone would transform toxic and dangerous working conditions, the ideal of objective scientific knowledge-as-savior proved simplistic rather than transformative. While people still sought information, the turn-of-the-century advocates for workers and cleaner workplaces realized that they needed to be involved with the production of expert knowledge, lest their perspective be shut out of the policy process. In this section, I explore three labor advocacy groups, the National Consumers' League (NCL), the American Association for Labor Legislation (AALL), and the Workers' Health Bureau (WHB). Each of these groups produced differing models for how best to counter the problem of toxics and health concerns in the work place (see Nugent 1987; Gottlieb 1993; Sklar 1995; Clark 1997; Sellers 1997). By exploring the roles of these groups, I intend to demonstrate how each one related to constituent groups and scientific expertise in order to draw parallels with modern environmental anti-toxics activism below. To wit, each of these groups sought to construct their constituents² as they tried to help them, with varying degrees of longevity and success.

The NCL (1898) and the AALL (1906) were roughly contemporaries. They worked

² I will pursue the notion of constructing constituents in much more theoretical detail in Chapter Six.

independent of one another, but were often drawn to similar topics and relied upon the marshalling of scientific evidence to make arguments about labor conditions and wages. In particular, the NCL emerged out of middle-class concerns for the well-being of women and children and the realization that concern over product consumption should also include the production process (Sklar 1995, 44; Clark 1997, 77). Attending to those who *used* products generated concern for the people *producing* them. To make their case, the NCL relied largely on the organization of grassroots women's consumer groups and the employment of gendered discourse (playing on the stereotyped roles prevalent in society) to help make political arguments regarding a minimum wage and child labor laws (Sklar 1995). This labor advocacy group provided powerful rhetoric in agitating for political change. Importantly, it was a national organization that relied upon scientific information and expertise, through mobilization of clearly identifiable constituents – women.

The NCL aimed to make more information available to the public, and to commission information production where it was lacking. One telling incident in the history of this organization dealt with the issue of radium poisoning and the radial dial painters referenced above. In 1924, the U.S. Radium Company had sought to discover the source of the illnesses in many of its painters. When Drinker finished his analysis, the company denied his claims and buried his study. Thus, information about the poisonous effects of radium was caught in tangles of compromised expertise, corporate machinations, and political posturing (for a more detailed account, see Clark 1997).

When the NCL became aware of this issue, it took up the cause of the women suffering these industrial calamities. The group pushed for the creation of more scientific data so that the

threat could be mitigated. What is instructive in this case is the place of experts in solving this problem. Experts came to perceive the radium issue as a technical one, rather than a moral one. As Nugent relates, radium became "a problem to solve rather than eliminate, and [the experts] solution justified their continuing involvement in the management of the dial painting firms" (1987, 187). Because of the intervention of the NCL and its scientists, radium industries instituted changes involving occupational interactions with radium paints and the risks involved - including improved ventilation and much more careful monitoring of the effects. The incident, however, marked a transition from the local gathering of information and open debate to technocratically managed risks: "The reformist National Consumers' League achieved its goals of full access to information about the hazards of dial painting and improved conditions for workers, but at the cost of conferring power over industrial hazards to technical experts" (ibid., 187). Thus, the NCL created more room for the sanction of expert-moderated realities. These realities tended to eschew moral questions about workers using these paints at all and instead spoke in terms of minimizing risk³ within the industrial setting.

The National Consumers' League's approach had some direct similarities with the one taken by the American Association for Labor Legislation, especially in its call for more information about the impacts of workplace hazards. The AALL, however, represents a more traditional, conservative model of advocacy, one based on organizational strength and broad aims. In its initial stages, the NCL took a more grassroots approach in identifying local problems and seeking smaller solutions. The AALL, on the other hand, cultivated a strictly professional

³ The discourse of risk factors importantly in later discussions about current anti-toxics activism.

and objective mandate, looking to influence national legislation which dealt with general problems (Sklar 1995, 51-2). For example, the group facilitated the first comprehensive study of phossy jaw, a progressive bone deterioration resulting from prolonged exposure to white phosphorous. In addition, Alice Hamilton served on the group's advisory board (Clark 1997, 76). Importantly, the model that the AALL proposed centered on their ability to produce effective, objective information about the impacts of toxics on workers' health. This production occurred at the national level, with local affiliates needing to seek the approval of the national group's Executive Committee before pursuing legislation (Sklar 1995, 54). The scientific information, once produced at the national level, would eventually be found by those who needed it. For the AALL, however, the largely centralized national structure, designed to establish and maintain scientific legitimacy, often caused the local groups to lose interest in the scientific information that was provided (see *ibid.*, 55-6). The labor group refused to make overtures toward an identifiable constituency, or allow local groups much input into how the information was gathered. As such, the AALL could often find no popular mouthpiece for its data. Thus, unlike the NCL, the problem with the AALL's effectiveness involved their current and potential constituencies rather than the content of their knowledge.

A third group, the Workers' Health Bureau, represented yet another approach to science and advocacy, with mixed results. While the NCL shined the spotlight on local problems and drew scientific attention to them, and the AALL looked to produce general knowledge on national problems writ large, the WHB put the needs of labor first and aspired to generate knowledge specifically targeted to the interests of workers (especially against management).

Two women, Grace Burnham and Harriet Silverman, established the WHB in 1921 and

endeavored to link scientific investigation with the needs of the labor movement. Their aim was to put the power of maintaining health safety in the hands of those most directly effected: the workers (Rosner & Markowitz 1987, 54). According to Nugent, the WHB mixed two agendas: "As a research institute, it attempted to place medical and scientific expertise at the disposal of trade unions, but as a labor bureau operating 'solely in the interest of the working class,' it pursued a radical vision of medical science distinctive in an age of corporate laboratories and medical professionalism" (1985, 425). The group's goal was to help workers and to create knowledge to further that specific end. This approach in some ways mimicked the NCL strategy of advocating for a particular constituency (labor for the WHB, women and children for the NCL). However, the Bureau sought to combine this form of advocacy with a dedication to scientific expertise and the production of useful data, similar to the AALL. In fact, Alice Hamilton also served on the WHB's Science Advisory Board, along with three other well-established scientists – James P. Warbasse, Emery Hayhurst, M.D., and C.E.A. Winslow (ibid., 433-4). The Science Advisory Board helped lend credibility to the Bureau and establish the validity of the data that they generated, making it valuable to their constituents.

Importantly, the aim of the WHB was to provide *labor unions* with missing data. Up until then, the conservative force of corporate – or government – affiliated research scientists produced most certified data, scientists who often conducted studies hoping not to offend their monied patrons (see Clark 1997, Ch. 2). Labor advocates, on the other hand, were often faced with attempting to prove that sickness was a result not of the innate susceptibility or incautiousness of the worker (Sellers 1997, 34), but rather of the toxic properties of industrial chemicals and working conditions. For the WHB, this meant informing labor groups that these

conditions were a reality worth opposing. Thus, the WHB had a three fold mandate: "establishing and supervising union health departments; undertaking occupational and environmental research and analysis; and making the information obtained from such research accessible to union members and other workers" (Gottlieb 1993, 70). With the latter goal, the group particularly sought to "[translate] the technical jargon and arguments of medical and public health researchers into terms designed to be easily understood by lay readers" (Nugent 1985, 435).

The importance of the last two mandates cannot be underestimated, especially in an atmosphere of intense antagonism to these sorts of claims both from industry and, at times, from workers themselves. The workers had to be convinced of the value of this information, forced to weigh toxic exposure and illness against possible unemployment (Sellers 1997, 34). By producing and spreading scientific data on the prevalence and impact of workplace hazards, the WHB hoped to empower workers to have a stronger voice about the conditions to which they were being subjected. As one trade union journal noted, "[w]hile the important work of the organization is to give expert advice to unions so they may incorporate in their trade agreements provisions that will guard the lives of their members and stimulate protective legislation, it is the scientific service the bureau was able to give at the very beginning that made its suggestions to union leaders carry weight" (quoted in Rosner & Markowitz 1987, 61). As an original pamphlet produced by the WHB stated, "Trade Unions Should Be Armed with Scientific Facts to Combat Health Exploitation" (quoted in Nugent 1985, 430).

The entire history of the WHB, however, encompasses a short-lived eight years. The only early twentieth-century Marxist medical institute devoted to labor in the United States

(ibid., 430), the WHB had attempted to challenge the emerging industrial culture. It was a culture which allied business, government, and science under an umbrella of status-quoism and which hindered broad-scale reform. Whereas both the AALL and the NCL attempted to work within the emerging given of the industrial order, the WHB attempted to subvert it. The attempts to integrate science and advocacy in this manner were met with resistance from both scientists and organized labor. For starters, it challenged claims that science was value-free. Given the antagonistic relationship between capital and labor, the scientist should be "an advocate and advisor to labor, 'teaching workers the meaning of the information gathered, and... enabling them to use this information for their own good in shop and home'" (Rosner & Markowitz 1987, 55). The researchers were not happy with this approach. Alice Hamilton left the Science Advisory Board, claiming that the WHB was "'violently prejudiced on the side of labor, so that it cannot see straight'" (quoted in Sellers 1997, 185). Labor unions were not happy either, as the Bureau suggested a kind of "dual unionism" (Nugent 1985, 433) when advocating for the rights of non-unionized workers, as well. With both major components pulling away, the WHB collapsed in 1928. Along the way, the labor advocacy group had some notable successes with the organized labor that remained affiliated with it, winning shorter work weeks and expanded compensation (Nugent 1985, 445). Despite its lack of longevity, the WHB pointed toward a means of understanding knowledge production that differed from the other models – not just knowledge, but knowledge for workers.

The WHB, however, typically remains overshadowed by the longevity and successes of

the NCL and the AALL⁴ (which achieved notable legislative victories like the Fair Labor Standards Act of 1938). These groups managed to retain influence in United States policy for decades, through careful production of information that other constituents could use, especially at the state level. The focus on industrial health and hygiene in this period helped to demonstrate the need for the production and dissemination of scientific information in the fight for environmental health concerns.

The efforts of groups like the National Consumers' League, the American Association for Labor Legislation, and the Workers' Health Bureau managed to change the landscape of worker health and safety, spurring the creation of compensation laws and even a new scientific discipline. Industrial hygienists came to define the appropriate method and the parameters of dealing with industrial toxics through professional engagement with both corporations and advocacy groups like those discussed above. This profession emerged to produce information demanded by a developing concern over worker health (a concern that scientists both responded to and helped create [see particularly Sellers 1997, Ch. 3]). Industrial hygiene had filled in the important role of information provider, serving a rapidly expanding industrial base from the late nineteenth to mid-twentieth century. After World War II, however, the problem would grow beyond their narrow professional realm and method.

Toxics Everywhere – Toxics Here

In this section, I want to jump ahead to the emergence of wide-scale concern about the presence

⁴ While the WHB disbanded in 1928, the AALL continued on until the death of its founder, John Andrews, in 1943. As the for the NCL, this organization is still around working to empower consumers. They can be found at <http://www.nclnet.org>.

of toxic chemicals in the environment. What happens when the chemicals escaped the confines of the factory and entered into the environment? The popular turning point, from more narrow concerns with workplace impacts and direct consumption to broader worries about environmental exposure, came in the 1960s. Carson's *Silent Spring*, published in 1962, represented a watershed event in popular, consumer-oriented toxic awareness. The opening pages set the tone: "A grim specter has crept upon us almost unnoticed, and this tragedy may easily become a stark reality we shall all know" (Carson 1962, 3). According to Carson, the grim specter, organic pesticides, had been imperceptibly infiltrating the most basic processes of life. These pesticides had their application in the environment, on farms and fields. As such, they seeped into water supplies and contaminated soils. Many people have discussed the past and current impact of this book (see for example Dunlap 1981; Graham 1970; Hynes 1989). Importantly, *Silent Spring* helped to open up debate about potential unknown novel compounds that could have unknown, deadly impacts on humans – not just humans that worked with the products or consumed them directly, but everyone who was exposed to them, knowingly or not.⁵ These ideas galvanized the new environmental movement and helped produce scores of governmental legislation (see Gottlieb 1993, Ch. 3).

The late 1970s and early 1980s proved to be an important time for broader, community-based anti-toxics mobilization efforts. Due to highly publicized tragedies like Love Canal, Woburn, and Bhopal, communities became even more aware that workers no longer held the

⁵ In addition, post-war concern in the 1950s about radioactive fallout also helped to raise public concern about environmental toxins (see Dunlap 1981; Lutts 1985). This rising concern can also be found in legislation. One such piece of legislation, the Resource Conservation and Recovery Act (RCRA) of 1976, offered an initial response to a growing sense of need for information about toxics by providing cradle-to-grave monitoring of hazardous waste.

monopoly of exposure to hazardous waste. These tragedies conveyed a sense of hidden danger and unknown risk to the places where ordinary, working people lived. In the context of these tragedies, older forms of intervention (based largely on studies of the workplace) failed to offer much hope. The experienced specialists – industrial hygienists – appeared ill-prepared for the expansion of the toxic concern (see Sellers 1997, 233). Government agencies who were used to dealing with toxic shop floors also proved unable to provide community members with the kind of help and information they desired (see Levine 1982, 73). People concerned with the spread and impact of toxic chemicals shared the concerns of labor groups and industrial hygienists. These citizens also fought to move the unknown hazards of modern life – unseen and potentially deadly toxic chemicals and pollution – into the realm of the known, the quantifiable, the controllable. However, the environment offered many different challenges to the production of that knowledge and certainty.

As the toxic problem shifted from the point of production to the multiple points of consumption, community-based activist groups needed to find new ways of dealing with this emerging issue. They had to create means of generating politically viable data and also to share experiences with groups in other localities. Despite new methods, however, these groups still defined the problem of toxic substances as primarily resulting from the lack of information (see Sellers 1997, 227-40). I want to examine these alterations and continuities in anti-toxics sentiment. To explore the general transition, I first want to contextualize the attitudes and events that shaped a new toxics consciousness. To do so, I examine well-publicized tragedies occurring in the early 1980s that helped crystallize popular American awareness of the problem of toxic exposure. These events - Love Canal, Woburn, and Bhopal – altered the political landscape by

initiating the mobilization of public resistance with regard to dealing with toxic substances. They became touchstones for community organization and legislative intervention. People sought to ensure incidents like these were never repeated. While each event contains complexities and differences all its own, the common thread between them all manifests as a cautionary tale about the perils of ignorance and the need for information. Below, I briefly outline each incident, particularly in terms of how communities mobilized to deal with the threat of exposure, and then explore the impacts of these events on the current anti-toxics movement.

Love Canal – A Tragedy Underground

The events of Love Canal have been well-documented (see particularly Gibbs 1982; Levine 1982). One should not underestimate the importance of the Love Canal incident on the landscape of modern U.S. environmental anti-toxics sentiment and modes of activism, as an “event” which catalyzed the public imagination (Fortun 2001, 77). Szasz argues that Love Canal helped propel anti-toxics as a “mass issue” – one taken seriously by citizens and government officials (1994, 38-54). The tragedy helped define an informed community as crucial to well-being. The people of Love Canal suffered because they first did not know of the presence of toxic chemicals in their community, and then because they could not prove the extent of the harm those chemicals caused to specific people. Thus, it bears examining the well-known details of this incident once again to explore the extend to which the tragedy gets defined as a result of information poverty, and thus influences the goals of future action and intervention strategies.

People living in the town of Love Canal in the mid-1970s had their fair share of working-class worries, but came to realize that the biggest problem could be found right under their feet,

literally. Unbeknownst to the residents of this upstate New York community, they were living over and sending their kids out to play atop a chemical waste dump. From 1942 to 1953, Hooker Chemical had dumped toxic chemicals into an abandoned, clay-lined canal, then covered it with soil. In 1953, Hooker sold the land to the local school district for one dollar, provided that the company was freed from any legal liability (see Levine 1982). Over the next two decades, city residents formed a community and built an elementary school in the area of the filled-in dump. Members of this community were largely ignorant of the presence, much less the impacts of these chemicals. After the pesticide Mirex found in Lake Ontario fish was traced back to Love Canal, there began a series of events that alerted residents to the heretofore unknown dangers of their living conditions. Faced with rapidly dwindling property values, along with escalating fears and health problems, the residents of Love Canal⁶ began to fight for increased safety and information about the threats to which they were exposed.

Some citizens of Love Canal attempted to make their community safer using a two-fold approach. First, they sought to identify the chemicals to which they were being exposed. Second, they needed to determine the possible and real effects these chemicals were having on their health. A particularly salient part of the tragedy of Love Canal involved a fundamental lack of information – people living there had no prior knowledge that the old canal, the namesake of the town, had been filled with industrial waste (Levine 1982). They were not fully informed

⁶ It is meaningful to note here that, despite the common referral to the “residents of Love Canal,” not all residents shared in the activities or views of those committed to seeking redress for the chemicals to which they were exposed (see Smith & Marquez [2000], for a comparative study of community groups on both sides of a Not-in-My-Backyard issue). As both Levine and Gibbs note, there were tensions regarding different interests and tactics, among homeowners and between homeowners and renters. There were even those people who were not outwardly concerned with the chemicals. I do, however, follow the convention in the remainder of this section – my references to the residents of Love Canal mainly refer to people allied with the Love Canal Homeowners Association.

about the potential risks they might face to their health (and property values) due to the presence of these chemicals. As such, they had no way of considering the acceptability of these risks of possible toxic exposure. The residents, in fact, had little reason to doubt their relative safety. When the news of the Love Canal tragedy broke, millions of other U.S. residents had to confront and call into question their own presumed level of safety and exposure (Szasz 1994, ch. 3).

Of course, once the residents of Love Canal became aware of the presence of chemicals, they could seek out the identities of those chemicals. The specific chemical substances which had been deposited in the chemical dump site included dioxin, benzene, toluene, trichloroethylene, and carbon tetrachloride – all suspected toxicants (Levine 1982, 41). What threat each chemical posed, however, involved information that either did not exist or was far from uncontroversial. The attempts made by community members made to identify what impacts particular chemicals were having on Love Canal residents involved many more complications than simply identifying chemicals. The challenges lay in several directions. Love Canal residents had to wade through existing scientific knowledge and its limitations (no data existed that could definitively prove politically necessary causality – that residents had been harmed by these chemical in these concentrations and combinations, at this place, over this period of time). They also had to create new data and defend its scientificity (residents collected their own data through cluster studies and interviews, only to have its validity questioned in policy contexts) and use these data to convince constituents at various local, state, and national levels (many people, including some residents, had to be won over to the fact that these toxic substances truly represented eminent risk and actual harm).

Some scientific information on the impacts of certain chemicals in animals and humans

already existed, at least in laboratory settings. Additionally, previous experimental data had been collected based upon workplace exposures to these chemicals. Through the industrial hygiene movement discussed above, for example, benzene had been linked with leukemia, toluene with anemia, and trichloroethylene with liver damage and deafness (Levine 1982, 41). However, this information did not translate well into real-time environmental exposure. Data generated in a lab with strict controls and isolated variables established a theoretical link between a certain chemical substance and a physiological effect, but such data did not necessarily assert that such a chemical has *in fact* caused such an effect in a *particular* person. In addition, researchers have to deal with different types of exposure. Environmental exposures tended to involve long-term, low-level contact which contrast with the acute, high-level exposure levels typical in lab settings. As Latour (1987), among others, has explained, the relationship between the laboratory and the world is far from direct. For any link to be established, several negotiations are required between competing social actors – the quality of the experiment, the adequacy of the experiment’s ability to model external conditions, and the particular external situation’s fit within accepted assumptions about the toxin and the disease.

As Love Canal residents discovered, existing scientific evidence of chemical toxicity, along with the presence of such chemicals in a particular area, does not provide conclusive evidence that residents have been unduly endangered or suffered any ill effects from what amounts to potential exposure. Thus, for example, dioxin could be experimentally linked with cancer in lab animals, could be found in soil samples in particular Love Canal residencies, and yet still be deemed as having caused no particular health effects (Levine 1982, 96-108). The industrial hygiene movement had produced data from longstanding engagement with chemical

hazards, and generated important information on potential impacts on humans. As noted above, however, these models were also arguably not analogous to wider-scale environmental exposure. The workplace itself acted as a kind of de facto laboratory, where exposure could be measured in discreet intervals and amounts (see Sellers 1997).⁷ Again, while data on potential hazards existed, no definitive particular link could be made for the residents of Love Canal. At best, one could make a declaration of potential risk⁸, but little more from existing scientific information.

What residents of Love Canal decided to do (a move repeated in Woburn later) was to conduct their own scientific surveys – what Brown has termed “popular epidemiology” (see Brown & Mikkelsen 1990; Brown 1992). With the help of scientific researchers such as Beverly Paigen and external environmental groups like Environmental Defense, Lois Gibbs and the Love Canal Homeowners Association (LCHA) conducted their own toxicological surveys and formulated exposure rates and theories on the flow of toxics (Gibbs 1982; Levine 1982). They conducted cluster surveys and tracked the flow of waste in efforts to link their place to the suspected effects of these chemicals. In fact, Paigen herself began conducting experiments in an attempt to help the residents establish the cause and effect connection between toxic exposure and health impacts in Love Canal.

Perhaps inadvertently, the Love Canal residents followed the model developed a half century earlier by the Workers’ Health Bureau. As detailed above, the WHB sought to align

⁷ The transition of control is worth noting. Workplaces gradually became more laboratory-like through the intervention by industrial hygienists. Originally, however, health effects witnesses in the labor force could not be directly attributed to work place exposure due to confounding environmental conditions (e.g. unsanitary living conditions).

⁸ In fact, in Love Canal, once government scientists announced the risk of miscarriage, they stopped recommending that those couples who were pregnant to be moved out with government assistance. The pregnant women could now make an informed choice about the risks of staying (Levine 1982, 108).

science with the particular interests of labor, seeing mainstream science as essentially a conservative tool for corporate powers. The WHB's own scientists, however, came to see this interested approach as compromising the integrity of the science. Similar results occurred in the case of Love Canal, except it was other scientists and policy makers who questioned the validity, the scientific merits of the lay group work and Dr. Paigen's own conclusions. That is, the residents' data were dismissed as unscientific, and Dr. Paigen's work was attacked by governmental scientists as being compromised by her partisanship and thus lacking objectivity. Dr. Paigen was later fired from her job, and then had her work smeared even more because she was an unaffiliated private citizen (Levine 1982, 162).⁹ The LCHA, then, had limited success in generating politically viable scientific information; however, it did manage to create enough data and public interest (through holding EPA officials hostage, in one case) to help create a public perception that something was wrong.

The creation of these data sets – collecting cluster surveys and identifying exposure zones - did provide crucial assistance in convincing others that there were hazards present in Love Canal. What is worth noting here is that much work had to be done to get that message out, even to the residents themselves. Lois Gibbs, in fact, can be credited with making the chemical toxics issue a community issue. Prior to her intervention, residents tended to view recurrent health problems as isolated personal matters (ibid., 33). Gibbs, who was joined by Debbie Cerrillo early on, changed the way community members saw disease, not as the result of dumb genetic

⁹ Interestingly, Levine (1982) views the treatment of Dr. Paigen and the Love Canal residents as resulting from corruption and a disregard for proper scientific ethics and procedure. While there definitely existed bias and power inequities with regard to the Love Canal situation, I would argue that much of that is inherent in the scientific endeavor, though usually less visible.

luck, but rather as systematic exposure to chemical wastes. Some remained unconvinced (see [fn 5](#)). Importantly, the people of Love Canal, specifically the members of the Homeowners Association, had to overcome the spatial isolation of their suburban existence to establish their very existence as a *community*. People bonded through the commonality of exposure to toxic chemicals and experiences of disease. In noting that many people in the area were suffering similar health problems, the residents of Love Canal were able to become a community, at least defined in this narrow way. The generation of information of this sort – shared disease experience and worry – enabled the group to form. People began to see their area and themselves differently. The area became a polluted place, and they became members of a community which has been unjustly exposed to toxic waste.

Once the community of Love Canal mobilized around toxic exposure, different data had to be collected. This data included the disease clusters and theories on exposure rates, which in turn reinforced the perception of the community as a meaningful entity. This collection of information, while not conclusive, did help to communicate the situation of Love Canal to a wider audience, eventually leading to major relocations of many Love Canal residents. Thus, the production and communication of information – about themselves, about the toxics, about the area – produced “Love Canal” as the environmental icon it has become.¹⁰

Woburn – Tragedy in the Water

The events in Woburn, Massachusetts, in the 1980s, continued the catalyzation of an emerging

¹⁰ The Environmental Protection Agency recently sought to end the toxic legacy of Love Canal by delisting the community as a Superfund site (see DePalma 2004).

community-based anti-toxics movement. Particularly, while the actors were different, much of the story in this situation repeats patterns seen in Love Canal. In Woburn, the toxics were trichloroethylene and tetrachloroethylene, the polluting companies were W.R. Grace and Beatrice Foods, the local activist group was For a Cleaner Environment (FACE), and the particular illness was leukemia (Brown & Mikkelsen 1990). The residents of Woburn were unaware that they were being exposed to the chemicals, primarily through their ground water. Once they discovered this hazard, the community members sought remediation, learning that (once again) the presence of chemicals might indicate risk, but it does not prove cause of harm. To gather this information, the residents also engaged in their own popular epidemiology, by performing cluster studies, the results of which indicated higher than expected incidences of leukemia (ibid.). The validity of these data was challenged as lacking scientific objectivity and rigor. However, the production of this information, combined with the general emerging fears of hidden toxics, allowed citizens of Woburn to settle the case against W.R. Grace to the tune of 8 million dollars.

The incidents at both Love Canal and Woburn helped to inaugurate a new form of environmental action and intervention, based upon the activities and goals of small, community-based groups. The events and mobilizations that occurred in Love Canal and Woburn (along with others in Times Beach, Missouri, and elsewhere) challenged more traditional models of environmental advocacy. For years, the environmental movement's typical representative groups included large, bureaucratized organizations that dominated the environmental policy setting agenda (see Gottlieb 1993; Hays 1987). This Group of Ten, including the Sierra Club and the Environmental Defense Fund, worked as lobbies for a particular vision of environmental problems more generally conceived – fighting for general policies and laws protecting

wilderness, combating ozone-depleting emissions, promoting renewable energy. Bureaucracies themselves, these environmental groups worked closely with industry and government to alter national policy and were less concerned with smaller, more concentrated problems plaguing urban areas and minority populations.

Community engagement with toxic substances brought another model. As Gottlieb notes, “[s]ince the 1970s, there has emerged, distinct from the mainstream groups, a powerful current in contemporary environmentalism focused on issues of empowerment, environmental justice, equity, and urban and industrial restructuring... This alternative movement is predominantly local in nature, more participatory and focused on action, and critical of the roles of expertise and lobbying in defining environmental agendas” (1993, 170). Larger groups tended to deal with more general policies and invoked their own rhetorical stance through expertise and compromise. The local groups, emerging from their own frustrations with bureaucratic systems, found mainstream groups unresponsive to local needs and modeled too closely to the very structures that had transgressed their community. This criticism of mainstream environmental groups emerged out of necessities in attempting to deal with particular local problems and asserting some power over how questions were posed and resolved. These groups, the LCHA and FACE, worked hard to create very specific information about their place. After recognizing connections and hazards, they engaged in popular epidemiological studies of their local community. These studies did not carry the political cachet of institutionally sanctioned scientific knowledge; however, they helped groups achieve their ultimate goal of using their local knowledge to gain a voice in the decision-making process.

The tensions between the mainstream environmental groups and locally-based anti-toxics

groups coalesced around issues of information and knowledge. In one sense, the struggles found here in defining and confronting environmental problems through scientific knowledge mimic the differences between the workers' health groups discussed above. The mainstream groups took on the guise affected by the American Association for Labor Legislation (and to a lesser extent the National Consumers' League): nationally focused, creators and certifiers of relevant scientific data, power and prestige radiating out from the center (see Sklar 1995). They saw local groups as simple extensions of the authority vested in the national group. Policy was the avenue of change. This style of approach had limitations, however, in keeping local links vital. The laborers, the purported beneficiaries of AALL's work, had little input and at times little interest in the efforts of the larger national organization. Similarly, the local anti-toxics groups found the Group of Ten member groups to be questionable allies (Gottlieb 1993). These large mainstream groups sought to help protect the environment (usually defined as wilderness) but tended not to seek out the opinions and experiences of community-based advocates. These local groups followed (if only by necessity) the model of scientific knowledge production advocated by the Workers' Health Bureau: science in the service of labor/localities, conscious of the constituencies' particular needs and experiences. Residents of both Love Canal and Woburn residents found existing scientific data wanting with regard to their specific contexts. The universal pretensions of science did little for the localities being affected. So, the groups looked for scientists interested in assisting with their specific plight and even took to doing science themselves.

These exercises in popular epidemiology represent the sense in which the emerging community-based environmental anti-toxics activism diverged from earlier industrial hygiene.

The community groups were too particular a contingency initially, with experiences that were too specific to the locale, to rely on the WHB model of scientific knowledge disbursement. Where the WHB sought to create a pool of data that could inform various labor groups, the communities had to produce their own specific data. The difference here should not be overemphasized, however, as what emerged from the early experiences was a model for the engagement in anti-toxics activism. That is, the groups produced knowledge of how best to confront the vested interests that may align against local activists (see Jamison 2001, 152). LCHA and FACE eventually developed a strategy that confronted the insufficiency of existing science, the political resistance to change, and the need to produce local, specific exposure data. Two national intervention groups took up this basic strategy – the National Toxics Campaign (NTC) and the Citizen’s Clearinghouse of Hazardous Waste (CCHW).¹¹ These groups emerged in the 1980s as vehicles for coordinating local activists. They provided access to existing data and offered guidance to communities needing to produce new data to combat existing and future hazardous waste dumps and production facilities. The model that participants of those experiences developed, then, helped to mold the anti-toxics movement into a *movement* – creating an environmental anti-toxics activist identity. The further concretization of this identity, through the installation of environmental policy, awaited an international tragedy – Bhopal.

Bhopal – Tragedy in the Air

The disaster of Bhopal, India, possesses different characteristics than those of Love Canal and

¹¹ In particular, CCHW was created by Lois Gibbs, hoping to provide help to others based upon her own experiences with Love Canal and the LCHA.

Woburn. This disaster shifted the focus from toxic disposal sites to chemical production facilities and their surrounding communities. As such, in the case of Bhopal, the exposure did not occur slowly and subtly, but dramatically and immediately. The number of people directly impacted was much greater than either of the two previous incidents, and the outcome was much more direct and visible. Viewed through the lens of risk and information, however, the lessons are similar to those of Love Canal and Woburn. In all cases, a lack of important information created and compounded the extent of the ensuing tragedy.

The precise events of the Bhopal tragedy have been thoroughly addressed by many excellent scholars (Kurzman 1987; Wilkins 1987; Bogard 1989; Fortun 2001, among others); however, how various policies and groups configure the importance of the event (what they remember, what they learned) remains important to the scope and strategies of later interventions. On the evening of 2 December 1984, part of the Union Carbide plant in Bhopal, India, state of Madhya Pradesh, exploded, exposing the surrounding community to a large cloud of methylisocyanate (MIC) – a toxic chemical used in the production of pesticides. Purely technical explanations exist which account for the cause of the explosion – an improperly closed drain allowed water into a tank of MIC, which reacted violently, leading to combustion. Other accounts look to underlying causes of the disaster – corporate malfeasance, global economic pressures, sabotage. The tragedy, however, involved more than the release of the gas. As residents of Bhopal were awakened that evening by a burning gas (some people thought neighbors were roasting red chili peppers [Fortun 2001]), they fled toward rather than away from the gas. The final impacts of the gas on humans remain unclear to this day. Depending upon the source, the numbers of deaths range from 1250-1900, with those immediately injured ranging

between 200,000 to 600,000 (see Wilkins 1987; Fortun 2001). What is clear is that the overwhelmed doctors, seeking to treat those exposed, were unaware of the cause of the distress, what they were supposed to be treating. The health professionals knew of the gas, but did not know what the gas was, and as a result prescribed treatment regimens that actually exacerbated the effects of MIC. Union Carbide was initially quiet about the extent and composition of the explosion. The direct impacts of this silence cannot be fully measured, but the hazards were magnified by the company's failure to publicize the specific dimensions of the disaster. Also, neither the company nor the community had developed emergency plans in case of a catastrophic occurrence. In any case, the people of Bhopal were subjected to tragic events made worse by a lack of information – where the gas was coming from, what the gas was, what the gas did.

The cause and effect of the incident remained ambiguous enough to various actors that each could make different attributions and draw different lessons (for an in-depth analysis of these narratives, see Fortun 2001). For the present purposes, we can examine how the incident was imported into the United States environmental and political context. The tragedy of Bhopal had a palpable impact on American environmentalism and environmental policy. A subsequent incident in Institute, West Virginia, the following year (at a sister plant to the one in Bhopal), helped crystallize concerns about living near and around chemical production. In effect, the Bhopal incident brought the industrial hygiene movement and community-based environmental anti-toxics activism more closely together. The workplace, even in production, could no longer be viewed as a closed system (ibid.). Rather, the complexities and hazards of these production facilities now represented potential threats to surrounding communities and thus entitled those communities to know what threat they posed. So emerged “Bhopal’s Babies” (ibid., 63)–

environmental regulations intended to facilitate the disclosure of risk. These pieces of legislation, together with the expansion of community-based anti-toxics groups, come to define the modern movement.

Modern Interventions – Community Groups, National Organizations, and Legislation

The modern environmental anti-toxics activism movement inherits the basic approach to toxic substances developed by industrial hygienists, but adapted to suit a shifting context. That context includes the presence of tragedies, like those discussed above, which heightened the general sense of awareness that “[t]o be a citizen is to be a *potential* victim” (Feenberg 1999, 120). Everyone needed to confront the possibility that their neighborhood, their home, their playground, contained dangerous levels of hazardous waste. To face down these realities, people sought to avoid the fates of the Love Canal and Woburn communities and demand information about the presence and impacts of toxic chemicals. As a result, an increasing number of proactive groups formed to lobby for more information about existing toxic substances, to protest the siting of future waste producing or processing facilities, and to call attention to existing disparities in toxic exposure (especially for racial minority groups and impoverished communities). These groups, both Not-in-My-Backyard coalitions and Environmental Justice advocates, helped to constitute the present push for combating toxins in the environment.

Another lesson that community groups learned from the U.S. disasters was the importance of pooling resources and sharing information and experiences. LCHA and FACE developed strategies for dealing with government agencies, courts of law, and reticent corporate polluters. This information would be invaluable to nascent, widely dispersed groups just starting

to mobilize around a local issue. To this end, the national organizations mentioned earlier (NTC and CCHW) helped to facilitate knowledge exchange between groups, sharing sources and experts and methods. These national organizations increased the available support network for community-based anti-toxics activists and augmented the production and distribution of information.

A final component of the modern movement came in the form of government legislation – Bhopal’s Babies mentioned above. The U.S. government responded to the Love Canal, Woburn, and Bhopal tragedies, along with the growing public anxiety over toxics, by enacting laws meant to increase the amount of information on toxins available to local communities. In particular, the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 established provisions for the collection and dissemination of toxic pollution data. The act mandated emergency response plans and the creation of a computerized database of emissions (the Toxics Release Inventory). This database offered another tool for community activists who could now download publicly available information on which companies were polluting what chemical in what location.

In the final section of this chapter, I explore in detail the emergence of these three components of the modern movement. I track how each respond to some lesson from the toxic catastrophes of the late 1970s and early 1980s, particularly in terms of the value and use of information. What information was missing from those incidents? What new information is now needed to mitigate the problem of toxins?

Emergence of Not-in-My-Backyard Groups & the Environmental Justice Movement

In the years and now decades following the Love Canal, Woburn, and Bhopal incidents, numerous small groups sprang up in reaction to the perceived lack of information and assurances of safety regarding exposure to chemical hazards. Some were short-lived, single target coalitions looking to stop the siting of an industrial waste facility, while others were longer-termed, large-focus groups organizing the alter the toxic landscape of the United States. The mobilization of these various groups emerged from an underlying fear of the dangers of hazardous waste, and a desire to make those dangers visible to the wider community (see Fischer 2001, 125). The construction of the outrage could take the form of environmental justice claims or so-called not-in-my-backyard (NIMBY) coalitions. These coalitions fought existing pollution and challenged the future siting of toxic waste facilities,¹² and did so very successfully (ibid., ch. 7). Fear of the unknown could be a powerful motivating factor in mobilizing community groups against the possible introduction of a toxic substance, especially when the impact of that substance was uncertain.

Community groups fought for the right to not be exposed to toxic substances. Industry sources grew angry at this new phenomenon that effectively put a halt to the easy disposal of waste. For many on the production side of things, people were acting in an irrational manner, blowing the actual risk that the pollution presented out of proportion. Other critics of this NIMBY phenomenon pointed out that communities often wanted to benefit from the services of

¹² Importantly, the NIMBY phenomenon is in no way limited to the opposition of hazardous waste alone. The label has also been appended to: “landfills, prisons, power plants (nuclear or otherwise), industrial parks, housing for the homeless, [and] treatment facilities for drug addicts” (Fischer 2001, 125). In the context of this analysis, however, I will be sticking to the NIMBY phenomenon with hazardous waste facilities.

the waste facilities, they just did not want to have to bear the burden of proximity. Importantly, the goals of many of the groups grew from a not in my backyard mentality to a not in anyone's backyard strategy. Whatever the limitations or narrowness of the various NIMBY actions, there existed at this time a palpable "bubbling up" (Henson, quoted in Fortun 2001, 308) among various communities reacting to this new era of insecurity.

Combating against hazardous waste siting and exposure, groups did not limit their rhetoric to inconvenience or risk. Many people who were traditionally disempowered politically, such as members of minority groups and poor people, drew on the language of justice to make their case against these hazards (see for example Adeola 1994; Bullard 1990; 1994; Hofrichter 1993; 2001). The environmental justice movement emerged out of an understanding of the potential risks posed by hazardous waste, and anchored their arguments to notions of lack of fairness or unequal distribution of risk. Environmental justice advocates argued that these traditionally disenfranchised groups who lacked the political and monetary resources to fight the proposed sitings of hazardous waste facilities had to suffer a disproportionate burden of these facilities. No one could be certain about the amount of risk any particular toxin posed any particular community. However, this lack of knowledge served to augment the case for environmental justice. Whether actual or potential risk, minority groups and impoverished peoples had to bear the brunt of the uncertainty. This disparity was unjust.

The wellspring of anxiety that surfaced in the 1980s and continued into the 1990s generated many scattered community groups aiming to limit their risk as much as possible, especially with regard to new threats. As many local groups formed, nationally-minded organizations sprang up to help organize the movement and provide a means to access the

information (about toxics, about risks, about politics) that would help make so many of the local efforts successful. I now turn to two examples of such national organizations – the National Toxics Campaign (NTC), founded by John O’Connor, and the Citizen’s Clearinghouse for Hazardous Waste (CCHW), founded by Lois Gibbs.

Anti-Toxics Organizes Nationally – ‘People to People’

Amongst all the foment and unrest, organizations emerged to mobilize and assist these disparate local groups. They helped to construct a “formal organizational infrastructure” (Szasz 1994, 74). Much like the workers’ advocacy groups earlier in the century, these infrastructural endeavors provided access to information and instructed communities on how best to organize and challenge hazardous waste emissions or sitings. While both organizations also engaged in broad national campaigns,¹³ their main business has been aiding local community groups in their organization efforts.

The two groups began in the early 1980s. CCHW started in 1981, hoping to use the lessons learned at Love Canal in subsequent community organizing. The NTC began, in 1984, as a coalition to aid in the passage of Superfund Reauthorization, then became an advisory group to local community groups. Both organizations created a national presence for the community-based anti-toxics movement. In fact, CCHW became the prototypical model of national organization aimed at helping local anti-toxics interventions. Both groups followed similar models (ibid.,75) - people or groups who became interested in the issue of toxics or who were

¹³ For example, the Citizen’s Clearinghouse for Hazardous Waste ran the Stop Dioxin Exposure Campaign in 1995 (see <http://www.chej.org/>).

concerned about their local environment could seek out the resources (monetary, experiential, organizational, and informational) of either group to aid in their efforts. The goal has been both to foster small, community based groups to take responsibility for the places in which they live (to own the issue), and also to guide those groups to helpful sources of information and to interpret that information, making it intelligible and political effective.

The formal infrastructure of the movement gave people valuable resources from which to draw. The NTC, unfortunately, folded in 1995, but not before supplying over 2000 local coalitions with valuable support (ibid.; for a discussion on why the NTC folded, see Fortun 2001, 308-311). The CCHW underwent a name change (it is now called the Center for Health, Environment, and Justice [CHEJ]), but is still going strong. Since 1981, CHEJ has helped over 8000 community groups and receives about 1500 requests for assistance a year (see <http://www.chej.org/about.html>). The intervention that CHEJ provides is still very much geared toward the local community. The organization provides assistance in locating the information and people that might prove helpful in the struggle. Importantly, CHEJ attempts to maintain a very personal connection to the groups it assists. As they note on their website, “It’s About People to People” (<http://www.chej.org>).

Right-to-Know

The Bhopal incident shifted attention from where the chemicals ended up to where they were produced. Production facilities not only released toxic substances knowingly, but could be subject to catastrophic accident leading to wide-scale exposure. Within the context of the U.S. government, Bhopal produced the lesson that living next to or near a chemical production facility

comes with the risk of such an accident. Thus, the government constructed the tragedy of Bhopal as one of information poverty rather than corporate negligence. To that end, Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA) in 1986. The EPCRA was Title III of the Superfund Amendments and Reauthorization Act (SARA), which governed waste disposal practices, tying waste disposal to emergency response planning (Hadden 1994, 92). Title III had four provisions: emergency planning and response, including State Emergency Response Commissions (SERC) and Local Emergency Planning Committees (LEPC); emergency response, which required industry to immediately report identity, effects, and precautions regarding released chemicals; right to know, which required facilities to provide information on chemicals stored or used there if above certain threshold; and the Toxics Release Inventory (TRI), which required the availability of data on releases, which must be computerized in a database. The computerized database (TRI) catalogues the type and amount of chemical released by particular industries. Industries are required to supply that data, but it is self-reported.¹⁴ With the creation of the TRI, large amounts of computerized raw data on toxic emissions became available – information that could, at least in theory, empower the individual to make informed decisions about the risks they faced from toxic emissions and the strategies they would adopt in the case of emergency. Thus, data collection and availability has been

¹⁴ The data have severe limitations. To be obligated to self-report emissions, businesses have to meet the following requirements: ‘The facility falls within one of the following industrial categories: manufacturing; metal mining; coal mining; electric generating facilities that combust coal and/or oil; chemical wholesale distributors; petroleum terminals and bulk storage facilities; RCRA Subtitle C treatment, storage, and disposal (TSD) facilities; and solvent recovery services; Has 10 or more full-time employee equivalents, and; Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year. Persistent, bioaccumulative and toxic (PBT) chemicals are subject to different thresholds of 10 pounds, 100 pounds or 0.1 grams depending on the chemical’ (http://www.epa.gov/tri/2002_tri_brochure.pdf). In addition, the number of recognized toxins now stands at about 667, and industries can petition to not make their emissions public if they can show that such information may lead to a breach in national security, in that the site could become a terrorist threat based on the chemicals present (Hadden 1994). This latter provision is disquieting on many levels.

embraced by U.S. regulatory agencies (and to an extent by industry). Such measures forego costly and cumbersome legislative oversight on the actions of industry, on the assumption that this information will facilitate regulation. Informed citizens, acting on knowledge about pollution and polluters, could protest company behavior by publicizing bad actions and boycotting certain products.

As Hadden notes, however, having the right to this data does not directly translate into having either a willingness or an ability to exercise that right (1989, 101). The construction of the TRI database along with the emergency response planning groups allowed for the availability of a vast array of information. For the community activist, concerned citizen, or even just curious citizen, two main problems remained: how to get the information and what to do with the information once they acquired it. The Environmental Protection Agency solved the first problem themselves. Written into Title III, Section 313, the Toxics Release Inventory must be stored on a computerized database (*ibid.*). The database has been in existence since 1988, and the EPA provides access to the TRI on its own website: www.epa.gov/tri/. Here the individual can put in their zip code and get a listing of all the companies that are required to comply with the TRI statute. I will examine the importance of this website interface in later chapters. For now, the important issue remains the extent to which this information has become available online.

The second problem, however, proved less straight forward – for while the information may have become available, what should be done with that information remained unclear. For their part, the EPA explicitly refuses to provide any analysis of the data; the agency will not make any statement about what the various numbers might mean in terms of risk or hazard. The

EPCRA provided for the creation of such a database, but not for official declarations on what those numbers say about the risks involved in living in a particular place.¹⁵ Simply put, these numbers on their own mean nothing, outside of some interpretative framework. The U.S. government refuses to provide such a framework, allowing intermediary groups the privilege and the liability.

The EPCRA created more information on toxic chemical emissions. National groups provided a framework for assisting local groups in mobilizing resistant to those toxins, supplying information, experience, and contacts. Local groups needed to identify a potential problem and then work to combat it. Both the law and the national organizations helped to focus attention on what might constitute a local issue. Regardless, the lessons that the modern movement has learned include the need to produce and distribute more information about toxins – where they are and what they do.

This law appears to represent the culmination of a century's worth of activism and struggle against pollution. Information was missing; information is now being provided. Of course, the problem of pollution is not *simply* an information problem. Other important factors must be neglected or minimized in order to conceive of pollution as primarily an issue of absent data. The history of struggles against toxic substances can also be told with attention to corporate power and malfeasance, to capitalist modes of production, to community struggle with

¹⁵ In Europe, similar legislation has been passed regarding the development of plans in case of toxic release. The Seveso directive, however, is conceptualized more as a “need to know”, rather than a right to know, with governments taking a more active role in both defining problems and providing citizens with readily understandable recommendations (see van Eijndhoven 1994, 127).

and against scientific expertise, to the systematic and purposeful targeting of groups disempowered not just by lack of information, but also by race and income and education. As I will explore more fully in the next chapter, this pared down version of the problem – get information, get better – is in part shaped by the technology (the Web) used as the main mode of intervention, as a *solution*. The lesson of toxic struggles *becomes* one emphasizing the primary need for information.

As I will set out the next chapter, a few coalitions have taken these truncated lessons of history and moved them into the digital sphere. Websites have sprung up that attempt to take advantage of the communicative possibilities and flexible nature of the Internet in the service of the anti-toxics movement. In the next chapter, I first explore the emerging characteristics of the Web as a medium of information distribution. Then, I read back into the historical narrative from the point of view of this medium – how might the information distribution qualities of the Web influence the understanding/construction of the problems and lessons of combating toxic pollution? Lastly, starting with the EPA’s TRI and Window to My Environment websites, and extending to rtknet.org and scorecard.org, I examine the parameters of these activist-oriented websites. I parse how they organize and present information, configure the interface and the user of the information, and suggest strategies for intervention. In short, I ascertain how the modern environmental anti-toxics activism movement gets translated into the digital realm of the Web.

Chapter Five

Digital Intermediaries: The Web and Online Environmental Anti-Toxics Activism

I guess there's a lesson in all this. Get to know your chemicals.

Don DeLillo, White Noise

In the last chapter, I explored a history of activism aimed at taking on toxic substances. That history could be defined in large measure by the need to produce and distribute information to people. Activism of this sort grew out of desires to know about and in some sense exert control over toxic substances. To satisfy these desires, groups had to produce and distribute knowledge to an ever-widening array of people – from labor groups to community groups to everyone. As the issue grew, so did the storehouse of knowledge and the potential constituency. Political victories (like the TRI database) produced more information about who was polluting what, and where. Activist groups had to face the new challenge of message transmission – how can they communicate this new information to more people? How can anti-toxics activists advertise their message? One possible solution came in the form of new distribution technology – the Internet – which could change the ease and the manner with which individuals obtained this information. After the legislative victories of the Community Right-to-Know Act and its associated Toxics Release Inventory, activists now had more information about the production of toxins than ever before. The question involved what to do with it. How can people become aware of both the availability and the power of that information? That answer, it appears, came in the guise of

networked computers.

This chapter deals with the emergence of digital environmental anti-toxics activism and is organized around three central questions – how did the Web develop into something anti-toxics activists would want use to distribute information, how might that technological development influence the definitions of the problems of and solution to toxic pollution, and how do current activists use the Web to confront this problem? Thus, before we engage specific environmental anti-toxics use, I want to engage in a bit more historical analysis, tracking the emergence and popularization of the Web. Sticking with the philosophical and historical framework of technological development expanded in Chapter Three, I want to explore why the Web became what it did, and not just assume that the best possible design emerged. This technology itself has an important history that is neither obvious nor linear, but helps to show why the Web became the most popular Internet application. What different concepts of the Web emerged, and what might explain its current manifestation? What characteristics make the Web so appealing? What relationships does it foster between the user, the designer, and the Internet itself? How has it become such a widely accepted tool of empowerment? The Web represents the application that broadened the definition of networked user and thus facilitated the explosion of Internet use. This application, with its perceived ease of use, potential for updatability, and emerging wide-scale availability, surfaced as a logical choice for the extension of environmental anti-toxics activism. Websites have become portals of information distribution that, on their surface, are ideal media for distributing the anti-toxics message.

The first part of this chapter, then, sketches a history of Web development, tracking the changing designs that led to the current browser model. The second part engages the relationship

of technology to historical narrative, particularly in terms of *designing* a technology to *solve* a problem. In this section, I borrow from Fortun and show how entities “remember” certain events as being caused by certain factors that will, in future, need to be altered or reinforced. Next, I extend this concept of remembrance into technological design to explore how things – in this case websites – can encode particular historical understandings through creating a tool to *fix* the problem so defined. In this specific case, I argue that Web-based environmental anti-toxics activist sites remember the problem of toxics, conveniently, as an information problem, thus justifying their current existence, configuration, and emphasis on the power of access.

The third part of the chapter moves into specific uses of this technology by environmental anti-toxics activist groups. How did these groups, emerging out of an understood trajectory of information poverty, envision the Web and design websites that sought to distribute information about toxic substances? My main examination in the remainder of the chapter engages three websites aimed at providing information on toxics to the wider public: the Environmental Protection Agency’s own Toxic Release Inventory website (<http://www.epa.gov/tri/>); OMB Watch’s Right to Know Network website (<http://www.rtknet.org/>); and, most conspicuously, Environmental Defense’s Chemical Scorecard website (<http://www.scorecard.org/>). In parsing these sites and the respective interfaces, I seek to establish two things – the primacy of these particular sites as portals to online anti-toxics activism and the means by which the sites facilitate access to information about toxics. The former goal involves asserting the general prominence of these websites within the constellation of online anti-toxics activism, in order to justify the necessity (if not the sufficiency) of exploring them in depth. I intend to show that, in dealing with these three interfaces, one could draw conclusions about the more general possibilities and

limitations of this form of activism, as worked out in subsequent chapters. The latter goal builds on what David Silver has called “interface studies” and described as the “move to study the [website] interface as a site of culture, as a significant player in the kinds of interactions made possible, promoted, and thwarted by various Web designers” (2003, 284). In exploring these interfaces, I establish that the context in which the data are presented makes important contributions to the meaning and acceptance of information. As portals of information distribution, these websites focus attention and shape messages. That is, activist websites speak to a broad online audience while at the same time attempting to convert that audience into people recognizing the power of information in confront toxic substances. While not attributing sole power to website designers proper, I examine the interfaces of the three websites to ascertain the explicit ways in which individual users are encouraged to regard and to use the information provided to them. In the end, this chapter demonstrates how activist websites translate an image of environmental anti-toxics activism into the digital medium of the World Wide Web.

The World Wide Web – A New Medium of Information Distribution

The history of the Internet itself contains the unforeseen developments and political struggles that one might come to expect from the emergence of a new technology. That is, what the Internet was to become could not have been foretold from the early stages of its development. This history has been covered extensively by many credible sources (e.g., Abbate 1999; Gillies & Cailliau 2000; Hauben & Hauben 1997; Naughton 2000; Stefik 1996). Thus, I do not want to go into too much depth regarding how the Internet came into being. Instead, I want to give a brief overview of the people and concepts which helped to constitute the shape of the Internet

today, then quickly turn to a more extensive focus on a specific online application – the World Wide Web – in an effort to parse the elements of this application that make it so powerful and useful. In particular, I explore the characteristics of the Web that make it appealing to groups interested in distributing information to a potentially large and varied group of people.

I have chosen to give the briefest of historical overviews of the Internet in favor of a more detailed look at the World Wide Web, but I have not made this decision casually. I want to use this gloss to make a larger point about the relationship between Web interfaces and Internet architecture. As I hope to make clear below, the Web itself tends to have a glossing effect; it provides an interface that valorizes the presentation of information while rendering the enabling technologies of the Internet less visible. Tim Berners-Lee distinguishes the two technologies this way:

The Web is an abstract (imaginary) space of information. On the Net, you find computers -- on the Web, you find document, sounds, videos,.... information. On the Net, the connections are cables between computers; on the Web, connections are hypertext links. The Web exists because of programs which communicate between computers on the Net. The Web could not be without the Net. The Web made the net useful because people are really interested in information (not to mention knowledge and wisdom!) and don't really want to have know about computers and cables. ([Berners-Lee](#) 1998, format preserved)

Berners-Lee's delineation between hardware and software here provides a means of seeing both how these two entities are interrelated and how easily the Web can supplant the Internet in language and argument. That is, the Internet provides the physical means through which the Web "exists." On the other hand, the Web has become the main point of interaction for the plethora of users who "don't really want to have to know about computers and cables," and thus can more easily ignore the specific physical infrastructure that enables this digitized behavior.

Janet Abbate has made the more general claim that “communicating media often seem to dematerialize technology, presenting themselves to the user as systems that transmit ideas rather than electrons” (1999, 5). As interface, the Web serves to downplay the other technologies that make it possible. Thus, I have chosen to focus on the Web and not the Internet. In Chapter Seven, I revisit the implications of this “messy detail” ([Luke 1997](#)), the reality that digital transmissions require physical infrastructure, in the context of environmental anti-toxics activism.

The story of the Internet begins as early as 1962, and includes the development of a decentralized data transmission network that could connect computers and thus by extension sites of research or governance. The development of the Internet could be described in terms of shifting sites of controversy – people had to settle particular controversies to set the stage for later one. These sites included the physical architecture of the Internet itself, the protocols and languages designed to govern the transmission of data from point to point, and the creation and adoption of applications that could make such data present to users. The basic physical requirements were satisfied in the form of a so-called Internet backbone. This backbone – the technological infrastructure composed of systems of computers and phone lines and modems and code protocols – initially developed through work by the Advanced Research Programs Agency to link up scientific research institutions, but soon became more ubiquitous in terms of its scope and availability ([Leiner, et. al 2000, 8-9](#)).

The stabilization of this network technology required the settling of another, related controversy regarding command protocols. As Murphy notes, networks can function only “when they are structured according to rules” (2002, 30). In this context, there would need to be rules

that would govern the transmission of information packets between computers. Several possible control protocols existed, including rival platforms like Open Systems Interconnection (OSI) with its related X.25 protocol and the Telecommunications Control Protocol/Internet Protocol (TCP/IP) which competed for dominance (see Gillies & Cailliau 2000, Ch. 2). According to Gillies and Cailliau, the OSI protocol supported by the International Standards Organization (ISO) lost out, in large part because the ISO “concentrated their efforts on designing a system that would be easy to charge for rather than one that would be easy to use” (ibid., 65). The open and simple TCP/IP platform was readily available and easily fixable, thus allowing more people to use this form of standardization.¹ Thus, the widespread international adoption of the TCP/IP in the 1980s paved the way for true networking, as it provided a standard code for transmissions to take place ([Leiner, et. al 2000](#)).

This technological stabilization of infrastructure and protocol enabled the creation or continuation of a wide array of networking applications. Several nascent programs emerged to take advantage of the growing technological infrastructure that digitally connected people: Usenet, MUDs, MOOs, news groups, email. Out of this array, however, one application came to represent most other Internet interactions – the World Wide Web. Before the advent of the Web, people could, in theory, gain access the Internet, but those people really had to know what they were doing in order to make the Internet work for them. Despite it’s theoretical “egalitarianism..., the Internet’s tight de facto admission requirements of technical acumen, access and pricey tools also made it a very elite realm” (Reid 1997, 5). An application was

¹ It is one of the seductive ironies of the Internet that the platforms and models that win out often do so because they (initially) can be freely manipulated by enthusiasts. The settlement of these controversies evolves from successful enrollment of numbers rather than the invocation of commercial interests.

needed that would lower the bar of participation, enabling more people to be able to participate in this networked life. That application turned out to be the Web.

Beginning in the early 1990s, the Web facilitated the wide-scale use of the Internet by widening (or at least simplifying) the definition of possible user. Barrett notes that “[t]he Web has been described as the ‘killer application’ for the Internet: the application that took the Internet from a relative handful of enthusiasts, into the domain of serious, commercial and governmental users” (quoted in Graham 1999, 22). To that list I would include legions of casual users looking for information, recreation, even love. More importantly, the Web has become the most popular application for using the Internet (Gillies & Cailliau 2000, 1) and the point of entry for many other forms of Internet communication and application (see Salter 2003). In fact, as people use the Web more and more to inhabit the Internet, the two often get conflated; as Robert Cailliau noted, in 1995 the Web was “generally equated with the internet” (1995).

As such, I want to focus on this so-called “killer application.”² Why did it become so? What makes the Web so appealing for users and how did the Web alter who *could be users*? After briefly addressing technical aspects of websites and their construction, I will explore the elements of the technology that make it appealing to anti-toxics activism. Particularly, I examine the development and perception of the World Wide Web as a new medium of communication and information distribution which emphasizes ease of use, breadth of possible users, and mutability in the presentation of content, thus representing the ideal instrument for

² “A killer application (commonly shortened to killer app) is a computer program that is so useful that people will buy a particular brand of computer simply to run that program... There have been a number of new uses of the term however. For instance Mosaic is generally credited with causing the majority of computer users to join the Internet, while others argue that e-mail was the reason” (“Killer application” 2004). The specific reference to Mosaic rather than the Web proper is significant and will be explored below.

environmental anti-toxics activism in its attempts to distribute and contextualize information about toxics.

Famously, it was William Gibson who made the term “cyberspace” (1985) available to the popular vocabulary, but it was Tim Berners-Lee who worked to make the space visible to most people. The design concept for the World Wide Web emerged in 1989, through work involving many people at the Conseil Européen pour la Recherche Nucléaire (CERN), most notably Berners-Lee. In developing the concept of the Web, Berners-Lee had three goals in mind: “personal empowerment; social efficiency, understanding and harmony; [and] exploitation of computing power in real life” (Berners-Lee 1997). These goals were best suited by an application that could enable more people to use and manipulate the data available online. Thus, the emphasis was on developing an interface that could facilitate data retrieval and interaction for those people who possessed minimal computer literacy.

The basic interface concept required an organizing presentation principle and a series of codes and protocols with which to orchestrate that presentation. For Berners-Lee, the model for organizing this online experience was the browser, “a virtual window which displayed the structure of the space” (Naughton 2000, 237). This browser would be able to process commands and arrange information in a space that users could then digitally manipulate. The Web needed a set of codes for addressing information (Uniform Resource Locator - URL), for facilitating the transfer of information between computers (Hypertext Transport Protocol - HTTP), and for organizing the information displayed on the page (Hypertext Markup Language – HTML), in order to work widely (ibid., 237-8). Berners-Lee’s purpose involved expanding accessibility to

include more than just the computer enthusiast, thus lessening participation barriers like literacy and hardware. For both barrier problems, he turned to the straightforward markup language. Berners-Lee designed HTML to be simple enough to “...cope with dumb terminals through high end graphical X Window workstations. HTML was conceived as a very simple solution, and matched with a very simple network protocol HTTP” ([“Some early ideas for HTML” 2003](#)).³

With the advent of this interface, then, users could access the Internet more conveniently. Despite creating what would become the World Wide Web 1989, Berners-Lee still saw this medium as restricted to serious research by serious people who may not know that much about computers (Reid 1997, Ch. 1). In this sense, he simplified the Internet for trained experts in other fields, as a high-end research tool. The first browser Berners-Lee developed reflects this emphasis, and as such differs substantially from more modern versions. The browser contained a feature called the “editable text object,” which would allow the user to edit text in every window, so that “[w]riting would be as easy as reading” (Gillies & Cailliau 2000, 195). Thus, he designed the prototype with a conscious eye toward the role of the user-researcher, someone who sought to interact more directly with what they read. Berners-Lee did not see the content of the Web as something simply to view, but something to use. The modern “homepage” was referred to as a “welcome page”; the original homepage was something more personal, where users could create

³ The adoption of HTML as the main method of organizing browser windows had two primary implications – it made such organization relatively simple and it enabled the use of hypertext within the browser concept. In the case of simplicity, HTML is a markup language, not a novel computer code. As such, it appends tags to ASCII text – these tags dictate where and how the text shows up in the screen. Thus, in order to manipulate HTML, a user can learn very basic codes (for example centering text or bolding text) in a short time. Thus, to bold the sentence ‘this dissertation is a work of genius’, I would simply write this: this dissertation is a work of genius. More recently, people interested in creating their own websites can use What You See Is What You Get (WYSIWYG) software packages, which allow the individual to manipulate text and images visually without having to know the markup language that makes such organization possible. In addition, HTML makes use of hypertext, which adds functionality to certain lines, enabling users to jump to other places on the same page, to other sites entirely, or even to itself (for an examination of the reflexive elements of hypertext, see Shields 2000; Kirschenbaum 2000).

their own links and comments on what they saw (ibid., 193). This version of the browser (see image 5.1) had a short life and was not represented in the more popular browsers that made it to the wider public, or rather turned the wider public on to the Web.

As evidenced by his browser interface, Berners-Lee had a vision of the prospective Web user. His user was driven by more specialized, research-oriented motives and needed a computer network that was easier to access. That is, Berners-Lee saw the Internet as a tool for learning and researching, not as a means of entertainment (hence the emphasis on editing). The inventors of Mosaic, Marc Andreessen and Eric Bina, however, were more conscious of an even wider, non-specialized audience who would be captured by a visual interface populated by images as well as text (Naughton 2000, 241-5). Mosaic, which later became Netscape, spurred the explosion of the Web as an application facilitating much wider access to the Internet.⁴ This browser emphasized viewing over editing; it redefined simplicity in terms of allowing the user to be able to consume information rather than to produce information. Granted, one could still manipulate HTML and create Web pages to be displayed in the browser window, but the main interaction on the Web would be based upon the consumption model (rather than the interaction model) where people could publish and view websites but not alter their content (see Gauntlett 1999, 5). This level of simplicity allowed more people to use this application. As Berners-Lee himself admitted, “Mosaic was the easiest step onto the Web for a beginner and so was a critical element of the Web explosion” (quoted in Gillies & Cailliau 2000, 243).

The Web explosion, spawned by the Mosaic browser, made the Internet into a much

⁴ In its first year alone (1993), users of Mosaic went from zero to one million (Moschovitis, et. al 1999, 154).

vaster network. The Web application steadily gained a larger share of the Internet traffic and grew exceedingly faster in number of new sites than the Internet did in number of new hosts (see [Gray 1996](#)). The number of users grew exponentially with the growth of the Web, and in so doing, the composition of the user changed (see Salter 2003, 119). The killer application (in terms of the Mosaic browser within the Web platform) enabled the novice computer user to access the Web (and by extension the Internet) for the first time, increasing the scope and power of this network. The Web did this by simplifying the interface into a graphically driven space where people could produce, but more importantly consume, information. The scope and availability of the Internet, then, has grown through an increasing focus on simplicity, at least in terms of being able to find and view online content. More people have been able to access and use the Web as it has become easier to use.

Once the Web came into existence, the Internet took off. The composition and number of potential users exploded, expanding to include more (not all) people. Of course, to become an Internet user, an individual still had to meet certain prerequisites: standards of income, opportunity, infrastructure. Other prerequisites, however, had been removed. The prospective Internet user no longer had to possess an advanced state of computer literacy. Instead, people could point and click their way to information. In enabling the creation of browsable sites of information, the Web delivered the Internet to the user as a graphically driven space.

Importantly, however, the Web *enabled* the creation of these information sites. People still had to create them. As such, anyone with a grasp of the relatively simple Hypertext Markup Language and dedicated space on a server could produce such a site. This ability to produce web

spaces, along with the concomitant ability to allow others to visit those spaces once produced, led the Web to be perceived as a “radically global medium” (Kirschenbaum 2000, 134). This global nature comes from a theoretical level playing field, where all sites are equally accessible.⁵ Such accessibility overturns the broadcast domination of traditional modes of communication – television, radio, newspaper. In the domain of the Internet, “every desktop is a printing press, a broadcasting station and a place of assembly” (Rheingold 2000, 171). Where few people or entities may control access to the airwaves or wide-scale print distribution and thus filter what messages have the chance potentially to get heard by a large audience, the Web offers the potential of one’s site, almost regardless of content, to be seen by any/all online audience members. It is into this domain that anti-toxics activism enters.⁶

Digitized Toxicity – “When You Don’t Know an Erin Brockovich”⁷

Thus emerges the ideal instrument – a relatively easy to use, wide-scale medium that could be exploited by anti-toxics activist groups in order to communicate their message. The confluence of Web-based communication technologies and digitally available data on toxics allowed for the creation of websites dedicated to carrying this information regarding risk to the public. The Web provides the means for activist groups to reach a large number of people and to inform them of

⁵ The utopian dream of unfiltered openness has encountered the reality of information overload, leading to a new and subtler form of message filtering – the search engine (see Jordan 1999).

⁶ Within the context of this recap, I have told a relatively conventional story, tracing a main line of development through something called the Internet through to something called the World Wide Web. To do so, I have had to ignore important contemporaneous applications and uses, particularly in terms of so-called Free Nets that emerged as early, rabidly anti-commercial domains of the Internet. Murphy (2002) distinguishes different groupings through the development of Acceptable Use Policies, and argues that the history of the Internet can be best understood in terms of these divergent struggles. I have simply endeavored to show, in this context, how the Internet became a popular(ized) medium in terms of wide-scale use and availability.

⁷ Subtitle borrowed from Larry Tuttle’s article, “When you don’t know an Erin Brockovich” (2000), which publicizes the emergence of online toxics databases.

possible dangers. To be decided: what would these websites look like and how would they present the information. These steps are important, for knowledge *of* risk does not necessarily carry with it indications of what to do *about* that risk, if anything.⁸ The creation of the digital context for environmental anti-toxics activism required at least a tacit engagement with the “why” questions – why is this medium valuable and why is this information valuable? In addition, there is the related question of “how” – how can a user use this information to best achieve a particular set of goals? These questions are situated within the historical context of anti-toxics activism attitudes and intervention strategies, but alter when they are translated into the digital medium of the World Wide Web. How these various elements come together in the form of the Web interface will be the focus of the remainder of this chapter.

As I will show below, all three citizen-oriented websites present answers (at various levels of explicitness) to those questions. To deal with these issues, I will largely focus on the Web interfaces that one would encounter when visiting these sites. As such, I engage these interfaces as a method of exploring how citizens are both constrained and empowered (or at least encouraged) by the digital architecture of these sites. These websites do not determine how they will be used. The interface, however, does generate contexts in which the data becomes important and, I will argue, does influence the way people may use that data.

⁸ I will address the importance of citizen/activist contexts in more detail in [Chapter Six](#), when I explore the existence of commercial sites that aim toxic data at the savvy real estate investor.

Why These Sites?

In examining anti-toxics websites, I have chosen to focus on three particular manifestations: the EPA's TRI website (<http://www.epa.gov/tri/>); OMB Watch's Right to Know Network website (<http://www.rtknet.org/>); and Environmental Defense's Chemical Scorecard website (<http://www.scorecard.org/>). Of these three sites, scorecard.org will figure most prominently in the analysis. In limiting my scope to these sites in particular, I considered three main criteria – access, intended user, and scope. The three at issue are by no means the only sites dedicated to the eradication of pollutants and to the mobilization of support for the anti-toxics cause. Various groups have used the Web to promote environmental anti-toxics activist messages. Few, however, rely on the interface as the primary mode of interaction with the user. That is, there are many groups that exist online as a means of publicizing their organizations and their messages. Groups such as the Center for Health, Environment, and Justice (<http://www.chej.org/>) have a web presence, but these sites tend to advertise what the group does rather than provide the user with particular bits of information meant to be relevant to the specific user. The primary goal of some of these sites, then, is to alert users to the existence of these types of groups, using the Web as a kind of electronic brochure, billboard, or permanent commercial for an existing service.

As noted in Chapter Four, SARA's Title III provision required that the controlling agency (EPA) make the TRU database computerized and available to the public (see Hadden 1989). This availability suggests that citizens could remotely access pollution data and then use that data to make informed decisions and actions based upon their new informed-citizen status. From the creation of a computerized database, it is but a small step to the Web, where groups could design sites to provide TRI data themselves and not just advertise the groups' existence as users of the

data – moving “from brochureware to actionware” (see [Stein 2001](#)). What differentiates the sites I have chosen to analyze involves the direct access to TRI information granted to users of the site. That is, sites like [scorecard.org](#) deliver the information to the screen of the online visitor making the intervention more digital. In acting as a kind of distribution center, these sites fulfill the promise of the information technology *and* the intent of the Right-to-Know Act (see Hadden 1989: 5), by lessening the cost of information and tailoring that information to the specific user. They also become online incarnations of the specific trajectory of environmental anti-toxics activism, becoming a model of digital engagement. More than just using the Web as another shop front, groups like Environmental Defense are making the Web the shop. This transition to digital exchange represents a main point of entry for the current study.

I have chosen to limit my scope to nationally geared websites, in part because of the extended reach of these sites – drawing on the national RTK law. Individual states do offer Web-based resources. For example, the New Jersey Right to Know Program offers an extensive hazardous substances fact sheet (<http://www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm>). Also, while some states (notably New Jersey and Massachusetts) have strengthened portions of the RTK provisions, the national law still exists as the model. As such, I feel confident that the analyses developed on the national sites will be applicable to any smaller state-run ones.

Of the three I have chosen, the inclusion of the EPA site seems the most anachronistic. After all, the basic Web interface for the TRI database is run by the government, not by activist groups intent on advocacy. The EPA, however, both ties the site to opportunities for citizen action against toxic chemicals and presents it as a powerful tool for citizens:

In 1984 a deadly cloud of methyl isocyanate killed thousands of people in Bhopal, India.

Shortly thereafter, there was a serious chemical release at a sister plant in West Virginia. These incidents underscored demands by industrial workers and communities in several states for information on hazardous materials. Public interest and environmental organizations around the country accelerated demands for information on toxic chemicals being released "beyond the fence line" -- outside of the facility. Against this background, the Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted in 1986.... Armed with TRI data, communities have more power to hold companies accountable and make informed decisions about how toxic chemicals are to be managed. The data often spurs companies to focus on their chemical management practices since they are being measured and made public. In addition, the data serves as a rough indicator of environmental progress over time. (<http://www.epa.gov/tri/whatis.htm>)

As such, I have included it in part to provide a kind of baseline, to show the intent and limits of the government's data presentation in an effort to delineate exactly what role the activist groups have defined for themselves digitally – if the government does offer the information, why must other people duplicate the service? In starting with the EPA's TRI database, we can then move to the activist niche attentive to the aesthetics and purposes activist groups give information in their own digital contexts. In fact, the EPA points the way to those sites on its own, stating that other organizations exist "which also make the data available to the public through their own data access tools, including Unison Institute which puts out a tool called 'RTKNet' and Environmental Defense which has developed a tool called 'Scorecard'" (<http://www.epa.gov/tri/whatis.htm>). It also provides actual links to each of the two sites on another page. In pointing out these other sites, the EPA suggests that there are other ways to access the information.⁹ Importantly, the EPA site still targets the user as *citizen*.

⁹ The EPA has also posted stakeholder comments, where people have commented that TRI should be more like scorecard.org: "exposure data would be extremely useful; Scorecard, as operated by Environmental Defense, is very useful in that regard" (<http://www.epa.gov/tri/programs/stakeholders/comments/dr/DR0019.htm>). And in a related story, the EPA has received criticism from members of congress for the links it provides to both scorecard.org and rtknet.org (see also <http://www.epa.gov/swercepp/factsheets/epcra.pdf> for further comment on both sites by EPA).

The EPA has not limited itself to maintaining the TRI database alone, however. It has recently added another highly interactive site they call *Envirofacts Data Warehouse* (see <http://www.epa.gov/enviro/>). This site acts as a launch point for a plethora of advanced mapping features and topic-organized searches. One of the most interesting features in this area involves the *Window to My Environment* mapping application (see <http://www.epa.gov/enviro/wme>). This application augments TRI data through the addition of maps, other databases, and links to local agencies and activist groups working in a region. As such, I will include this feature more completely in my analysis below, as it represents a fuller attempt to create a sense of citizen empowerment online.

The remaining two sites attempt to make good the promise of Right-to-Know while also making the policy more useful to citizens by filtering it through the lens of activism and empowerment. Anti-toxics groups or online resources often list one or both sites as powerful tools for people seeking to make a change in the polluted nature of our environment (260 different sites link to both of them, while they are linked to close to 6000 sites independently).¹⁰ Each site has attempted to augment the power of TRI, but in different ways. Rtknet.org has enabled the searching of other, related databases independently or encompassing them all. The searchable databases number 11, including TRI, the Emergency Response Notification System database, and Risk Management Plans filed by companies (see

Both websites were called “extremist” by Representative Barbara Cubin, Chairperson of the Energy and Mineral Resources Subcommittee (Bleizeffer 2004).

¹⁰ I obtained this data through the Alexa.com website (<http://www.alexa.com/>). This site, launched in 1996 and run as part of amazon.com, tracks website use and ranks popularity of websites in attempts to create an easily accessible metric for evaluating site quality and understanding affinities between sites (see <http://pages.alexa.com/company/index.html> [last accessed 14 May 2004]).

<http://www.rtknet.org/rtkdata.html> for a comprehensive list). Roughly four years older than scorecard.org, rtknet.org “was established in order to empower citizen involvement in community and government decision-making” (<http://www.rtknet.org/aboutrtknet.html>).

Scorecard.org also combines various databases to augment its service. It marshals information from over 400 databases, drawing from government and science sources. Scorecard.org promises “authoritative sources” so that “users can be confident they are receiving credible information that reflects the best available science” (<http://www.scorecard.org/about/txt/data.html>). This site does not just add databases, however; it also adds an element of interpretation as to what basic significance the numbers have for local environments. Recognizing that information not only has to be read, but also has to be made meaningful, scorecard.org offers a preliminary risk assessment in an effort to bolster the significance of the information provided. I will discuss this function in greater detail later in the chapter. Regardless, both activist sites deliver information to the user about where they live through the use of the digital medium.

While rtknet.org and scorecard.org operate at the level of activism through information, I have chosen in large measure to feature scorecard.org most prominently in my analysis. I have many reasons for this level of attention. In part the site offers a heightened level of interactivity with regard to the information. Not only can a person find information digitally, they can act on that information digitally, as well (never needing to leave the confines of online space): “Information is power – once you learn about an environmental problem, Scorecard encourages and enables you to take action – you can fax a polluting company, contact your elected representatives, or volunteer with environmental organizations working in your community”

(<http://www.scorecard.org/about/about.tcl>). One can accomplish those activities through the online hub that is the scorecard.org website, thus furthering the *digital* transformation of anti-toxics activism.

Even more than this, however, scorecard.org has become an icon of sorts for not just anti-toxics activism, but also the promise of the Web itself. Scorecard.org has served as a model for what the Web can do when put to good use. On its first day of operation (9 March 1998), over one million people attempted to visit the site (Krupp 1999). Since then, it has been featured in numerous media which were extolling the virtues, simultaneously, of the site and the Web. It has been discussed in the *New York Times*, the *Christian Science Monitor*, on National Public Radio, by Ralph Nader in speeches, and even in a book by Bill Gates.¹¹ Such press has been exceedingly positive, touting the immense power that the site, with its design and appeal, allows people. A story from *Chemical Week* soon after the site's launch catches the cachet surrounding the site: "...Scorecard has out-designed the competition. It is user friendly, offers context to help users understand the data, and flexes the Internet's interactive muscle to give users a quick way to act on their newfound knowledge" (Foster, Fairley, & Mullin 1998, 24). The site generates a lot of buzz about the power it affords users and the innovative way it has used the Web to promote anti-toxics activism. Whether by Web innovators, progressive advocates, or chemical company public relations departments, scorecard.org has become something to notice, to

¹¹ The Bill Gates (1999) reference is exceedingly interesting, as it contributes to the blending of texts – paper-based and digital. To even know that Gates is referencing scorecard.org when he says: "Sites that involves citizens are getting excellent traffic flow. One Web site shows all the industrial polluters in the Unites States, offering maps and the ability to search by company name or locale. It drew 300,000 users in the first five hours it was up – almost all by word of mouth" (116), a person has to go to the accompanying website that augments the book. Here (<http://www.microsoft.com/billgates/speedofthought/looking/additional.asp#Chapter%207> [last accessed 11 May 2004]) one can find a list of references and, thus, scorecard.org.

applaud, or to fear.

The popularity of scorecard.org reflects a more general sense of the power of the Web to do good things. The site *demonstrated* what the Web might be envisioned to do. By some accounts, it is a “view of the future” ([Graham 2000](#)) – using information to shame corporations into change. The model that this site has developed (in particular the “take action” techniques like email and fax transmissions available from the Web) extends beyond anti-toxics activism. The popularity of scorecard.org has led Environmental Defense to spin off its Web-based activism arm into GetActive Software, which develops interactive tools for other activist groups.¹² As such, the scorecard.org prototype, which combines information distribution with digitally mediated action, will spread through the work of GetActive (for a wide-scale example, see www.actionnetwork.org). In focusing so heavily on scorecard.org, then, I hope to draw out a wider commentary on the Web itself as a possible tool for activism.

In the remaining sections of this chapter, I fill out the historical associations made between the history of environmental anti-toxics activism and the websites which have come to represent that history. First, I explore a theoretical relationship between the idea of historical narrative and the design of technologies. That is, the contours of how one understands what happened in the past help to engender means of technologically intervening in the present. The environmental anti-toxics activist websites are themselves beholden to a particular understanding of the (information) problem of pollution. In the final section, I introduce the three main websites and

¹² See <http://www.getactive.com/getactive/client.htm> [last accessed 14 May 2004] for the company’s list of current client successes.

show how they position themselves in terms of that historical understanding as tools for the user – to know, to do.

On the Interaction of Technology and Historical Narrative

In Chapter Four, I related an historical narrative about environmental anti-toxics activism. I did so largely with an eye toward the current online activist form of intervention. That is, the Web-based manifestations of environmental anti-toxics activism have influenced my choices as to relevant historical episodes *and* the lessons that they teach. In exposing my bias, I am not intending to disparage the veracity of the account. Rather, I want to explore the interaction between historical understanding and technological intervention, between narratives and tools, between the lessons of the past and the goals of the future. In short, I want to show how entities (groups and governments) remember historical episodes and incorporate that remembrance into the design of website interfaces. I take the term “remembrance” from Fortun (2001), who uses it to describe how groups position themselves with regard to certain events – what lessons should be learned and what actions should be taken. How an event like Bhopal is remembered (what went wrong, who was at fault) informs present action and future goals. Groups organize and act based upon these visions of the past. I extend remembrance into the realm of technology. What happens when a version of the past gets imported into a particular technological form?

As noted above, the Environmental Protection Agency’s Toxic Release Inventory website explicitly ties the site to the events of Bhopal in 1984, as well as the importance of empowering people through the availability of information on toxics. The site appeals to the Bhopal incident to justify its existence and also its mode of intervention. In so doing, the site incorporates the

“lessons” of the event into the digital interface it offers to the visitor, as a means of solving the problem of toxic exposure.

My goal with this section involves exploring the complex relationship between historical narrative and technological design. I highlight two important and related factors with regard to this relationship – the supposed primacy of historical narrative (telling stories in time) and the impact of incorporating histories into technology (stabilizing stories through time). In my linear presentation (putting Chapter Four ahead of Chapter Five), I have privileged the telling of historical events over the production of technologies. The websites appear to simply inherit a long tradition of anti-toxics activism, generating information about toxins to combat a polluted environment. I want to take this opportunity to argue that the order could have easily been reversed. That is, environmental anti-toxics activism websites offer an *interpretation* of the historical problem of toxics. By referencing specific events and providing intervention tools which emphasize the value and power of information (see below), these sites in essence look back on past events and construct a particular narrative which highlights the historical need for information. In turn, this constructed narrative gets imported within specific technological forms, like the Web interface. The technology itself becomes a kind of historical text which informs and constrains future action.

Technologies are not only situated within historical narratives; they also contain them. They enable the telling and retelling of certain stories over others. Before dealing with the specifics of how technologies contain historical narrative, I will first address the more general question of how the present helps to configure past events and forecast future ones, and why such perspective is important. In so doing, I can then address how technologies (specifically

digital communication technologies) contribute to this form of storytelling.

To contextualize my understanding and use of historical narrative, I want to explore how and why past events are constructed as *meaningful*. That is, how do certain events become events, worthy of remembering, and what function does that process serve? First, it is important to separate out the “true” history (everything that happened). Instead, I want to focus on how that history is remembered – the stories told and the texts written.¹³ One tells stories in an effort to sift through past events and construct a narrative that makes sense of what has happened. How did I get here? How did I become the person I am today? Past events only gain meaning as *something* through their relationship to the present, by the current understanding one has of oneself.¹⁴

Importantly, this effort of storytelling or historical reconstruction serves *two* main purposes – to make sense of the present *and* to forecast future events. One does not just construct a narrative to understand now, but to help decide what will be done later. As Knorr Cetina and Bruegger explain it, “the past is incorporated into the present through recollections and reconstructions, and it also anticipates a future” (2002, 398). The stories of the past anticipate futures by defining the parameters of the present. That is, by understanding what

¹³ Hausman (2000, 117) makes the following relevant distinctions: the “fabula,” or the events that took place in the past, the “story,” that which organizes the fabula into something coherent, and the “text,” that which has been written down or encoded in more permanent form.

¹⁴ To draw from my own experience, I might explain my perpetual graduate school choices through tortuous “real world” episodes like spending 6 weeks substituting for a high school English class or having 4 ludicrously oppressive jobs simultaneously – both occurring in between degrees. At the time, I might have drawn other conclusions from those experiences, like seeking out alternative employment, but a particular hermeneutic spin – I like teaching but not in public school, I am not qualified for anything else – validates my current choices and keeps me invested in completion. As such, these past experiences have happened, but gain meaning through the present.

happened in the past that made the present (the mistakes, the traumas, the successes, the patterns), one also finds instructions for how to behave in the future (what to avoid, to repeat, to watch out for, to accept). The act of constructing stories is situated in time, forming what has happened and projecting what will happen.

Historical storytelling can also be recorded in more lasting media, through the creation of texts. In this context, texts are historical tellings that have some durability. People may write in a diary, for example, or take pictures of events. The artifacts themselves constitute partial representations of the events that preceded them; after all, a journal entry is still just a story of past events and current thoughts. However, because of their historical content, these artifacts can then be referred or deferred to in later attempts of storytelling. They form the records of the past which an individual must confront when constructing a personal narrative.

For my present purposes, I want to extend out the concepts of stories and texts in two primary areas. First, the process of telling stories and inscribing texts involves more than just individuals. Rheinburger (1994) describes the use of historical narrative within scientific experiment to identify objects of inquiry (e.g., viruses). Fortun (2001) has noted the importance of historical understanding for both social organizations and government bodies. Thus, individuals are not the only entities which make use of stories and texts in crafting an identity and a future.

Second, the concept of historical text includes more than just the stories/texts that people and social organizations write about themselves. As I interpret texts of this kind, they can exist as many things: as categories, as things, as systems or structures. In short, as technologies. To make this case, I turn to Latour's (1988) work on technology and ethics. Latour describes the

process of technological construction in terms of the ethical role delegated to that technology. The automatic door-closer, for example, is designed to perform the function captured by the following moral declaration – the door should be closed (ibid.). He uses “enunciator” to designate that person who is charged with articulating the moral sentiment, who delegates the role to the technology. The value of Latour’s formulation, in this context, regards this process of delegation or inscription. Technologies represent through their very function certain historically situated choices. To the extent that people attempt to solve some historical problem *as understood in the present*, such an understanding gets inscribed into the design of that technology.¹⁵ As such, these things also contain within them historical narratives. These things are also texts. Importantly, these technologies/texts contain particular histories. The role of the enunciator (which can be a committee, an organization, a government) inscribes a *specific viewpoint* into the technology. The individual who uses the technology in the future, then, must possess or gain the skills needed to make the technology function (what Latour refers to as “re-inscription”).¹⁶ In this sense, in adapting to the technology, the individual also implicitly adopts the historical viewpoint inscribed within it.

In conceptualizing technologies as historical texts of this kind, I hope to emphasize two very important things: technologies arise out of a present and partial reading of history, and that these technologies then impact later historical constructions. I want to return to Fortun (2001)

¹⁵ The events of 11 September in the United States offers a current example, as various groups define the cause, relevance, and meaning of the event in radically different ways, implying versions of future action. The U.S. Government has inscribed a certain understanding of that event in tools, laws, and organizations - a metal detector, a PATRIOT Act, a Department of Homeland Security.

¹⁶ In terms of the door-closer, the person needs the strength to defeat the hydraulic pull of the arm and the mobility to get through the door before it closes.

for a relevant example of this first component. In her study of reactions to the Bhopal tragedy by various interest groups (corporations, activist groups, governmental departments and policies), she notes the differences in the stories these groups tell regarding the incident - the cause, the impact, the result.¹⁷ The stories are more than just reflections of things past, but produce a "future anteriorized" (ibid., 354). Thus, in this sense, the future iterates the past through projecting a possible future that is *made* possible by a version of that past. Importantly, these past/future collaborations configure the present. Groups reacting to the Bhopal incident were all impacted by how Bhopal was remembered: an unfortunate accident, an act of sabotage, yet another example of corporate malfeasance, or a lack of information problem. These groups then incorporate that act of remembrance into their organizational structure. To explore one partial reading, I can make use of the epigraph. For the U.S. government, Bhopal was remembered through the context of legislation as an *information* problem. As such, laws mandated the Toxics Release Inventory to solve that problem as such – that the Bhopal tragedy *as tragedy* happened as a result of information poverty becomes institutionalized within the law as an intervention strategy. Consequently, environmental organizations have mobilized around this legislation, using the resultant database tool as a primary means of their own intervention.

As I noted above with regard to personal narrative, however, technologies/texts also can then act in the future and constrain¹⁸ later stories. Technologies are more durable than stories (in

¹⁷ Creating historical occurrences into significant events can work in many ways, including ways that existing social powers fight against. For example, see Brian Martin's analysis of the concept of "backfire" related to censorship ([Jansen & Martin 2003](#)). The concept captures how small actions can become big events and mobilize people against certain practices like censorship and police brutality.

¹⁸ As I noted in [Chapter One](#), I am not interested in perpetuating a form of technological determinism, but rather hold that technologies can set parameters for human action (parameters which can be ultimately rejected, but only at some cost).

the sense used earlier). As such, texts/technologies carry specific histories/perspectives into later times, as explicit representations or implicit delegations of a particular view of the world (what it was and what it should be). Someone's version of the past gets "folded" (Latour 2000) into that technology and stabilizes. Thus, as technologies stabilize in terms of design and become enmeshed within larger technological systems (see Chapter One), people who engage technologies also engage with the historical understanding contained within that technology. The legislative remembrance of Bhopal takes a particular view of the incident and uses that view to enable and justify certain forms of intervention. People needed information; now people have access to information. The database and tools of intervention (including the Web interfaces) become texts through which new stories about Bhopal and about anti-toxics activism itself are compared. For websites using the TRI database, then, their interfaces take the premise of information poverty and augment it. The websites provide more power and more convenience and more intervention tools. However, the basic understanding of the problem – the need for information – remains accepted. Thus, for the digital activist, the Web offers tools which interpret the lessons of history in terms of missing data.

To sum up, I would argue that there exist two principle values of exploring how historical narratives get folded into various technologies (interfaces/texts). One, people can use history to legitimate certain technological forms or intervention strategies, but the reading of history is necessarily partial in terms of events and in terms of meaning. Because of present concerns, certain incidents become notable and relevant to constructing a story. And, perhaps more importantly, the meaning of those events, the lessons learned, also result from a contemporary

perspective. The significance for technology comes from delegating those lessons into a technological intervention. The concept of delegation describes the process of transcribing a desired state of the world (people need to be informed of the presence of toxic wastes) into a technological reality (the Toxics Release Inventory). As noted above, how one views the future is a product of remembrance. Technologies, then, are tools of remembrance. They translate “lessons” of history into conditions for future living. Importantly, those lessons do not capture history *as it is*, but rather as one sees it at a particular time and perspective.

Two, the historical interpretation that gets folded into technology instantiates *a* history into *the* history, at least in terms of the technological practice. The partial reading becomes a technological reality that persists and may serve to influence what visions of history are viable in the (later) present. In the case of TRI, the problem of toxics resulting from information poverty (particularly scientifically certified information) becomes both a historical interpretation *and* a legislated strategy, leading to the creation of a database that provides what is missing. Websites take up this informed advantage and thus perpetuate a view of toxics as a problem solved by *citizens becoming aware*. Importantly, I am not attempting to discredit the historical interpretation, but merely point out its perpetual, partial nature. Other historical possibilities exist, including those that emphasize corporate responsibility for knowingly creating chemicals and perpetuating conditions which put workers and communities at risk (see, for example, Markowitz & Rosner 2002). Part of the challenge will be to understand the limitations of viewing the history of the problem of toxics as one of information poverty.

Informed Action – Websites as Spaces and Tools of Activism

The three websites I want to analyze – EPA’s TRI database, OMB Watch’s rtknet.org, and Environmental Defense’s scorecard.org – all cater to the citizen operating within the historical context of a need for information about pollution. The sites are organized to empower the user to discover more about their environment and to use that information to make a difference *in* that environment. The websites are intended to make the user a better citizen, by informing her and empowering her to take informed action. The groups design the website interfaces to make this appeal, in large measure by presenting data and the sites themselves as useful for *particular* purposes; the interface creates a textual or screenic environment aimed at the digital citizen. The context of the presentation positions the site as an empowerment tool – users will gain power with access to information. I will examine and critique the extent of this empowerment and its boundaries in subsequent chapters. For now, I simply want to explore how they present the value and use of the information.

These sites contain a myriad of links and possibilities for accessing very specific information, all of which I could not hope to detail here. Instead, I want to highlight particular elements of each site – elements that best illustrate the means by which the site positions the user in terms of the information. I have chosen four general categories/questions:

Home page ‘invitation’ (why should the user ‘enter’ the site?)

Data (and related headings) provided at initial entry¹⁹ (what information is useful?)

¹⁹ Each website asks the user for some bit of data that would designate the area in which they live (or are curious about) – either a zip code or town, state names. For the sake of clarity, I have used the same geographic location – Blacksburg, VA, 24060 – as the default in requesting information from each site, then proceed to analyze the results of that request.

Subsequent opportunities to explore/act from the new position (what does the user do with the information?)

Explicit means of self-promotion (why is this site/data important?)

Each site in some way answers all of these questions. They do so through explicit description and implicit organization. In the remainder of the chapter, I explore how the anti-toxics websites fill out each category and begin to shape the digital environmental citizen.

EPA's TRI Explorer and Window to My Environment Feature

In compliance with the Emergency Planning and Community Right-to-Know Act (EPCRA), the EPA began tracking industrial releases and keeping that information in computerized databases. The motivation for computerizing the information was based in the presumption that individuals could become more aware of toxic releases if they could find out about them electronically. The TRI database went online in 1988,²⁰ and the EPA's TRI homepage represents the Web-based public access to the database - <http://www.epa.gov/tri/> (see image 5.2). The site adopts a simple layout, providing information on what TRI is and why it exists. It also provides links to featured topics and program-related materials. Importantly, the TRI homepage prompts users: "If you want information about toxic chemical releases in your neighborhood enter your Zip code here" (<http://www.epa.gov/tri/>). This zip code feature, which anchors geographic location to pollution releases, can be found on all three of the sites I analyze; each site also ties the zip code to related references to neighborhood or community. I wanted to focus, for now, on what happens when the user pierces the initial layer and drops into the specific, user-tailored data granted via the zip

²⁰ I have been unable to ascertain when the website was first made available.

code.

A zip code gets the user a chart like the one seen in image 5.3. This chart details the amounts, in pounds, of chemicals emitted by the company listed in the far left column. Below each company is a list of the chemicals they reported (or were directed to report) with regard to emissions. By clicking on a company name, the user can access a breakdown of the reported chemicals, including (after one more click) charts that track release trends over the reporting dates. A user can also find the address and contact information for the company. Click on a chemical name, and the user can view the specific reporting information for that chemical (including whether or not the chemical is a trade secret²¹), along with how the company interacts with the toxic substance (as manufacturer, processor, user) and if it is transported. An additional interface, accessible through <http://www.epa.gov/triexplorer/>, offers slightly more interactivity. A user can generate reports broken down by chemical, facility, year by year trends, geography, or industry. However, the basic report layout remains the same. Essentially, this site serves as a document of compliance and monitors self-reporting.

TRI provides very limited data, anchored to basic regulatory requirements. Limitations include a consistent two to three year delay in publishing reports (true for all sites investigated here). Also, the site provides almost no context for interpreting the numbers – what big or small numbers might mean with regard to risk. Instead, each data delivery page offers the following caveat:

²¹ If chemical names are trade secrets, part of a secret process protected from competitors, then the EPA will not list the name of the chemical. In an interesting bit of usage, the chemical name becomes “sanitized” before release (see http://www.epa.gov/enviro/html/tris/column/sanitized_ind.html). Thus, the company in a sense becomes protected from the chemical.

Users of TRI information should be aware that TRI data reflect releases and other waste management activities of chemicals, not whether (or to what degree) the public has been exposed to those chemicals. Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical, and the amount and duration of human or other exposure to the chemical after it is released. ([EPA TRI](#))²²

EPA's data suggests many different things, none of which effectively communicate the risk posed to members of the lay public. The individual user, upon visiting the site, can learn about the estimated pounds of pollutants that are being emitted in their general proximity, but must correlate that data with distribution patterns, exposure rates, actual releases (all very local and particular information) and also gauge the relative toxicity each of those contaminants – in isolation or connected with others. This basic TRI data is a “starting point” but mainly in terms of suggesting that these numbers are meaningful in some way. The extent of that meaning, that significance, what the numbers represent, is the big question. In one sense, the data is self-reported, so these numbers are estimates. Also, the numbers themselves – pounds emitted – do not necessarily reflect the potency of the chemicals, nor do they provide an adequate sense of the dangers that may be posed. Much knowledge (about individual exposure, about scientific understanding) is missing from the site – knowledge vital for making the data mean something to the specific user. As such, the site exists as a small node in a vast network of knowledge and understanding, stretching from the very specific elements of individual experience to the

²² For the sake of clarity, I have shortened the following url address in text: http://www.epa.gov/cgi-bin/broker?zipcode=24060&_service=oiaa&_program=xp_tri_sasmacr.tristart.macro&trilib=TRIQ1&view=ZPFA&ab_rpt=1&sort=VIEW_&fld=E1&fld=E2&fld=AIRLBY&fld=RELLBY&fld=TSFDSP&fld=RE_TOLBY&fld=TRIID&sort_fmt=1&industry=ALL&chemical=ALL_&year=2001

universal reach of scientific declarations.

Importantly, the data that has been presented via TRI, by itself, does little to inform the user. The meaning of those numbers must still be filtered on the ground (through local environmental conditions), in the body (through exposure rates), in the brain (through learning the various contingencies and regulations and science that govern the data's significance), and in the ether (through nested sites offering a continual regress of explanation). The casual user is not empowered as much as overwhelmed. At best, the TRI site suggests that the numbers are meaningful, and that there are ways to figure it out. Despite this, the EPA still holds out much faith in the empowerment that the database provides: "Armed with TRI data, communities have more power to hold companies accountable and make informed decisions about how toxic chemicals are to be managed. The data often spurs companies to focus on their chemical management practices since they are being measured and made public. In addition, the data serves as a rough indicator of environmental progress over time"

(<http://www.epa.gov/tri/whatis.htm>). Information is established as a *prelude to* empowerment.

Recently, however, the EPA has created a new tool that tries to do a better job of integrating the information that TRI and other databases provide as a means of catering to the digital citizen.

That feature, Window to My Environment (<http://www.epa.gov/enviro/wme/>), relies heavily on the "my window" metaphor. After entering the requisite Zip code or city/state information, the feature presents a much more visually appealing map interface with a menu bar (see image 5.4).

The "Your Window" tab provides basic demographic data, including the number of pollution reporting facilities. The "Your Environment" tab provides links scripted as a series of possible

questions a citizen might conceivably ask, about the air, the land, the water, and also regarding “what is being done about my environment.” These latter links (accessible under the headings Reporting and Tracking, Restoring and Protecting, Working Locally) use environmental buzz words to connect the user to state and local programs, TRI data on trends, and national, state, and local groups working to clean up the environment. The EPA presents this information in part to show that it is working in conjunction with other groups – the government at work for the citizen. Window to My Environment (WME), then, acts as a “geographic portal” (<http://www.epa.gov/enviro/wme/background.html>) for the citizen, providing information accorded meaning through the associated links-as-questions. Much of the information remains the same – toxic release data is still accessed through TRI. The aesthetics of the interface orient the user better, however, pointing her in ways meant to be empowering. The feature provides many more explicit links to other organizations and data, which might provide the potential for making the information more immediately usable. Posing questions, providing links, displaying maps – WME acts as a hub for the pollution-minded digital citizen.

OMB Watch's RTKnet

The site run by OMB Watch, rtknet.org, has been in existence since 1989 (see image 5.5).²³ This site runs in a way similar to the TRI website; however, because OMB Watch serves as a watchdog of the government, there are meaningful differences in how the data is presented. The homepage offers the user a small account of what the website does and also offers links to the

²³ The 1989 date comes from the [rtknet.org](http://www.rtknet.org/aboutrtknet.html) site itself (see <http://www.rtknet.org/aboutrtknet.html>). Alexa.com, however, reports that the site has been active since 1994 (see <http://www.alexa.com/data/details?url=www.rtknet.org>). I believe that the source of discrepancy emanates from being online versus being on the Web.

latest EPA TRI data and a related article, written by OMB Watch, which comments on what is new with the year's data and the often adversarial relationship between the EPA and OMB Watch (see <http://www.ombwatch.org/article/articleview/1612/>). The “way in” to the site is similar to TRI as well. Exhorting the user to “Search for toxic pollution in your area!”, the site asks the user to input her city, state into a search field. This search produces TRI data, but in a different format. Instead of the chart, information is broken down by year and company. Each reporting in an area, starting with 1989, is listed. Below the company name, the site lists gross estimated emissions. To get the specific chemicals and their emissions, the user has to click on the specific company in a specific year.

This initial data scheme provides for quick indexing of yearly increases/decreases of emissions by company (see image 5.6). The aesthetic appears to emphasize an accounting of corporate behavior rather than personal health impacts. Has a company been increasing emissions or working to decrease them? The basic intervention strategy that rtknet.org takes involves flattening out the information available. They provide a year-by-year comparison for companies that pollute in an area. Then, in picking a company, the user views a chemical-by-chemical outlay of the respective year. Thus, what may have taken several clicks on the TRI database takes two here.

Rtknet.org also draws from other databases which can be searched independently or combined under a mass search. However, each search leads to the same presentation style of results. The added databases provide information on water pollution permit compliance (incidents of non-compliance), generation and shipment of waste, superfund sites, calls reporting toxic emissions (under the Emergency Response Notification System requirements), and

hazardous waste permits. Each can be explored. Again, the emphasis appears to be on the behavior of corporations rather than individual health per se.

Rtknet.org positions itself exclusively as a springboard for further activism, and not as a digital tool itself. The site promotes the data to established activists, or people already concerned with the state of their environment. As such, they attempt to filter the information and present it in such a way that the numbers are useful, but not overwhelming; while at the same time, the site specifically does not offer interpretation of the data ([MacLean 1995](#)). The specific risks must be evaluated and worked through by individuals doing their own research. Rtknet.org does link to sites where such research could be accomplished. In particular, a user could attempt to correlate chemical names with their suspected health impacts by visiting the New Jersey State Fact Sheets on hazardous substances (see <http://www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm>) or the EPA's Integrated Risk Information System (see <http://www.epa.gov/iris/>). These correlations can suggest how dangerous, in principle, a chemical is, but do not translate into necessary risk.

Finally, the site presents its usefulness this way:

The Right-to-Know Network provides free access to numerous databases, text files, and conferences on the environment, housing, and sustainable development. With the information available on RTK NET, you can identify specific factories and their environmental effects; analyze reinvestment by banks in their communities; and assess people and communities affected. **There are no fees; RTK NET is free.** It was established in order to empower citizen involvement in community and government decision-making. (<http://www.rtknet.org/aboutrtknet.html>, emphasis in original)

Ultimately, rtknet.org provides the service of augmenting data presentation through using added databases and comparative displays which track release trends. Unlike the hub-style presence of WME, rtknet.org does not offer much more beyond the information itself. Users must seek out

aids to understanding themselves.

Environmental Defense's Chemical Scorecard

The prototype digital environmental anti-toxics activist website is scorecard.org. Environmental Defense, an environmental organization that had aided with the Love Canal incident, began to pursue the task of putting the TRI data online themselves in 1996 (Pease 2003). The organization was consistently receiving very similar inquiries – “which chemicals should I be concerned with, who are the biggest polluters, how do I interpret TRI data?” (ibid.). In the context of these requests, Environmental Defense envisioned the Web as a vehicle for providing valuable information to interested parties like community organizations. Since its arrival in 1998, scorecard.org has drawn lots of attention as a model for what the Web can accomplish. The site represents a move to Web-based intervention techniques, creating a hub that not only distributes information, but attempts to create mechanisms for people to be empowered – by providing opportunities to learn and to share, to give voice to their concerns about toxic chemicals. It is an activist site which seeks to cultivate online activism.

The homepage of scorecard.org employs a variety of visual aids and streaming updates to the user (see image 5.7). At the top is a scrolling top ten list, which ranks states or cities (depending upon the day) according to different pollution criteria. A news update appears on the left and a set of maps which highlight different pollution concerns occupies the middle. Most importantly, a prompt on the right side, superimposed over a scope target, tells the user to “Find Your Community. Just enter your zip code and find out what pollutants are being released in your community – and who is responsible.” Upon entering that, the user finds herself viewing a

page that breaks down data into various categories: waste, air, land, and water (see image 5.8). The site visitor can choose amongst those headings, broken down into subheadings. For example, a user could follow the link-as-question “Who is Polluting Your Community?” What follows is a list of companies, ranked top to bottom in pounds of chemicals emitted. Click on a company name, and the user is taken to another list, this one offering maps, rankings of pollution in terms of potential health risks, a catalogue of health effects, a caution (and political gesture) about what is unknown about chemicals,²⁴ summaries of the data, a button urging people to take action, and links to other sites (see image 5.9).

I want to take some time to note the general features scorecard.org provides that separate it from the previous two sites. It provides much more immediate information, especially with regard to health impacts of specific chemicals and potential health risks. For example, as a hub of personal activist experience (even enabling a personalized scorecard homepage), the site organizes the information in such a way as to present a larger total picture. Unlike the other two, scorecard.org offers broader comparative rankings,²⁵ not just in terms of a company’s performance relative to other companies, but a community’s level of toxicity as compared to other communities. If one were to follow the “What are the Major Pollutants?” link-as-question, she would find a ranked list of chemicals, from most emissions to least. These comparative measures help to provide some easily identifiable meaning markers.

²⁴ “The biggest enemy to thoughtful policy on pollution control is ignorance. Gaps in the scientific understanding of which chemicals are toxic, what (and how severe) their health effects might be, and how and where people are being exposed to them will continue to block our ability to regulate pollution properly, reduce emissions as necessary, and deliver the protections that U.S. citizens were long since promised by law, until these gaps are filled. One of Scorecard’s most important features is how it identifies What We Don’t Know About Chemical Safety and Harm, in every report at every level” (Krupp 1999).

²⁵ Both www.epa.gov/tri/ and www.rtknet.org facilitate comparison of a company to itself – its own past performance.

There are several more ways in which scorecard.org packages the information that is worth noting. The site assumes that the user wants to learn, and so scorecard.org wants to teach them more than just data, taking time to shape the specific importance of the data. Thus, each company listing does not just show numbers, but contextualizes them with health effects and comparisons and even action.

The digital environment that scorecard.org creates enables users to do more than just get numbers – they can get rudimentary assessments of risk, compare companies to themselves and to others, compare communities to others (especially to gauge environmental justice issues), map the area to locate facilities, and finally take action. The take action feature, particularly as it employs digital means of intervention, makes scorecard.org unique among the websites. There are three basic means of “taking action” that a user can choose from the safety of the computer screen: speaking out through faxes and emails, collaborating with others by joining online discussions or networking with environmental groups, and supporting Environmental Defense through contributions. The first two offer the user a means to interact electronically with others. The speaking out function allows people to fax offending companies by just registering with scorecard.org (so the fax can be “signed” by you) and clicking through two links. A user can also send emails to governors or the EPA itself, voicing concern about air pollution.

The risk interpretation feature is also important to consider. Rather than require people to seek outside sources on the possible risk people face from the pollutants emitted in their areas, scorecard.org provides means of assessing health risks. Scorecard.org’s goal involves making people more aware of the risks that specific chemical pollutants can pose. In part, this goal was generated through the feedback and queries Environmental Defense continued to receive from

worried individuals. Bill Pease, an individual who was instrumental in getting the website online, noted that they viewed the Web as the ideal venue for providing people with the information they desired (2003). Rather than package TRI data and other intervention tools on a CD-ROM, with its compatibility problems and tendencies to become antiquated, Environmental Defense saw the Web as a tool that could be instantly updated and made accessible to a wide variety of people and machines (requiring only a Web browser). Importantly, database-supported websites could reach more people more quickly.

What they wanted to deliver was not just numbers, but rather “credible scientific data” that was “scientifically bullet-proof” (ibid.). People called not to be informed about where to find data on pollutions, but rather to learn about how to use the information to good effect. Thus, the website was designed to facilitate that task. Pease estimates that around one hundred thousand unique visitors come to scorecard.org a month. Of those, he believes that only about 1% use the take action functions. However, the goal is to provide people with ways of using the information or at least understanding its broader significance. The context that scorecard.org sets up does just that.

The key differences for this site include its willingness to provide interpretation of data, through producing more data – computing risk assessment values (RAVs). If the user peruses the pollution locator function, she can look up potential health effects and risks involved with various “recognized” or “suspected” toxicants.²⁶ Importantly, the website provides a risk

²⁶ Scorecard breaks down the toxins into recognized and suspected, relying on California's Proposition 65 (“known to the State of California” based on a review of “neutral scientific and regulatory experts”) for the former, and their own analysis for the latter (www.scorecard.org/health-effects/gen/hazid.html). They lobby for the burden of proof being negative and not positive - i.e. that the chemical manufacturing must establish that a substance is not toxic,

assessment framework, which translates various toxins into comparable equivalencies by creating Toxic Equivalency Potentials (TEPs) using benzene as a baseline for carcinogens and toluene for non-carcinogens.²⁷ This framework represents a controversial attempt to present *some* level of risk analysis in the context of these data. Industry experts contend that this comparative measure does not adequately reflect the risk involved, and may cause unjustified panic (Foster, Fairley, & Mullin 1998). Though admittedly not perfect, these measures are an important start toward better gauging risks.

Also, the site emphasizes comparison – demonstrating how companies are doing compared to analogous companies, how they are doing with regard to themselves, and how communities are doing compared to analogous communities. These two tools augment or even alter the learning that these database-backed websites provide. These comparative measures and RAVs give the user a larger picture regarding how the data should be seen and used. With regard to use, the site also provides direct, dedicated mechanisms enabling individuals to engage in the political process – digital letter writing in the form of faxes and emails. These tools direct individuals through the site and into the world, through the lens of environmental anti-toxics activism. People can become a part of the network by taking on the role of concerned citizen.

In positioning itself as a valuable tool for online users, scorecard.org emphasizes two points – power and ease of use. Both elements are important, in that the site wants to make it easy to get informed and meaningful once informed:

rather than people having to prove that it is (see fns 1, 5).

²⁷ For carcinogens, TEP = [Added Cancer Risk/Unit Release of Chemical X]/[Added Cancer Risk/Unit Release of Benzene]; for noncarcinogens, TEP = [Hazard Index/Unit Release of Chemical X]/[Hazard Index/Unit Release of Toluene] (http://www.scorecard.org/env-releases/def/tep_caltox.html).

Scorecard is the ultimate source for free and easily accessible local environmental information. Simply type in a zip code to learn about environmental issues in your community. Scorecard ranks and compares the pollution situation in areas across the US. Scorecard also profiles 6,800 chemicals, making it easy to find out where they are used and how hazardous they are. Using authoritative scientific and government data, Scorecard provides the most up-to-date and extensive collection of environmental information available online. Information is power – once you learn about an environmental problem, Scorecard encourages and enables you to take action – you can fax a polluting company, contact your elected representatives, or volunteer with environmental organizations working in your community. (<http://www.scorecard.org/about/about.tcl>)

The site positions itself as a tool that empowers individuals by informing them. It also makes staying informed easy: “Our goal is to make the local environment as easy to check on as the local weather. You may not do it all the time, but it should always be at your fingertips” ([Krupp 1999](#)). Environmental Defense designed the website to be a hub of environmental activism, taking advantage of the Web characteristics to constantly update information and make that information available to people with a minimal amount of computer literacy. In addition, by adding more context for the data (like preliminary risk assessment and comparative rankings) and specific actions based on that information (faxes, emails, contributions), the site can channel people toward particular uses of the data aimed at intervention. Thus, [scorecard.org](#) is a technology truly meant to *digitally* empower and in some sense define (see Chapter Five) the online citizen activist.

All three sites attempt to create a form of digital activism as *something*. The interfaces that they provide, which contextualize the information to various degrees and suggest (or sometimes provide) uses for that information, create a screenic environment or textual representation for the

practice of environmental anti-toxics activism. People who visit the sites confront not just access to a database, but ways of seeing and acting in the world. In short, the sites are Web-based spaces where users can become – to greater or lesser degrees – environmental anti-toxics activists, at least for a while. The task ahead (Part III) involves parsing the assumptions built into these digital identities and the connections they make to information, action, and community.

Part III

A Technology of Identity: The Parameters and Limitations of the Digitized Environmental Anti-toxics Activist

Chapter Six

Information, Empowerment, and Identity: Configuring the Digital Environmental Anti-Toxics Activist

*Do I contradict myself?
Very well then I contradict myself,
(I am large, I contain multitudes.)*

Walt Whitman, "Song of Myself"

I didn't say it. The computer did. The whole system says it. It's what we call massive data-base tally. ...This doesn't mean anything is going to happen to you as such, at least not today or tomorrow. It just means you are the sum total of your data. No man escapes that.

Don DeLillo, White Noise

In the last chapter, I presented the new, digitally mediated environmental anti-toxics activism, empowered by websites that enable individuals to gain access to information and do something with that information. In tracking the emergence of this technological tool of empowerment, however, I also want to explore one of the main research questions of this current work – what are the exact contours of the digital environmental anti-toxics activist, and what elements of that identity have been altered through the connection with the Web? I contend that the translation of environmental anti-toxics activism into the digital sphere also transforms the activist identity by heightening certain aspects and precluding others. My current task involves parsing that transformation.

Just what kind of empowerment do Web-based intervention methods offer? With regard to communication technologies, Sobchack notes that “our relationship to technologies that instrumentally mediate and thus transform our perception and forms of communication is further complicated by the fact that, so transformed, our perception and expression are *both* amplified

and reduced” (1996, 81). Confronting those amplifications and reductions involves identifying the explicit forms of interaction and identity the technology promotes, while at the same time teasing out the potentials and possibilities that are neglected or denied by the interface. For environmental anti-toxics activism, this process must include the relationships which the websites broker between the user and the information, along with the intervention options the users have because of that relationship. In particular, the sites offer the digital citizen easy access to expert-certified information and intervention tools aimed at changing the behavior of companies and governments. What are the parameters of this citizen/activist identity as constructed through Web mediation? What do users gain and lose by adopting this online environmental anti-toxics activist identity?

In this chapter, I explore the assumptions and impacts of environmental anti-toxics activist websites in their construction of the online activist. That is, the digital interface does not just enable people to become activists, but (subtly) transforms what it means to be an activist in a digital sphere. To make this argument, I first explore different conceptions of online identity, focusing most intently on the Web-surfing experience. Regarding the Web, I offer the concepts of reflexive modernity and risk subject as advanced by Beck and Giddens as a useful means of conceptualizing Web identity. Next, I move to the specific environmental anti-toxics activist websites. By exploring their role in communicating risks and contrasting them with other risk sites, I establish the role of present sites in providing identity opportunities. In the final two sections, I parse the kinds of empowerment the sites offer (access, expertise, and action), then tease out the assumptions aligned with this type of empowerment. Overall, I seek to show that the transformative power of this technology must be understood in terms of what it changes,

what it privileges, and what it keeps constant.

Multiples and Multitudes

Before exploring exactly *how* these environmental anti-toxics activist sites impact or construct the online activist, I want to expand upon the very idea of Web-based digital identity. What does it mean to pursue or develop a particular self through the use of this technology? Are there specific elements of Web-based interaction that may prejudice the types of identity that individuals pursue or experience? In order to adequately answer these preliminary questions, I want to devote this section to an exploration of some contemporary theories on digital identity and how they are related to the emergent Web-based technology.

There are two prominent, interrelated ideas that have gained purchase in the context of digital technology and identity – a de-centered subject that indulges in multiplicities and play, and a cyborg that embraces the mediation of technology as not outside but rather partially constitutive of the subject. Both ideas (the cyborg at least in extension) see the Internet as enabling a new conceptualization of the self, one which does not rely on a wholly integrated subject anchored to the body but rather one that can explore its fractures and indulge in playful, partial constructions of the self. The paradigmatic example comes from Sherry Turkle, whose work *Life on the Screen* (1995) detailed the experiences of individuals who explored all manner of identities through various windows of experience – MUDs, MOOs, and even RL (real life). Turkle found that people were using text-based Internet applications and venues to explore various conceptions of their “selves” not limited to traditional, body-mediated instantiations. A white male computer programmer could represent himself as a red-headed female in one domain,

a paraplegic ex-boxer in another domain, and a magical sorceress in still another domain. For Turkle, each of these representations were not simple falsehoods, but could be interpreted as investigations into elements of the self previously ignored, or constructive acts aimed at expanding the self beyond the constraints of physical interaction.

Within the text-based applications of the Internet, people are not limited to interactions premised on their physical presence. Instead, when interacting with someone online in text-based domains, an individual not only has to choose to explicitly represent herself, but also to choose to represent herself *as someone*. This form of active representation¹ gives the online individual the opportunity, and the burden, of taking on an identity when online. Choice, obligation, and ease: text-based Internet applications make slipping into new identities in the context of interacting with others in the digital sphere a relatively simple matter. In limiting interaction to written text in this context, people can hide their physical bodies and take on a

¹ One needs to be careful not to overemphasize the power people have in representing themselves online, even in text-based environments. In a paper written in response to Don Ihde's phenomenological account of bodily experience in technological environments (2002), Feenberg notes the body – or the self – does not just actively engage technology, but can be passively used through it. The concept that he uses is the “extended body” (2002). The extended body is a form of passive interaction with technological interfaces. That is, there is an extent to which all people may actively engage in the use of a technology, but in social settings that use itself also connotes a particular set of characteristics or expectations on the user of that technology by those who interact with the user. The example used by Feenberg is helpful. A person who wears glasses actively engages with that technological interface. At the same time, that person is marked socially as a glasses-wearer and is accorded qualities concomitant with the social setting (viewed as nerd, or bookish, or whatever). In many respects, the person can choose to wear glasses (instead of contacts or instead of nothing) in hopes to invoke particular responses, but this is contingent on the participation of others. Importantly, this form of technologized body (especially in terms of necessity – those that wear glasses out of necessity, rather than out of convenience) and the social expectations foisted upon it can impact the constitution of the self in meaningful ways (being hesitant in sports, even simply hyper-conscious of the impact glasses may have on the aesthetic choices of others – boys seldom make passes at girls who wear glasses). Feenberg extends this idea into the specific realm of computer-mediated communication. From a phenomenological standpoint, the representations of the body via language (not just in self-description but in choice of language) constitute just this sort of extended engagement. We may be careful in our choice of words in presenting ourselves online – through email communication or website design – but we may still mark ourselves as one thing or another (intentionally through the careful choice of words, but also unintentionally through the use of language or servers or email accounts) that people interpret despite our intentions. As Feenberg notes, “[w]e could be said to ‘wear’ language online in something like the sense in which we wear cloths in everyday life” (2002). For an examination of the specific political implications of such markings, see Crawford (2002).

large variety of external, textually signified markers. The certainty of identity gets upset in the digital realm, as no one's characteristics can be taken for granted. Whether this lack of certainty is to be celebrated or abhorred², traditional categories of identity – race, gender, body (and to a lesser degree class³) – face a challenge with regard to their necessary relationship to a fully realized individual. This challenge emanates from the intervention of computer-mediated communication.

Importantly, digital mediation may not represent a simple new outlet for human interaction, but a more fundamental shift in how identity is conceptualized. Poster puts it this way: “The mode of information [computer-mediated communication] enacts a radical reconfiguration of language, one which constitutes subjects outside the pattern of the rational, autonomous individual” (1995, 57). People can begin to think of themselves not as *really* a white male Texan⁴ putting on various guises like so many ten-gallon hats, but as *really* all of the identities adopted for exploration, at least in part. From this line of reasoning, the play that occurs in digital representation should not be taken as a fad, but as a grander expression of human possibility outside of dominant social constraints. Heterogeneity is real. Humans are multiple, heterogeneous, though often forced into preconceived social roles based upon their race, gender, or body.

This heterogeneity can be further expressed through the concept of the cyborg. This concept, popularized by Donna Haraway (1991), proposes a notion of the self that does not

² For broad positions on new forms of digital subjectivity, see for example Dixon & Cassidy (1998) and Brook & Boal (1995).

³ People explore class issues with regard to the Internet mainly to point to disparities in access (the so-called digital divide phenomenon), and not identities.

⁴ See this example of a textual representation of the current author.

simply use technology, but rather is itself partially constituted by technology. The cyborg represents a human reality filled with partialities and fractures, rather than some integrated whole. Humans have partial identities, are not total, should be considered an integration of human and machine. The very idea of human is tied up through technological mediation. The concept of the cyborg has informed many studies about the impact of the Internet and the computer on identity (see, for example, Featherstone & Burrows 1995; Hakken 1999).

Importantly, the imbrication of humans with machines lends the partial experience of identity through digital technology more substance, in that the *reality* of those multiples are not somehow negated by a more real, unmediated self.

The drive of these concepts of self involves undermining the idea of, and the need for, the autonomous subject. Both Haraway and Poster reference and problematize the importance of the autonomous subject ideal found in Marxian critical theory, the kind of human life that becomes undermined in capitalist social organization.⁵ At the risk of oversimplifying, the critical theory school had as its touchstone the autonomous subject. This human reality/ideal could be appealed to in efforts to demonstrate the prevailing problems of society, where such an individual could become alienated from their true selves and left prey to mechanisms of false consciousness (see, for example, Marcuse 1991). The scope of the debate involving this subject position is both wide and deep;⁶ suffice it to say that an individual who adopted a position of authenticity as

⁵ For the two specific authors at issue, Haraway refers vaguely to “socialist/Marxian standpoints” (1991, 159) in her critique, whereas Poster is particularly intent on demonizing the autonomous subject position of Adorno, who he represents as being “unable to theorize heterogeneity as anything but the death of the subject” (1995, 11). I will return to Poster’s critique of Adorno later in this section, offering an alternative reading of Adorno’s basic position.

⁶ The issue about whether heterogeneity and fracture is something to applaud or abhor has many combatants. Principle among them include Jameson, etc. I pick up the issue later in this section, but for now I simply want to introduce the prevailing idea regarding the influence of the Internet on identity; regardless of its potential, agreement

autonomy would find reasons to mourn the de-centering tendencies of this digital communication mechanism. For people like Poster and Haraway, however, the new heteroglossia promoted by this technology is something to be celebrated for its transformative potential. So, they propose that a transformative subject can be found in the heterogeneity given voice in the matrix of computer-mediated communication. Humans are partial.

Given the plethora of argument invoking the fracture and multiple subject positions that emerge from digital technology, it appears prudent to establish exactly what sort of subject and identity is at stake in the present analysis. After all, if things are so fluid and partial, does it even make sense to speak about digital environmental anti-toxics activist identity? Obviously, I think that it does. On the one hand, analyzing the impact and assumptions embedded in the digital activist identity does not require the presumption of an autonomous, wholly-integrated, total subject. Such an activist identity is quite compatible with the contention that people are heterogeneous and possess multiple identities. Under this construct, a digital activist identity could be just one of many expressions which people invoke at various occasions – it need not be consistent with other aspects of an individual's self, but can represent a partial engagement. In fact, I am not (and will not be) arguing that someone visits the environmental websites and becomes an activist at the exclusion of all forms of life, or even that said person necessarily becomes an activist. Rather, I argue that the websites represent what it would mean to become an online activist, partially or otherwise. As such, the process of becoming such an activist (again, as simply one of many co-present selves) gets filtered through some of the digitized

exists on the emphasis computer-mediated communication puts on heterogeneity.

assumptions that I address in this analysis.

On the other hand, in exploring a distinctly Web-mediated identity as I am here, I want to distinguish the characteristics of the Web from those of the Internet in a general sense. The Web itself does not correspond to the same type of interface as text-based MUDs and MOOs, which have been the subject of so much Internet identity work (again, see Turkle 1995; for an elaboration on this point, see Salter 2003). As shown in [Chapter Five](#), the Web represents a shift in how the Internet can be conceptualized, with emphasis not just on graphic interfaces, but also on the role of the user as viewer/consumer of images and information. With regard to environmental anti-toxics activism, users do not actively represent themselves as much as they position themselves in relation to information. This distinction roughly follows how Lamb & Poster (2002) differentiated between avowed and ascribed identities. Avowed identities emerge from an individual's representation of self (e.g. in text-based applications like chat rooms and letters). Ascribed identities, on the other hand, result from actions of others *on* that individual (see also fn 1). Ascription occurs in interpersonal communication and also in interactions between individuals and institutions. The phenomenon of an institutionally-ascribed, functionally specific identity is called an interpellation. Poster describes interpellation as a kind of "fixing of identities [...] a matter of being invited to play a role in such a way that the invitation appears to have already been answered by the subject before it was proposed, but at the same time the invitation could be refused" (1995, 81). This fixation, for Poster, is a problematic engagement, because it institutes domination of that self into certain pre-inscribed roles. Latour's (1988) concept of prescription with regard to technologies echoes interpellation – people are forced into roles (which may have more or less flexibility) in order to function within

the technological system or institution.

For the Web surfer, the process of interpellation/prescription emerges from the particular representations contained in the interface, the certain assumptions regarding *who* will be viewing and interacting with the website. Individuals engage the various sites, attempting to navigate and accept or reject various interpellations. Similar to the relationship of the viewer to broadcast media discussed in [Chapter Three](#), people placed in the position of user still retain an active role in manipulating images. Surfing the Web involves active manipulation of mediated images by a seeking subject. Identity formation still occurs, but may need to be understood in terms of the relationship between an individual and the mass of information accessible via the Web – scrolling through various prescribed identities and choosing among them. So, the question more germane to the current analysis of Web-based activism involves how to understand an identity that is formed through this relationship. In particular, how do individuals develop an understanding of their place amongst so much data on toxics and their potential effects? I want to turn to theories that help map out dynamic relationships between subjects and their toxic selves, filtered through online media.

Reflexive Modernity and Risk Subjects

For online environmental anti-toxics activism, one way of representing Web-based identity formation is through the concept of reflexive modernity as advanced by Anthony Giddens and Ulrich Beck. This concept of reflexive modernity deals less with how people actively represent themselves, and more with how they reflexively position themselves in relationship to competing

claims and potential realities.⁷ In dealing with competing knowledge claims and the changing nature of modern experience, Giddens and Beck may more accurately reflect the process of Web surfing. These concepts also share the benefit of focusing on risk, which is of primary concern to the activist websites at issue. As such, I want to explore reflexive modernity and how it relates to Web identity in more detail.

In *Modernity and Self-Identity* (1991), Giddens sets out an argument for why the present modern period represents a potential transformative moment for the concept of self-identity, due in part to new relationships with information. For Giddens, society has entered into a phase he calls “high modernity” (ibid., 4). High modernity is characterized by a categorical shift in the nature of risk and the explosion of institutional claims to knowledge. New types of risk have proliferated that threaten the very possibility of survival – global risks such as nuclear annihilation, global warming, and new forms of disease. These global risks change the context under which people live by posing a threat that cannot be controlled by individual action. Importantly, media play a role in this process of proliferation in two ways – presenting types of risk that impact everyone and publicizing divergent claims about the extent and necessity of those risks (ibid., 27). In the former case, media make risks present by bringing catastrophe and potential catastrophe into our realm of immediate experience (ibid., 84). In the latter, these same media demonstrate the expanding and contradictory voice of science. Media are the conduit through which people become exposed to the proliferation of expert knowledge claims. Now, if

⁷ I do not mean to suggest that actively representing is clear and distinct from reflexively positioning. In fact, representing requires positioning, which will be important in terms of the present study. As such, I want to deal with the process of positioning here first in an effort to be able to show what happens at this stage that must be accounted for.

people look hard enough, they can find experts extolling all manner of advice, often contradictory, on what to eat, when to exercise, when to die. Because science has colonized so much of life and offers no unified voice concerning how to live one's life, people must make the choices for themselves.

These dual forms of proliferation lead to a new kind of individual empowerment. Because science cannot offer *the* way, people are forced to choose between possible lifestyles. Individuals must cobble together a life⁸ through the adjudication of competing knowledge claims. No obligatory script, based upon certain knowledge, exists to guide a person's choice about who they are or who they should be. Rather, the individual is freed up to assert her own values in decisions about her life. This assertion of power does not represent rebellion in the sense of overcoming the institutional control imposed from above, but rather taking advantage of a systemic weakness. For Giddens, such choice is institutionally sanctioned because of the very proliferation of competing claims. Science has been empowered to speak, but because it speaks with many voices, we have been empowered to choose which combination of science will speak for us. In the end, Giddens advocates for a kind of life politics, which uses the sanctioned choice of lifestyle to empower larger changes (see 1991, ch. 7). Because people can assert their own values into the uncertain decisions of the future, they can also ensure that such values remain a part of the social structure.

Ulrich Beck has advanced a similar thesis in works like *Risk Society* (1992), *The Reinvention of Politics* (1997), and *World Risk Society* (1999), where he extends the role of risk

⁸ Giddens remarks that he does not fully subscribe to a fractured theory of identity (see 1991, 5). However, as I noted in the section above, I want to claim that such distinctions are not necessary for pursuing the agenda at hand.

in altering how political decisions are and should be made. His ideas echo Giddens to a large degree, though in his later work Beck has taken pains to distinguish himself from Giddens. Both focus on the emergence of risk and divergent scientific opinions. They also share the idea that these conditions have led to a kind of “legally sanctioned individualism” (Beck 1999, 10). As Beck relates the process, risk used to be hidden or at least tolerated as an implicit trade-off for the satisfaction of material need (see 1992, 55). However, because basic material need (at least in theory) can be met with current technology, humans have since transitioned into a state of affairs conditioned on distribution of risk rather than wealth.⁹ Couple that with science being unable to offer any definite answer (becoming “demystified” [*ibid.*, 155]) and a new modernity emerges. Here, because nothing simply “goes without saying,” individuals can contest what should be done in a given context (Beck 1997, 107). Through this conception, Beck advocates for a “symbol-driven issue-oriented politics” (Pellizzoni 1999, 111), where citizens confront the meaning and value of certain technologies by pushing for the importance of non-technical, social factors in political decision-making.

Beck’s concept of the risk society contains two aspects that I would like to pursue – subpolitics and cosmopolitanism. He focuses on the concept of the subpolitical to explain how politics works and to explain how people have suddenly become so empowered. The subpolitical, for Beck, is where politics really takes place. The subpolitical are those actions which constitute the state of the world – scientific, corporate, and economic decisions made by actors outside or beneath the traditional sphere of politics which in turn establish the conditions

⁹ See Foster (1993) for an exploration into some of the perverse logic that follows efforts to distribute risk based upon likely fiscal harm to an area. He examines the implications of a World Bank memorandum that advocates the encouragement of high-polluting industries to Less Developed Countries.

under which we live. Corporations decide (subpolitically) whether to introduce genetically-modified crops and scientists decide to clone human embryos, while traditional political structures attempt to add *post hoc* justification or intervention to now *existing* states of the world. For Beck, the subpolitical sphere always operated but, to the extent that the system ran smoothly, tended to do so outside the purview of the citizen – “Power that functions is not perceived” (1999, 96). However, as the risks posed by these subpolitical decisions proliferate, people can question the legitimacy of those decisions and can lodge complaints against the extreme uncertainty of technologies like genetically-modified foods or toxics-producing processes.

Questioning those subpolitical decisions requires knowing about the risks attending those decisions – in some sense to give birth to risks as such. Risks require the complex interaction of subpolitical industrial/technological activity, scientific cataloguing, and media(ted) presentation to *become* real. Thus, risks come into being as matrices or constellations of processes of creation, identification, and communication. Beck calls such risks “quasi-subjects” (ibid., 150). He uses the term to denote the extent to which risks are constructed and then turn and act in the world. That is, risks outstrip the conditions of their making. For example, in the context of identification, people need science to recognize the presence of a risk (e.g. the EPA’s TRI database). In undertaking to catalogue and control risks, to call attention to risks of this type, however, these scientific institutions at the same time reveal their own impotence in actually controlling them. Consider that the TRI site inserts caveats into its pages, noting that “Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects

on human health and the environment” ([EPA TRI](#))¹⁰. While the TRI can track the emergence of risks from toxics, it offers no certainty for the extent or the control of said risk. As such, risks become “a powerful, uncontrollable ‘actor’ that delegitimizes and destabilizes state institutions with responsibilities for pollution control, in particular, and public safety, in general” (Beck 1999, 150). In being created, identified, and publicized, risks challenge the conditions of their making and thus require new modes of governance.

The power and limitations of the subpolitical become visible to the public, for Beck, because of the Golem-like nature of risks which refuse even the pretense of control by those institutions traditionally assigned the responsibility. In turn, this opening empowers individuals to reflexively recognize that no one possesses the knowledge needed for control. This recognition Beck calls “unawareness” – a positive assertion of the *inability* to know with any certainty (ibid., 119). By reflexively recognizing the limitations of knowledge, the individual now has the license (and even the necessity) to accept the burden of deciding between options and to choose the kind of person she wants to become. Science and other formal institutions lose the monopoly on authority for decision-making, because the world (and the human body) is revealed to be contingent on uncertain knowledge and value-laden decisions. Thus, in being empowered to make decisions about one’s life, an individual is also necessarily challenging the existing knowledge structures through consciously chosen values.

As the individual seeks to exercise the “power of just being oneself” (Beck 1997, 177),

¹⁰ Once again, see http://www.epa.gov/cgi-bin/broker?zipcode=24060&_service=oiiaa&_program=xp_tri_sasmacr.tristart.macro&trilib=TRIO1&view=ZPFA&tab_rpt=1&sort=VIEW_&fld=E1&fld=E2&fld=AIRLBY&fld=RELLBY&fld=TSFDSP&fld=RE_TOLBY&fld=TRIID&sort_fmt=1&industry=ALL&chemicaht

however, a second form of consciousness will emerge – one that recognizes the commonality of experience and risk. Such a commonality impels individuals toward a kind of cosmopolitanism. As noted above, risks as Beck describes them are egalitarian in nature. They impact everyone. Fights against these global risks cannot be undertaken simply at the local level, but must emerge in a kind of “glocal” understanding – that risks potentially impact the individual, but are not limited to any particular person. Individuals, then, will seek out new institutions that recognize the global nature of risk and adopt a kind of “world citizen” mentality (Beck 2000, 102). A new politics, a new cosmopolitan world order, can emerge from the foundation of the risk society.

Both Giddens and Beck emphasize the possible *transformative* nature of this reflexive, consciously self-constituted identity. The realization of one’s reflexive ability to construct value-laden identities empowers the individual to alter the state of the world without a substantial reordering of daily experience, what Beck calls “transformation without revolution” (1997, 17). Transformation occurs at two levels – the identity of the individual and the subsequent composition of society and social decision-making. The first level, that of individual identity, exists at present; people cannot help but make choices about their lives in the face of all the available information. The second level requires individuals to recognize and assert this new social power through the careful manipulation of institutionally sanctioned modes of decision making to alter the constitution of society and to impact the prevailing political state. This level of transformation will not necessarily happen – individuals must undertake to use the empowerment to demand a larger voice. The “tyranny of truth” can be overturned because of the reflexive realization that no one holds a monopoly on the truth. Thus, social values rise to prominence as the only viable means for deciding between alternatives. This reliance on

systemic weaknesses within social institutions to reorder themselves reflects the larger promise of using the Internet to undermine the power of the very forms of social and economic order that helped to create the Internet in the first place.

Communicating Risk, Constructing Identity

The concept of reflexive modernity, I would argue, does a good job of capturing Web-based experience and identity formation. As most Web surfing involves exposure to, and consumption of, a variety of websites, users must seek out the information which appeals to them. As I discussed in [Chapter Three](#), the Web as a form of information media allows individuals to cobble together their own relevant sources and data, making “news out of what the reader looks for” (Jones 2000, 177). The Web-based, hyperpersonalized ideal promoted by Negroponte (1995) seems at least partially representative of the kind of reflexive subject Giddens and Beck have in mind; users confront a plethora of information sites with no necessary guiding logic, so they can fashion (or reinforce) an identity through the active acceptance or rejection of Web-based knowledge claims and environments. Thus, surfing may more closely represent the reflexive cobbler than the active representer found in more text-based Internet interactions. Of course, Beck and Giddens deal more with scientific data, but the Web’s information overload may augment the conditions they describe rather than diminish them – people have even more viewpoints from which to choose.

As mentioned above, media play a crucial role in producing risks as real social actors (or quasi-subjects). For the most part, Beck pays scant attention to this third element of the risk matrix – communication. This facet of communication makes the risk *something* to which an

individual can respond, in a sense similar to Thomson's "mediated quasi-interaction" (1990, 228; see Chapter One). Beck does make explicit mention of the use of mass media (1997, 147). He notes how it is important for criticism to gain expression in this venue, and relegates the following to a footnote: "In a sense, protection of the independence of the mass media is of crucial importance" (ibid., 185). This independence is presupposed and not explained. One could view the Internet as the answer to the independent media dilemma, but we must also understand and not simply presuppose the extent of that independence. In addition, Beck does not address the level at which media already are ideologically influenced and represent a mediating expertise. Without a doubt, systems of media are vital – for the reflexive subject position to develop, science has to produce divergent knowledge claims and people have to have access to those claims. Without that access, individuals would not be in the position to activate any comparative choice. As a result, media systems must be in a position to make such claims available to a wide public audience – media systems like the Internet. This mediated necessity suggests that the medium itself could affect the impact of the divergent knowledge claims.

Tools of Communication – Citizens and Risk to Community

For a digitized environmental anti-toxics activism concerned primarily with the distribution of information on risk, the concept of reflexive modernity resonates both powerfully and complexly. These websites play a dual role in the risk society system – setting the conditions for this reflexive subject position and offering a value-laden choice for the new subject. Again, Beck notes that in order for risks to become real, they have to be communicated to the public as existing. By contributing to the spread of information on risk, these sites *specifically participate*

in the communication element of risk production. They participate in two ways. One, the sites simply call attention to the toxic risks associated with modern life. To enter the each site, users are prompted in ways that *presume* the existence of toxic releases:

“Find Your Community. Just enter your zip code and find out what pollutants are being released in your community – and who is responsible.” (www.scorecard.org)

“Search for toxic pollution in your area!” (www.rtknet.org)

“If you want information about toxic chemical releases in your neighborhood enter your Zip code here” (www.epa.gov/tri/)

Nowhere do the sites suggest that an individual might live in an area *free* from toxic pollution and exposure. This rhetoric positions people in terms of toxics by implying that people need to become aware of already extant toxic risks – where they come from, who is producing them. As such, the websites contribute to the general communication of a risk-filled world. In providing the site visitor with an immense amount of information about chemicals and their potential effects, the websites accentuate the fact that, in the current toxin-filled world, “[t]o be a citizen is to be a *potential* victim” (Feenberg 1999, 120). These interfaces contribute the general perception of risk by inviting people to consider the risks they face daily, and to act with regard to those risks deemed unacceptable.

Second, the sites also contribute indirectly to the risk society component of reflexive unawareness promoted by Beck – some things about toxic risks we just do not know. These contributions come in the guise of caveats to the completeness of the information offered and available:

“The biggest enemy to thoughtful policy on pollution control is ignorance. Gaps in the scientific understanding of which chemicals are toxic, what (and how severe) their health

effects might be, and how and where people are being exposed to them will continue to block our ability to regulate pollution properly, reduce emissions as necessary, and deliver the protections that U.S. citizens were long since promised by law, until these gaps are filled. One of Scorecard's most important features is how it identifies What We Don't Know About Chemical Safety and Harm, in every report at every level” ([Krupp 1999](#)).

“Users of TRI information should be aware that TRI data reflect releases and other waste management activities of chemicals, not whether (or to what degree) the public has been exposed to those chemicals. Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical, and the amount and duration of human or other exposure to the chemical after it is released” ([EPA TRI](#)).¹¹

These sites project a sense that there are limits to the knowledge currently available on toxics and the risks they pose to each individual. Beck clearly holds that citizens should regard unawareness as a positive, empowering condition, noting that it expresses a fundamental lack of scientific completeness. On the other hand, the sites call attention to a gap in current knowledge but assert the likelihood or at least desire for filling those gaps with more concerted scientific attention. The *present* state of knowledge, however, indicates a lack of definitive guidance, suggesting that users are responsible for current decisions. So, whether one encounters unawareness as a permanent or temporary reality, these sites help establish the conditions of reflexive modernity through communicating information (and conspicuous lacks thereof) about risks.

¹¹ Once again, see http://www.epa.gov/cgi-bin/broker?zipcode=24060&_service=oiaa&_program=xp_tri_sasmacr_tristart_macro&trilib=TRIO1&view=ZPFA&ab_rpt=1&sort=VIEW_&fld=E1&fld=E2&fld=AIRLBY&fld=RELLBY&fld=TSFDSP&fld=RE_TOLBY&fld=TRIID&sort_fmt=1&industry=ALL&chemicaht

The sites do not just set risk conditions, however; they also participate in the reality of a risk society. Within the context of risk and the lack of certainty expressed by scientific knowledge, individuals become empowered to choose information and identities based not on the compulsion of scientific truth but rather on a personal, reflexive weighing of values. As such, risk society members must confront differing claims about the proper state of the world or the body, each vying for a better, more meaningful present and future. It is up to that individual to choose the one most representative of her personal values, most reflective of the kind of future she desires to see. The activist websites participate in this process by presenting a citizen and community member identity interested in changing the persistence of toxic pollution:

“Information is power – once you learn about an environmental problem, Scorecard encourages and enables you to take action – you can fax a polluting company, contact your elected representatives, or volunteer with environmental organizations working in your community” (<http://www.scorecard.org/about/about.tcl>).

“[Rtknet.org] was established in order to empower citizen involvement in community and government decision-making” (<http://www.rtknet.org/aboutrtknet.html>).

“The goal of TRI is to empower citizens, through information, to hold companies and local governments accountable in terms of how toxic chemicals are managed... Armed with TRI data, communities have more power to hold companies accountable and make informed decisions about how toxic chemicals are to be managed” (<http://www.epa.gov/tri/whatis.htm>).

The moral imperative, as prescribed by these activist websites, regards the importance of fighting against the presence of toxic substances to preserve the integrity of a community or environment. Information acts as a prelude to an empowered citizen identity. As I noted in the preceding two chapters, this identity emerges in part from a convergence of historical understandings of the problem of toxic substances as well as the particular form of intervention suggested by the

technology. One should not assume, however, that data on toxics would only be meaningful for the *citizen* interested in fighting for the integrity of their community. For the sake of contrast, I want to offer two other sites which package risk information a bit differently – emphasizing consumer investments over citizen involvement.

Tools of Communication – Consumers and Risks to Investments

Another way of communicating risks involves developing sites that cater to a desire to know about toxics in order to avoid them. That is what one encounters in going to the following two related websites - www.disclosuresource.com and www.smarthomebuy.com.¹² These websites offer information to the consumer¹³ as a prelude to investing smartly – not buying a home in an area that might be obviously toxic. While toxicity on these sites takes the guise of all manner of hazards – “natural hazards” and bad neighborhoods – I want to focus mainly on the presentation of toxic chemicals and pollution.

The private homeowner seeks out pollution sources as a means protecting her investment. For those people in search of a new home, the last thing they want to be a part of is another Love Canal or Woburn. So goes the message of disclosuresource.com (see image 6.1). This site offers information on toxic risk and exposure, but amid rhetoric of protection of economic investment rather than protection of one’s community. Knowledge about toxins is packaged as important for ensuring savvy real estate investments and limiting liability. At the homepage,

¹² The site www.disclosuresource.com has existed since June 2000, while www.smarthomebuy.com has been around since August 1998 (see Alexa.com). These sites were renamed and reconfigured about 1.5 years ago. Previously, the sites explicitly emphasized the nature of the hazard and the desire to flee, with images including the skull and crossbones, images of leaking drums, and names like www.e-risk.com and www.nearmyhome.com (author cache).

¹³ The disclosuresource.com site also caters to real estate professionals, claiming “[w]e have the tools to limit your liability. Question: Can you assure your clients that there aren’t any environmental or natural hazards on or near their property?” ([Real Estate Professional Home Page](#)).

users are asked to identify themselves as homebuyers or real estate professionals. The “homebuyer” confronts startling questions about the uncertainty of real estate safety. Claiming to have “The Power to Limit Your Exposure,” disclosuresource.com asks the user to contemplate the following question: “Forget about the lawn, what about the leaking tanks? Let DisclosureSource, your number one source for environmental and natural hazard disclosure data nationwide give you peace of mind” ([Homebuyer Home Page](#)). The homebuyer needs to know about the possibility of hidden risks – not just the ones that people do not know are there, but even the ones people would not think to be concerned about. The first question the site user is asked involves those hidden dangers:

Q Is your dream home surrounded by environmental hazards?
Environmental hazards can include more than the toxic landfill or hazardous waste site in the county. They can also be the gas station or dry cleaner down the street from your home. Our Natural Hazard Disclosure Premium will alert you to any known or potential environmental risks near your home.

Our Natural Hazard Disclosure Premium has been designed specifically for the real estate market. We have researched Federal, state, and local government databases to provide the most comprehensive disclosure report available for any property in California. The Natural Hazard Disclosure Premium will inform you of a wide variety of potential home hazards, including environmental risks and natural hazards.

We stand behind every report we issue, and our insurance coverage confirms this fact. You can have confidence that you are receiving the most accurate and thorough map-based report. (“Is your dream home threatened...”
<http://www.disclosuresource.com/bmoreinfoal.asp>)

The rhetoric surrounding the value of pollution data, as confirmed by “insurance coverage,”¹⁴

¹⁴ Interestingly, Beck (1999, 145) argues that insurance companies help to spur recognition of the inescapability of risk. Insurance companies will come to deem some risks, based upon actuarial calculations, as uninsurable because the probability and resulting damage from particular events will be unquantifiable. Thus, refusals to insure are signs that certain hazards are catastrophic, motivating individuals to seek other forms of protection, like prohibiting the

rests in users having confidence that their real estate investments are secure from environmental risk. How exactly are such risks defined? Disclosuresource.com is there to help:

Many of us live with the threat of environmental risks, from leaking tanks to toxic Superfund sites, without ever knowing it. Businesses are producing toxic and hazardous waste on daily basis. Many times we tend to overlook the more common generators of waste, such as gasoline stations, septic tanks, landfills, etc., in our neighborhood. Your HazardLook report will identify any known or potential environmental risk location near your property. We have compiled information from various sources, including Federal, state, and local governing agencies, to create the nation's largest environmental database ("Glossary" -- <http://www.disclosuresource.com/glossary.asp>).

According to the website, information carries with it power – power to ‘limit’ one’s personal ‘exposure,’ power to protect one’s investment. Without this information, the (financially empowered) user may make unwise choices about where to live and in what to invest. The user of this commercial site, in purchasing this data, is not expected to share this knowledge with community members, but simply to activate some comparative advantage in knowing, potentially, where not to live. Sites like disclosuresource.com promote avoidance of toxic environments.

Smarthomebuy.com continues this encouragement to the consumer, declaring that: “You can not do too much research before purchasing your most important investment – your home. Learning all you can about a potential property and the neighborhood it is in, before you get serious about making an offer, can save you much time and prevent unpleasant surprises later” (“SmartHomeBuy – Home” – <http://www.smarthomebuy.com/>). Both services are obtainable for a fee. Smarthomebuy.com allows the user to view a sample report, which lists a variety of

existence of those hazards.

hazards, including contaminated sites, crime, schools (public and private), floods, and waste facilities nearby. Regarding environmental risk reports, smarthomebuy.com has the following to say:

The Environmental Risk report provides significant environmental hazard information reported from States and Federal Environmental Protective Agencies (EPA). The data provided in this report is intended for those who are interested to know what known or suspected environmental hazards sites, if any, are located *near a specific property of their interest*. Such pre-knowledge may have a direct impact on *their future quality of life and property value*. (<http://www.smarthomebuy.com/nsample/EPA1.asp>, emphasis added)

The site emphasizes the commercial value of pollution information, so that real estate investments are protected against the possibility of property devaluation due to toxics. Plots are potential investments and risks are largely financial. The digital consumer protects her investments, using information to safeguard fiscal well-being.

In the case of sites like disclosuresource.com and smarthomebuy.com, the user is offered the choice of the consumer identity. The interfaces provide the information in a context of avoidance, where the reason to know about toxins is to protect oneself, one's family, and one's investment from toxics by living where they are not – by not buying a home near pollution outputs or by moving quickly. The moral imperative inscribed into the interface is not that toxins are hurting people (and hurting people unequally) but rather that individuals can (or at least should) keep from being financially harmed if they take the right precautions, like investing in reports like those offered at the sites. Individuals have the ethical responsibility to protect their portfolios and families from future ruin by doing the research and making an informed decision.

As evidenced by the consumer websites discussed above, environmental anti-toxics activist websites do not hold the monopoly on communicating information on risks. They encounter competition in contextualizing the meaning and the values accorded to pollution data. Does an individual want to access their digital citizen or their digital consumer? Importantly, this choice points to complications in Beck's theory on the risk subject. For Beck, the individual reflexively chooses among options. He appears to rely on a subject who encounters discreet bits of information (about risks and their possible effects) and produces a thoroughly individuated expertise through that encounter. In contrast to Beck, however, it may be that users choose from formed versions of expertise rather than simply fashioning their own unique self-expertise. As discussed above regarding interpellation, interfaces may present the data, engage in communication, with an expected role for the hearer/viewer. In the case of the all the websites discussed above, the subject position – individual as concerned citizen or savvy consumer – is already assumed in the interface. As such, these sites *selectively* present information congruent with *pre-established* lifestyles/identities. The identity is the filter through which users learn information on toxics and why such information is important. Concurrently, they learn what it means to be an environmental anti-toxics activist/citizen or smart real estate investor. Users face interpellations; they are “invited to play a role” (Poster 1995, 81) – either citizen or consumer – through connections to information and explicit representations regarding what kind of empowerment – political or financial – the information offers.

In presenting environmental anti-toxics activist sites in the context of reflexive modernity, I hoped to establish two things. First, the identity represented in website interfaces can have an impact on users because of the nature of Web-based experience. Scrolling or

jumping through different sites can add data to the choices people make in who they are and what they know. Second, these specific sites do not just provide information for people to use, but teach them how to use said information and thus in some sense *how to be the kind of person who uses information in this way*. Given these concepts of digital identity and specific Web interfaces, I think it is important to confront the assumptions built into the environmental anti-toxics activist Web-based identity.

The Informed Citizen – Digital Empowerment Through Access and Action

The environmental anti-toxics activist websites contain an interface which projects an identity – the citizen/activist. As a form of interpellation, this identity can be said to *inhabit* the interface, in the sense that the interface presents particular characteristics to the user by making connections between the user, the information, and the contexts (historical, political, social) for understanding the value and importance of the information. The user is more than a simple link in the chain; she gets positioned as vital to the meaning construct of the Webbed space. Just as the sites “empower citizens, through information,” to get involved in community and government decision-making, to take action against polluting companies, the user represents a fundamental element in the empowered network – yes, “Information is power,” once it is in the hands of a concerned public.¹⁵ Whether the viewers of a screen or the readers of a text, users not only confront data on pollution, but they are expected to be changed, to be empowered, to *do something with it*. As such, the user learns two basic things: what the information means to them

¹⁵ For the sake of clarity, I have not rewritten the website citations here. For the original segments in context, see the [Tools of Communication – Citizens and Risk to Community](#) section above.

and what it means to be a digital anti-toxics citizen.

The websites present these two lessons through the text or screen that configures the user's basic positioning to the information and tools of intervention. We have explored that explicit positioning in Chapter Three and have tied such positioning to the articulation of an identity above. What remains to be analyzed, in the context of this identity, are the networked connections, the intertextual meanings, that attach to the website interface and enable its presentation. What social institutions, political assumptions, epistemological sureties do the sites take for granted? In short, what are the exact conditions and mechanisms of the empowerment offered to the digital environmental anti-toxics activist?

Empowered by Information: Easy Access & Expertise(s)

Thus far, I have presented the rhetorical context of the interface, which suggests that people will benefit from the information and the heightened awareness the sites provide. The site visitor becomes the empowered citizen, connected to valuable information and action tools that augment the informed citizen's digital position. But the precise value of the information itself is not patently obvious. What exactly makes this information so powerful? What kind of relationship does the user/citizen of the interface have with the data presented? What kind of networked connections and assumptions make this digitized relationship valuable? In the following section, I want to explore the various ways in which the user is empowered by links to pollution information – as easy to access and as certified by experts – in an effort to understand this interconnected element of the digital environmental activist/citizen.

As I noted in previous chapters, the legislation which led to the creation of the TRI

database contained a presumption that people should know about certain kinds of pollution emissions, as evidenced by the computerization provision of the Right-to-Know law. The basic TRI information itself contains meaningful limitations, however: certain chemicals, certain industries of certain sizes, certain self-reporting contingencies, certain delays in availability (see Chapter Two). These limitations are acknowledged on the sites themselves:

TRI data do have certain limitations. TRI data reflect releases and other waste management of chemicals, and not exposures of the public to those chemicals. TRI data alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment... (<http://www.epa.gov/triexplorer/introduction.htm>)

The Toxic Release Inventory (TRI) is a database of information about releases and transfers of toxic chemicals from manufacturing facilities. Facilities must report their releases of a toxic chemical to TRI if they fulfill four criteria... Therefore, not all, or even most, pollution is reported in TRI. (<http://www.rtknet.org/triabout.html>)

Scorecard does not cover all major environmental problems, sources of pollution, or potential exposures to toxic chemicals. Our profiles are limited to environmental issues tracked by authoritative national data sources.... There are many gaps in the coverage of national regulatory programs, leading to gaps in our understanding of local environmental problems. (<http://www.scorecard.org/about/txt/caveats.html>)

Despite the lack of completeness or comprehensiveness of the data, these websites still tout the value of their service, of bringing this partial information to the citizen. Exactly how can this value be conceptualized despite the data's obvious deficiencies? One way involves the Web's promise of *easy access*.

In this context, the perception of the Web itself as a medium that reaches many people and is easy to use has been re-presented. These specific websites draw on this perception to promote the value of the services they provide. The information contained in TRI has been available, in theory, since its inception, but the Web decreases the technical and spatial obstacles

to finding and using that data. In the context of availability, then, the activist sites focus on the form of empowerment overtly suggested by the distributional and interactive capabilities of Web technology, predicated on easy and convenient access to information. Scorecard.org is typical, if even a bit optimistic – referring to the simple zip code interface, the site states: “Our goal is to make the local environment as easy to check on as the local weather. You may not do it all the time, but it should always be at your fingertips” ([Krupp 1999](#)). Websites provide information that is quickly and constantly accessible – anyone online at any time can have access to who is polluting what and where.

I want to point out two important aspects of access here. On the one hand, easy access means *speedy delivery*. The Web helps to mitigate the physical space that had limited access prior to this technological intervention. Without the online mediation, the data might be physically located in files or a computer in Washington, D.C., where access to such data would be limited, at the very least, to operative business hours of the place where the information was housed and the travel needed to get to that place. Scorecard.org is sympathetic: “We know how hard it is to get public information on pollution in your community, so Scorecard is set up to let you *find the facts about local pollution*, and what hazards that pollution presents, with just a few mouse clicks” ([“Your Guide to Scorecard”](#), emphasis in original). Now, via the Web (and the Internet), time and space are compressed (see Harvey 1989; Castells 2001). The compression allows data to be accessed *virtually*¹⁶ anywhere and at any time. As such, the user and the information exist almost instantaneously at the same place – the computer screen. The barriers

¹⁶ Assuming, of course, that one possesses some basic means of going virtual.

that may have prevented the individual from retrieving such information before, like geographic distance or inflexible work schedules, become erased.

Importantly, new barriers are erected, new behaviors are prescribed in the Latourian (1988) sense, in that people can only benefit from such compression if they have some basic level of computer literacy and access. In addition, this compression itself can impact the assumptions and activities of individual users (see Harvey 1996). Because the data themselves are not static, as new information can be added or updated potentially at any time, people must understand that each visit could produce novel results. The individual who gains access to the information must be prepared, in theory, to engage in the *process* of information retrieval. The website grabs the attention of the user *because* the information could always be different. Access becomes perpetual, because of the processual, constant unfolding character of Web data presentation (see Knorr-Cetina & Bruegger 2002). Part of the value of the information resides in its easy access – users who are connected find the information constantly available. For the individuals who find themselves “enabled” (Sobchack 1996, 80) by the technology, they can use it to accomplish these inquiries and gather information more quickly.

On the other hand, access is also conditioned by a sense of *relevant retrieval*. The interface allows individuals to access the information that is (presumably) important to them – as members of a community, residents of a zip code. The points of entry of each site say “tell us where you are and we will tell you what you need to know.” These sites generically compress space and time, but they also bring two specific places together on screen – the place the user physically occupies and the virtual place the data represent. The interface re-represents the computer user’s locality *to that user* through the lens of pollution emissions data. For example,

with scorecard.org the user finds her community as a list of potential hazards and polluting facilities – through categories and maps (see image 5.9). One map, for example, displays an array of polluting facilities in the area, calling attention to where, exactly, the industries are located in comparison to one’s home. Other maps present areas in varying shades of green (for water quality) and red (for air quality). These colors group whole areas together, highlighting those that have more or less pollution than adjacent areas. Through these maps from scorecard.org, the user must confront her county as perhaps one of the dirtiest counties (in terms of air or water pollution) in the United States. EPA’s *Window to My Environment* also captures the community in terms of hazards (see image 5.4), with colored icons representing superfund sites, industrial pollution emitters, and hazardous waste producers. Users are asked to consider their current environment through this new lens: who is polluting their home; who is damaging this place; what can they do about it?

In representing the community through these categories of attention – who is polluting, what are the pollutants, what’s your risk, and how does your community compare – the sites amplify perception of the community as a polluted place. This perception, combined with access to information and potential means of intervention, is targeted at the citizen. The community is polluted, now take action. In this sense, the websites provide access to information that people *as citizens* need to know. They do so by intervening between the user and the information, bringing *each to the other*. The information is made available to the user within the interface, which organizes the data through the categories of attention – hyperlink headings meant to connect the information available through the link to the sentiment expressed by the link (e.g. a link identified as “people polluting one’s community”). The user is made available to the

information through those categories of attention – the data is valuable *to* those people (the current site visitor) concerned about who is polluting and damaging the community. To navigate this new place, the user is expected to operate as the citizen assumed in the interface. The mediation of the websites, then, alters the experience of the user by enabling the convenience of gaining quick *access* to information *relevant* to the digital citizen.

The question of relevance is more than just geographic and contextual, however. The websites also seek ways to diminish the gaps in knowledge described above. As noted in Chapter Three, one way involves expanding the number of databases that a user can search. Both rtknet.org and (especially) scorecard.org¹⁷ augment the inherently limited TRI data by including other sources of information related to toxic emissions, thus offering more potential data with each search. By providing more databases, the sites extend (in a limited way) the reach of their service and the information the citizen has available on screen.

Another way to lessen the impact of the gaps involves connecting that specific, easily accessed data up to networks of expertise. Since my focus has been on the digital citizen, the person who can activate various forms of interaction within the online environment, I want to focus on how expertise becomes translated into the digital sphere found largely on scorecard.org. This digitized expert connectivity contrasts with rtknet.org, which suggests that expertise is *available* for those that need it, offline. For example, rtknet.org offers a link that documents known uses of Right-to-Know data, but which does not in itself provide prescribed expertise. Scorecard.org, however, means to provide online access to “credible scientific data” which is

¹⁷ “Scorecard integrates over 400 scientific and governmental databases to generate its customized profiles of local environmental quality and toxic chemicals” (<http://www.scorecard.org/about/txt/data.html>).

“scientifically bullet-proof” and thus politically valuable as such (Pease 2003). Cognizant of the impact of operating in a Webbed space could have (after all, anyone could publish a website), the site takes pains to validate its information as scientifically viable and thus valuable. The goal, in providing data, is to provide meaningful and credible data that people could use. Importantly, the expertise is *contained* in the interface. Users do not confront or consult experts as much as they are asked to accept the information presented as already filtered through expert sanction; they are assured that scorecard.org uses “authoritative scientific and government data” (<http://www.scorecard.org/about/about.tcl>). The political viability of scorecard.org emerges from its easy access to data and the certified reliability of that data. Empowerment through access comes through attachment to expert-certified information, which users can then employ in the political process – connecting with community members, communicating with policy makers, and admonishing industries. The digital citizen has, at her disposal, expert-mediated tools of intervention.

Empowered to Act: Digital Forms of Intervention

After the environmentally conscious digital citizen gets acquainted with her toxic community through access to information, the next step involves *acting* on that information. In constructing the digital activist, these websites also offer (to greater and lesser degrees) means for putting the knowledge to work. Some actions involve connecting to other groups (through links to their websites). Others involve specifically-targeted messages communicated to the people doing the polluting or in charge of regulated polluters.

EPA’s *Window to My Environment* application limits the types of intervention it offers

for the digital citizen. Under the heading “WHAT IS BEING DONE ABOUT MY ENVIRONMENT,” the site visitor has three possible options: Reporting and Tracking, Restoring and Protecting, and Working Locally. The latter option¹⁸ connects the digital citizen to further information in order to “find out more about groups working in your community and how you can participate” ([EPA WME](#)).¹⁹ The page provides links to federal, state, and local groups (or at least groups that purport to cover a particular region) that work on environmental issues, broadly defined. Clicking on a link labeled “protect your environment,” the user can access a page of links, or “Concerned Citizen Resources” (<http://www.epa.gov/epahome/citizen.htm>). These resources involve still more links to information about Right-to-Know material and non-EPA groups working on particular pollution issues. In providing a hub of digital experience, a “geographic portal,” *WME* offers informed connectivity as its main form of intervention.

Scorecard.org, on the other hand, provides many more intervention tools, including connectivity but extending outward with other digital technologies. The citizen identity can be used to “speak out” – faxing TRI-regulated industries and emailing EPA and other government officials. These intervention tools take on the guise of informed citizen to voice displeasure with company action and government policy. When the user clicks on the fax button, for example, text appears that will be sent to the particular company. Once the user registers as a scorecard.org visitor, she can edit the text, but the site does provide a template which calls attention to certain data and the identity of the individual sending the letter. As such, I want to

¹⁸ Reporting and Tracking directs users to the TRI database, while Restoring and Protecting offers links to agencies working on brownfields, air and water quality, and conservation issues.

¹⁹ For the sake of clarity, I have shortened the following url in text:
http://oaspub.epa.gov/wme/i3_embedded_open_links?area=WORKING&ul_lr=-80.46098533333333.37.282364.-80.4126146666667.37.246086

explore this text in more detail (for a complete sample, see image 6.2).

The fax text identifies the offending industry in three primary ways: pounds of pollutants released and wastes generated; qualitative rank (e.g. among the worst) in performance; and gatekeeper to more knowledge and change. The fax sender asks the company to supplement the current information through assurances of safety and/or alterations to present practice. The fax identifies the user, primarily, as a “neighbor potentially affected by emissions from your facility,” and as a member of those “who are, or may be, affected by chemicals that your facility is emitting.” This status of potential victim of the plant is presented as an enabling feature, granting the digital citizen some measure of authority to demand change or, failing that, at least more information (for an assessment of the limits of this empowerment, see next chapter). Thus, the user (and potential sender of the fax) is constructed as “Concerned Neighbor” in the sense of wanting to know more about what this company is dumping into the surrounding environment. And the company is constructed *for* the user as “Polluting Company.”

Other communications that scorecard.org offers follow similar patterns. The sender identifies as a local community member and, on the basis of information they have obtained about their community (via scorecard.org²⁰), agitates for change. Officials are urged to alter policies and speed up processes in order to make more information available and force companies to be more accountable for their pollution. The other avenues, like online discussion forums and connecting to other local groups, reinforce the citizen’s mandate to change by providing means for the user to communicate with other (potential) citizens. Importantly,

²⁰ Scorecard.org references itself in the editable email message to the Governor of Virginia, explicitly representing its own reliability and credibility.

several key characteristics of the digital citizen are revealed through these forms of intervention – local, informed, and dedicated to change.

The digital environmental anti-toxics activist operates in a novel, online environment that facilitates connectivity and interaction among various digitized entities – toxic spaces, historical “remembrances,” organizations, experts, and decision makers. By enabling this exchange between actors, the websites help create a world in the interfaces made available to the user on screen. Importantly, however, the interface does not simply exist for any user, but propositions/interpellates that user by assuming/privileging a particular role – the digital citizen. Thus, users can accept or reject this digital environmental activist identity, but such an identity is itself contained in the interface.

Chapter Seven

Voice, Expertise, and Dependence: Problems with an Empowered Digital Identity

A place of residence is not merely where one happens to live, but the place where one's life is made.

Buchanan, De Certeau, Cultural Theorist

The digital environmental anti-toxics activist identity, through the intervention of the Web-based interface, connects the user up to modes of understanding and intervention. In adopting the guise of local citizen, the user can *learn* about pollution, *see* the effects of these toxic chemicals have on the community, *identify* responsible parties, and *act* to solve the problem. Importantly, defining the contours of the identity does not in itself assess the value of the identity within this digitized sphere. In referring to value, I mean two separate things – how the identity is presented to the user as something worthwhile to adopt and how the identity seeks to function in the larger world it would alter and improve. Why take on this identity? What would an individual gain, and what might an individual lose?

Empowerment is the most explicit benefit offered by the websites. In the context of these sites, the digital environmental anti-toxics activist gains empowerment first of all through easy and relevant access to information which has been vetted by some authoritative source. People can tap into personalized information – the information that is important to them, about their location, and addressing their needs. Thus, in gaining this access, the user learns a new way of seeing themselves (as online citizens), their communities (as polluted places), and their enemies

(industries, the government, and most of all ignorance). Becoming informed morphs into getting involved through the use of more communication tools, like faxes and emails. These tools further the interconnection of the user with the identity, as the websites broker a relationship between the local, concerned, knowledgeable citizen and the polluting companies and government agencies who can more directly affect structural change. Importantly, I examine digital modes of empowerment closely in an effort to expose the assumptions that are built into the power of access, expertise, and action.

In presenting empowerment in the manner that they do, the websites may carry with them some implicit costs to the user. That is, in gaining access to personalized data certified by experts, the user may be giving up other potential forms of action and empowerment not easily digitized or represented in the interface. The Web-based activist sites appear to offer a particular and uniquely tailored experience to each site visitor; however, the flexibility of this identity may be more rhetoric than reality. One way of exploring this distinction conceptually involves playing with the idea of identity. That is, I want to draw attention to a sense of identity other than the self-expression of the individual Web user. In researching the intersection of technology and identity, I encountered Mary Douglas' work, *How Institutions Think* (1986). She titled Chapter Five of the book, "Institutions Confer Identity." Thinking I would find an interesting discussion of how institutions help shape the identities of individuals, I plunged in, only to be surprised by an analysis of categories and sameness. In the chapter, Douglas developed the idea that institutions provide the means by which things can be categorized as the same, and thus help to organize thought within individuals. Of course, in a round about way Douglas was talking about identity in the way I expected, by more directly addressing how

people may come to organize thought and conceptions. My conceptual confusion, or at least assumption, helped point the way toward the dual sense of identity and its implications with regard to online environmental anti-toxics activism. That is, how much does the Web enable individuated use and engagement, and how much does it encourage sameness? When exploring environmental anti-toxics activist identity, then, I aim to challenge the presumed flexibility and personalization of Web technology.

Part of the challenge to identity in the digital context involves the various forms of presence that implicitly and explicitly populate this digital “world” and become associated with the identity of the environmental anti-toxics activist. These presences involve the groups that filter the information in the presentation/creation of the world (on the way in) and the experts that explicitly attach to the information in terms of activist intervention (on the way out). In this sense, the interface is bracketed by choices about who the citizen is and what the citizen says. In the former case, the website designers create a digital reality meant to entice a user to the site and to characterize the user as someone. These choices, regarding access and mediation, imply various kinds of presence – community, place, values – which may limit the uniqueness of the individual user. In the latter case, users are explicitly connected up with experts to enable an empowered voice to emerge in the political sphere, which in turn attempts to alter non-digital political realities. This explicit expert presence attached to intervention also compromises the voice of the individual attempting to use the intervention tools to alter toxic states of the community. Thus, in this chapter, I examine first the implicit presence found in attempts to create an attractive and valuable online identity and composition. Then, I explore the explicit

presence of the expert and its impact on activist voice in real world anti-toxics activism.¹

In the final section of this chapter, I turn to the concept of voice in an effort to bring together all of the various elements of empowerment offered by the digital interface. The site visitor encounters levels of intervention which impact what she says and how she says it. Taking a cue from work on Theodor Adorno, I explore what it means to have a voice, and to have a voice taken away. I argue that websites like scorecard.org actually serve to validate the user's voice only to the extent that it emulates, rather than supplants, existing authority. In so doing, the sites do not so much challenge current modes of decision making but instead reaffirm them.

Access: Informed Empowerment and Ease

One means of conceptualizing the value of the digital environmental anti-toxics activist identity involves its ease. This identity is easy to own, easy to operate, easy to affect. The websites heighten the ability of the user to access and use data on toxic substances. These sites have changed the context in which activism can occur by enabling easy access to individuals, making “the local environment as easy to check on as the local weather” ([Krupp 1999](#)). As noted in Chapter Six, this concept of easy access, which operates as a main selling point for the service offered by the sites, must be understood through two interrelated qualities – speedy delivery and relevant retrieval. The user can obtain specific data, understood to be relevant to the individual (as digital, local citizen), in just a few seconds. This element of empowerment heightens

¹ For the purposes of this chapter, I will focus my attention most fully on scorecard.org. Scorecard.org goes the farthest in creating a contained digital medium through which the user may enter, explore, and then act on the data to which they have gained access (see also [Chapter Five](#)). The other two sites do provide information, and thus much of the discussion below about access will also apply to rtknet.org and epa.gov/tri/. However, I engage the full scope of my critique on scorecard.org, especially in its more explicit use of expertise and action tools.

people's awareness of the value of the websites themselves. Aligned with much digital rhetoric about what the Web will revolutionize about modern life, the websites work because they make the life of the user easier² – bringing pertinent information close to the user with “just a few mouse clicks” (“[Your Guide to Scorecard](#)”). The Web itself suggests this easy version of action and interaction – translating the globe and experience into digital representations, shuttling bits back and forth, valorizing all experience which is transmissible over a cable modem. The empowered Web user, after all, moves easily amongst information.

What are the implications of empowerment as easy access? In exploring the idea of empowerment through easy access alone, one gets the sense that these activist sites present the role of citizen as relatively easy itself. After all, the promises are substantial: take action, get involved in decision making, hold entities accountable for the managing of waste. Such promises are premised upon the basic easy access provided by the sites. In part, online database access gives people *time* to be citizens and activists, by making data, expertise, connections, and intervention strategies available all at one place. The idle Web surfer can become a politically-engaged citizen simply by visiting a website and scrolling through a few options. Besides being a selling point, easy access connects the user to the information and the place about which she becomes informed. The community becomes a certain kind of polluted place, as evidenced by the data the sites provide. The information becomes a lens through which users can see their environment. The websites, then, reduce the cost of information, both in terms of getting it to the prospective activist and in terms of what the activist herself has to give up in order to obtain

² In a broader context, see Fisher ([2002](#)) for an example of optimism about the Web and the power of easy activism.

it. In this section, I explore the impacts easy access has on the process and power of activism. In particular, I want to address two interrelated premises which grant access its cachet – one may have a casual commitment to the cause and one may affect sociopolitical change with minimal effort. How can these websites invoke such premises and what assumptions underlie them?

As Easy As...

For the digital activist who populates the Web-based interface, the ability to make a difference involves a few clicks of the mouse and scrolls of the wheel. Enter. Learn. Send. The ease of this process makes the action inviting – “Scorecard’s most popular feature is its ‘type in your zip code’ approach to finding local information about local environmental conditions and problems” ([Krupp 1999](#)). Simply type in a zip code and gain entrance to a new world, full of information that eliminates the privilege of the government or industry expert and allows users to make a difference. This world *is* new because of the speed with which the user can gather information and find people responsible for what that information represents – the area contains toxic chemicals. People must confront the re-representation of their community as pollution sources, superfund sites, and rankings of comparative toxicity. Who has perpetrated this condition? The industries that pollute, the government agencies that have failed to protect us.

Like the county now color-coded in toxic realities, the various “relevant” actors are equally reachable through the interface. The individual can take through the sending of an email or a fax to those parties without leaving the computer screen. To engage in this form of intervention, the user calls attention to her local quality. The editable fax text calls out key elements of connectivity: “those of us who may be exposed”; “As a neighbor potentially affected

by emissions from your facility”; “those of us who are, or may be, affected by chemicals that your facility is emitting” ([Scorecard Action Tool – Send a fax](#)). The connection between the user and the decision-makers is facilitated through the identification of the individual as local, knowledgeable, and concerned. This transformation – occurring almost automatically by means of browsing and clicking through the site itself – is easy.

All the actors gather together in the digital interface – the toxic substances, the community, the government officials, and the offending chemicals – allowing the individual site visitor to quickly assert herself into the process simply by working her way quickly through the various levels of the interface as established by its designers. Thus, without leaving the digital world made present on the screen, the user can rediscover her community as a toxic place, “locate” the sources of the problem (the yellow dots of offending companies, the fax machines and email addresses of corporate liaisons and lax government officials), and send messages meant to call attention both to the presence of a “concerned local citizen” and to the existence of knowledge about pollutants, in as few as four clicks of a mouse. Enter your zip code and see your community [<click>](#). Find the perpetrators [<click>](#). Explore the maps [<click>](#). Take action [<click>](#).

Legitimate questions exist as to just how effective such quick and easy intervention can be. The speed with which the digital user can access information and fire off a targeted message belies the real world, real time struggles that many community groups have undergone in attempts to alter polluted realities. The communities of Love Canal and Woburn, for example, struggled for years to get some form of remediation for the exposure to which they were subjected (see Gibbs 1998; Brown & Mikkelsen 1997). As explored in Chapter Four, the

community members did not know about the chemical exposure; finding out, however, was simply the beginning of a very long fight. Communities in highly polluted areas of the United States like “Cancer Alley” in Louisiana and other highly industrialized inner-city areas continually fight companies and government officials over the persistence of toxic exposure (see, for example, Allen 2003). For all of these people, information surely existed as a prelude to involvement. However, for those who find themselves subject to real world exposure (physically experienced and not virtually witnessed), knowing about such exposure does not simply empower them in the context of structurally sanctioned experts and technocrats. The digital experience of toxics brokered by the websites – through categories, numbers, and images – may prompt digital remediation through faxes and emails,³ but other types of intervention and experience are much messier.

In addition, easy access and intervention appear to fixate on the quick states of the individual – the user accesses the data, gets indignant, sends a fax, and feels better. The website, in focusing on this easy identity, constructs, directs, and dismisses attention on pollution in “just a few mouse clicks.” The whole process is quick, and so may be the investment in the concerns and issues surrounding the problem in the first place – yes, pollution is a problem, but luckily I have done my part. The intervention *remains* easy to the extent that it remains in the digital sphere. But this containment isolates the user, as well. Scorecard.org offers few venues, digital

³ A study conducted by the Pew Internet Project entitled “Digital Town Hall: How local officials use the Internet and the civic benefits they cite from dealing with constituents online” (2002), 60% of politicians surveyed found themselves not swayed by mass emailings – even those accompanied by fax – and were much more influenced by face-to-face meetings (importantly, the survey tended to have a 20% no response rate, as well).

or not,⁴ to connect up with people who may share concerns or community memberships. In this sense, easy access also implies brief attention and isolated experience.

...Tapping into New Power

However, ease of information distribution and the power it implies can be viewed as the kind of media tool which undermines the very forms of governance (government bureaucracy, experts, industry secrecy) that prohibited earlier communities from putting the information to fulfill its full potential, quickly and effectively. Perhaps the digital sphere also creeps into the process of sociopolitical operations and power distribution. Perhaps the commitment that an individual must make now is actually minimal; perhaps substantive sociopolitical change can occur through surfing and mouse clicking alone. The context of this empowerment through the Web fits well within the concepts of Web-as-change explored in Chapter Two. Internet-based technology has the power to alter the existing state of the world by rerouting power and communication away from preexisting dominant architecture and towards individuals. The way station of the website cuts out previous barriers – time, distance, Byzantine governmental structures – and greatly reduces the cost of information. Add to this connectivity the prevailing historical understanding of toxics as resulting primarily from a public unaware of the hazard, and a new day has dawned.

One needs to understand that the networked connectivity of websites extends beyond that which can be digitized; one also needs to consider the value of particular kinds of information within the field in which it will have to operate in order to be politically effective. This

⁴ Scorecard.org does offer an online threaded discussion board, where people can ask questions or offer advice. Pease (2003) noted that the feature was woefully underutilized. The site also offers a downloadable Powerpoint presentation instructing an individual in how to conduct a meeting to discuss scorecard data.

assumption about the ease of activism, of course, neglects the extent to which the data and their value are still interconnected with networks of governance and distinctions among knowledge claims. All users must still interact with legislative bodies (i.e. the state) in terms of promoting actual political change. Cyberspace does not simply invalidate the state; states adapt to the pressures and possibilities the Web provides (Deibert 1997), and thus become weaker in some roles but stronger in others (Everard 2000). The mistake, once again, appears to originate in a reduction of all networks (political, informational, communal) to the digital ones found in Internet technology. As I addressed in previous chapters, the Web in general and websites in particular all rely upon vast networks of support which include those unable to be digitized. The Web adds a new dimension to preexisting network structures like the state and other forms of governance.

Going online does not by itself subvert the typical, state-sanctioned technocratic modes of authority and governance that have disenfranchised individuals from input into political decisions (see Feenberg 1999; Fischer 2000). Rather, access to information must at the same time be filtered through politically viable mechanisms and channels – offline and on – to offer any hope of impact. Despite the purported power of e-governance, traditional modes of political decision-making are still operative while adjusting to new modes of information distribution. The casualness, then, with which people are presented with the activity of activism makes the most sense in a purely digitized realm of representation, where individuals can deal with polluted screens and digital others. Other experiences not pre-coded by the database do not enter into the process. Users simply redistribute information distributed to them (more on this below).

Web-based intervention strategies looking to impact the non-digital realm cannot

presume that the simple presence of information distribution technology will undermine existing power structures. Instead, they must actively strive to subvert those structures through explicit mechanisms of change. Thus, in the context of environmental anti-toxics activist sites like scorecard.org, the pertinent question involves just what connections are attached to the information that the site provides. In particular, what makes this specific information powerful and where does that form of power place the individual in terms of political decision-making?

Individuals & Expertise: Validating Empowerment

The general utility of speed and ease notwithstanding, scorecard.org promotes a more specific kind of empowerment aimed at the individual located within and concerned about a particular community. Different communities have different problems, after all, so while the Web in itself may not facilitate wide-scale change, singular people may still be able to use the specific data to commit to a digitally engaged activist agenda. In this context, one can view scorecard.org as enabling two kinds of connected and individualized expertise. In the first place, users can become a digital expert of their own community; in the second place, users are connected up to digital representations of experts who sanction the information as valid. At issue here is the voice that the online environmental anti-toxics activist develops through the intervention of the site. What elements of this digital translation of information, experience, community, and expertise help to constitute that voice? How unique and local is that voice? Who, in the end, is speaking?

Assessing 'Local and Unique'

All the environmental anti-toxics activist websites cater to the specific local user in a similar sense through the dispensing of information – find one's community and who is polluting that place. Thus, the information that one accesses is supposed to empower that specific user to engage that specific locale. The idea of local takes on even greater significance for scorecard.org. As noted above, many of the site's text-based intervention tools (emails and faxes) emphasize the place of the sender as a local, potentially effected and exposed community member. The user can register concern about what she has learned and assert a right to have exposure to toxic chemicals lessened or at least have her concern abated.

The user becomes empowered to voice those concerns because they have become knowledgeable about their community. In visiting scorecard.org, individuals gain access to information and an identity that wields that information as a weapon – information as power. With it, I can hold companies and governments accountable, engage in decision-making relevant to my community, and take action. The interface's use of language (your community, your air, your water, your risk) heightens the sense of local, unique experience. The Web itself, with its hyperlinked readings that compel active choice by the user, also intensifies the perception of scrolling through scorecard.org and receiving specific data as a unique, personal experience (see also Chapter Three). What does it mean for this user, creating these personalized experiences through interaction with scorecard.org, to become a digitized local expert?

The site offers a peculiar kind of local, unique identity to each user. As I argued in Chapter Six, the sites create a kind of identity that inhabits the interface – a digital environmental anti-toxics identity. Each person visiting the site confronts that identity through the specifically

expressed hyperlinks, and that identity is itself imbricated within the representation of the local place as a polluted place. The problem with this digital interface, however, involves the extent to which people are not asked to contribute their own experience of place, but instead simply witness or access it. In addition, the user has no way of making the information (and their continued and continual experience of that information) their own and have such ownership be *represented within the digital interface*. Instead, the site continually rolls out information (the same or new) based upon algorithms and decisions outside the purview of the individual user. This contrast between “access” and “possession” or ownership exemplifies the kind of relationship to information fostered by Internet information technologies (see Hayles 1999). As a modality of communication, the Internet privileges “retrievability” over “repeatability” (Feenberg 1995, 136), enabling symbolic forms in the guise of information or images, media or messages, to be available (theoretically) on demand. The local place as represented digitally becomes a space to visit on screen, not a place to live.

At the same time, the concept of “local” remains crucial to the construction and impact of the interface. Users are targeted as members of a local community, who are given information pertinent to their locality. Yet again, these users are granted access to a version of their community, filtered through a particular representation of information about the toxicity that abounds. The place communicated to the government and industry officials is not the place people live, but simply space represented by the website. It is the space where the online, interface-enabled identity lives – the resemblance of that space to the physical, experienced place may be merely coincidental. Importantly, it is a place defined by others and not by the user.

As Feenberg (1995) notes, information that is retrievable online does not require the

immediate presence of another person – the data is in theory permanent and available for access on the command of the individual user. But a lack of immediate presence does not equate to no presence. The information as coded and made available carries with it normative decisions about proper knowledge and appropriate modes of access – decisions made by others. Thus, scorecard.org engages in a kind of deceptive or limited particularness. The site valorizes the specific, local relevance of the information provided, pertinent to the needs of the individual user. But what is local about this kind of access?

Like other media of communication, the Web impacts both data and users, and favors certain forms of interaction and organization over others (see Deibert 1997); in addition, the medium amplifies and reduces our perception of communication and how one expresses oneself within that form (see Sobchack 1996). In the context of scorecard.org's interface, preoccupation with empowerment through access impacts the perception of both "individual" and "local." In the case of the concept of individual, the site amplifies "individual as internet-enabled, geographically dispersed user of information" and reduces/diminishes "individual as locally-situated and uniquely experienced possessor of information." In this sense, individual does not contribute local knowledge, but participates in common knowledge.

Local, then, becomes more of a geographic characteristic and less a culturally distinct and unique area which might be able to create important information in its own right. Through scorecard.org, information is distilled and repackaged *not* based upon individual, locally-situated needs per se, but on more general prescriptions that are redeposited in the lap of the individual. The particularity is geographic, or spatial, not local, or placial. Scorecard.org facilitates access on behalf of "the concerned citizen and potential anti-toxins activist," not particular citizens with

their own particular needs, and with their own insights and experiences to offer. In being “informed” by specific systems of expertise which digitally configure both “community” and “risk,” citizens themselves become “formed in”⁵ those self-same systems, articulated by others, for purposes designed by others. Place-specific values and communal, distinct experiences do not play into it. Instead, “local information” stands as code for “general heuristic applied within geographic area.”

Explicit Use of Expertise

Of course, the websites offer more than simple easy access to information (even information tailored for the specific though perhaps not unique individual). The world created for the digital environmental anti-toxics activist includes an *obvious* presence – the expert. For rtknet.org, the site highlights the work of others in finding experts (non-digitized) to help the user with interpreting the information and putting it into practice. For the *Window to My Environment* site offered by the EPA, the interface provides links to other groups who can provide assistance, as well. Both hint at expertise, but leave its constitution largely off line. Sticking with the digitized world, however, I want to focus extensively on scorecard.org and the connectivity it provides between the user and the expert. This site explicitly ties the digitized user to digitized expertise, which in turn enables users themselves to speak with authority. In the following section, I examine the creation of the online activist voice, as facilitated through scorecard’s digitized, expert-mediated world. I want to show the limitations built into this conception of individual empowerment, creating individuals more dislocated than local, more uniform than unique.

¹¹ Thanks to Timothy W. Luke for suggesting this turn of phrase.

The importance of addressing the limits of expertise in the context of environmental anti-toxics activism has been examined by many credible sources (see, for example, Portney 1991; Davy 1997; Fortun & Cherkasky 1998; Fischer 2000; McAvoy 2002). Non-digital contestations over waste facility sitings and toxic cleanups have often led to stalemates, protracted court battles, and frustrations on all sides of the issue. Industry hires experts to certify no discernable risk, government employs experts who attempt to balance politically touchy subjects, and community groups consult experts in attempts to counter the claims of no meaningful risk with identifiable hazards. Such stalemates operate as a conservative force, leaving current states of the world the same (see Fischer 2000). If there is pollution in the ground, there shall it continue to be. If there is no waste facility, there shall none be. Especially for communities suffering from exposure to toxic chemicals, the time involved in attempts to *prove* harm can be excruciating.⁶

Again, communities and constituents have attempted to circumvent this stalemate by employing a variety of methods. As indicated in Chapter Four, groups like LCHA and FACE sought to speed up the process by doing their own kinds of research. By providing missing information, the groups hoped to sway the governmental bodies who could decide the communities' fates (through relocation and compensation). But lay production of information did not in itself translate into expedited government action or abatement. The trouble could be found in translating local concerns – about exposure, about future health, about specific

⁶ When Lois Gibbs was told at a community meeting by a government official that Love Canal residents would have to wait for large scale relocation, she responding by shouting incredulously “You’re killing us!” (see Levine 1982).

experience and needs – into acceptable government expert language.⁷ Expert-mediated value systems can ignore the importance of locally contingent value systems.

For local environmental anti-toxics activist groups, the process in which decisions are made can vary from place to place, as can community desires and expectations, making whole-scale conversion of pollution problems into technocratic modes of operation not a practical or even desirable solution. For Frank Fischer (2000), the persistence of stalemates in toxic struggles, along with the uniqueness and specificity of each community experience, suggests a reformulation of expertise itself. Starting with the problem of defining meaningful public participation in technocratic and expert-driven decision making, like those of anti-toxics problems, Fischer focuses on the concept of expertise and the rationality that guides it. The difficulty in providing definitions of this type involves the very palpable problem of defining the, well, problem. Contrasted with “tame” problems that admit to largely technical solutions, he uses the term “wicked” to describe dilemmas like those faced by polluted communities: “[W]icked’ problems lend themselves to no unambiguous or conclusive formulations and thus have no clear-cut criteria by which their resolution can be judged” (128). Wicked problems, then, resist straightforward technical problem solving favored by government technocrats.

For environmental anti-toxics activist groups, toxics present a wicked challenge, for at least two reasons. Exposure to toxic pollution represents a hugely complex issue in itself

⁷ In slightly different contexts, Brian Wynne (1996) has explored the dissonance between lay expressions of value and knowledge versus more generalized scientific experts. His work with Cambrian shepherds shows how problematic efforts of communication can become. For a more successful venture, see Epstein (1996). His work demonstrates how a group of people overcame the translation problem by learning to speak the language of the experts. This example, while promising, also tends to highlight the importance of education and disposable income in generating the opportunities for communicative success.

because of economic, toxicological, biological, environmental, and ethical issues that all have no simple solutions (see, for example, Fischer 2000; Tesh 2000). Secondly, and in this context more importantly, the very questions that should be answered represent intense political struggle – outside experts, government officials, industry scientists may seek to provide rational justification for increased risk while community members may define the predicament as one of justice and community integrity (see the struggles documented in Gibbs 1982; Brown & Mikkelsen 1997; Camacho & Camacho 1998; Bullard 2000; Girdner & Smith 2002).⁸ Reducing these complex problems to technical solutions, as certain experts are wont to do (and thereby creating a “toxic problem” algorithm applicable to all locations⁹), results in communities feeling disempowered in decision making arenas. Communities react to these feelings of being shut out by stubbornly resisting the introduction of any new potential risk, resulting in more litigation than resolution. Following Beck, Fischer notes that the complexity of risk leads to expert/counterexpert stalemates as no group can assert definitive, unassailable answers (2000, 99-100). Rather than necessarily empowering communities, such stalemates lead to a retention of the status-quo, whatever that may be (existing pollution remains in place, future waste facilities remain un-sited).

To counter such stalemates and wicked, non-reducible problems, Fischer explores participatory possibilities, having members of the community make meaningful contributions of

⁸ Wildavsky (1995) attempts to solve the problems attendant to these wicked problems by simply dismissing community-based risk claims and attempting to reaffirm the primacy of science.

⁹ See Douglas (1986) for an exploration on the tendency of institutions – like governments and even sciences – to create broad categories and means of ordering the world. In addition, see Porter (1995), who argues that the value of quantifiability, particularly as a “technology of distance” (ix), lies in its ability to render all problems as essentially the same problem easy translatable across geographic distance and thus limits the ability of individuals to interfere with the various processes.

views, insights, and experiences to the process of defining questions and answers. Importantly, Fischer notes that participation in the sense he means does not involve simply teaching citizens what is already evidenced through various forms of technical and scientific intervention. To do so reduces the problem back to a question of quantity, and becomes a mockery of authentic participation defined as people contributing more than just assent and dissent. Part of the solution, for Fischer, involves getting past a totalizing reliance on technical/empirical rationality and embracing instead (or at least equally) what he calls “cultural rationality” (ibid., 132). Fischer refers to cultural rationality as “the rationality of the lifeworld” (ibid., 133) and defines it more fully as:

...geared to – or at least gives equal weight to – personal and familiar experiences rather than depersonalized technical calculations. Focusing on the opinions of traditional and peer groups, cultural rationality takes unanticipated consequences to be fully relevant to near-term decision making and trusts process over outcomes. Beyond statistical probabilities and risk-benefit ratios, public risk perception is understood through a distinctive form of rationality, one that is shaped by the circumstances under which the risk is identified and publicized, the standing or place of the individual in his or her community, and the social values of the community as a whole. (ibid., 132-3)¹⁰

Fischer invokes the idea of cultural rationality to push for an expanded sense of participation through an expanded sense of expertise. While scientists and policy experts may be able to reduce complex problems down to technical quantities, doing so comes at the price of excluding forms of experience, forms of knowledge, and forms of decision making not easily translated

¹⁰ The concepts of traditional and cultural knowledges are not without problems. In critiquing social constructivist positions, Nanda (1998) has argued that scientific knowledge has served to disrupt and displace old, culturally bound hierarchies and inequalities validated under the guise of tradition. In addition, Nygren (1999) has also pointed out the difficulty of identifying any culturally or traditionally pure knowledge system. While both authors suggest difficulties with nominating cultural rationality as a sole decision making faculty, Fischer argues that this form of rationality should at least be valued in the process.

into numbers.

Reformulating expertise in this manner, even if politically difficult to achieve,¹¹ represents an important step in participation and environmental anti-toxics activist ventures. If participation involves a means of overcoming the complex, wicked problems that pollution poses, then recognition of cultural rationality enables community members to contribute not only their time, but the values and experiences of toxic exposure they feel in need of expressing (and which are typically shut out of technically geared decision making processes). In fact, as Tesh and Williams (1996) point out, community groups already try to use the tactic of voicing personal, local experiences in environmental disputes (see also Tesh 2000). Granting legitimacy to these views *as rational* would help bring more people into the policy process, facilitating greater involvement by the community groups. For environmental anti-toxics activism to expand, community groups must get involved and stay involved in environmental problems. Community-based activist groups constantly face struggles to maintain cohesion and fight better funded and better organized representatives of government and industry (see, for example, Simmons & Stark 1993; Mowrey and Redmond 1993; for a detailed description of the kinds of pressures and difficulties faces by community coalitions confronting industry, see Hurley 1995). As such, these groups must be prepared to engage the process for an extended time. Shemtov (1999) has pointed out that groups retain focus and become pro-active and future looking in terms of their environmental problems to the extent that they feel a sense of “ownership” over those problems. Such feelings of ownership involve a sense of legitimacy. As he notes,

¹¹ Experts in positions of relative power have a vested interest in restricting access to claims of authority. As Fischer himself notes, “[t]he issue of citizen participation in inquiry is perceived by many professionals as a threat to their status and authority” (2000, 261).

“activists who invoke claims over who legitimately defines and solves a social problem are more likely to effect goal expansion than those who do not make such claims” (ibid., 104). Thus, expanding the ability of community members to overcome expert-driven exclusion from the decision making process by redefining expertise to include local community experience itself appears to be a positive step for empowering environmental anti-toxics activism.

In the context of subverting expertise, the empowerment rhetoric of the Web in general and scorecard.org in particular proves quite seductive. This new form of communication enables users to defeat traditional, restrictive modes of information distribution and thus gain access to knowledgeable debate thus far denied. The egalitarian aspect of the medium itself allows individuals to become *equal* in the policy debate because she herself has the ability to learn about the community, pollution, and risk. Scorecard.org, in particular, appears most apt at taking advantage of this form of expertise egalitarianism, at least on the surface. The interface enables each person to become their own expert, as it were. The user, by being connected to information vetted by other experts, can now use that new found expertise to participate in policy debates. However, it is important to analyze the exact parameters of the expertise that is facilitated and enabled by the website. Just what kind of empowerment does this kind of expertise offer, and how does it empower the digital environmental anti-toxics activist?

The creators of scorecard.org designed the site in an effort to empower citizens to be able to participate in the political process. Efforts to do so involved connecting users to “authoritative scientific and government data” (<http://www.scorecard.org/about/about.tcl>). Explicitly, the idea of empowerment for the website was to provide information that was “scientifically bullet-proof”

(Pease 2003) and thus would be valuable because it carried the stamp of authority. For the local user, then, participation can be pursued through the connections with certified information – gaining access to this expertise becomes the primary means of gaining access to the political process. Other forms of empowerment, which might include efforts like Fischer’s in redefining expertise as such and inserting local values, become derivative. Empowerment as access to the expertise on offer from the site constructs expert information as the gateway to effective and meaningful political change. The value of the digital environmental anti-toxics identity involves the extent to which it is connected to *expert* knowledge.

Despite initial impressions, however, this empowerment as access to expert-certified information appears to diminish, not enhance, the individual’s powers of input into local, particular issues. The user visits the site to learn about the community, but she does not possess this knowledge, she is simply granted access to it. In relating to this expert knowledge, the user of this website exists as a simple conduit through which others speak. The people using the data will likely *not* participate in the production of the knowledge that is supposed to be so important to them. Missing knowledge is highlighted by the website (see also [Chapter Six](#)), but it is not suggested or implied that the user’s own knowledge is another component in need of being added. The technocratic decision-making process, based on the impersonal contestations of expertise that “vested” interests bring into the equation, is not called into question. A “local” citizen within this process has value only as a proxy for the authority of others (in the case of scorecard.org, this citizen-participant will have entered that particular zip code and followed that particular knowledge pathway). Thus, in confronting industry, the local “informed citizen” does not participate as a possessor of a unique form of expertise, but as a consumer of other experts.

This consumption of expertise harkens back to the risk society critique offered by Beck (1992 – see more thorough discussion in Chapter Six). It also ties into the “death of the author” phenomenon discussed in Chapter Three, where Web surfers create their own novel experiences based upon the necessity of personal choice built into the dynamics of hyperlinked Web browsing. That is, individuals may not create the conditions of their choices, but they still must choose. This process of choosing allows for individuals to express some sense of personalized experience and expertise of their own life. Consumers can overturn the designs of scientists and technocrats. Web surfers can frustrate the goals of Web designers. On this view, scorecard.org contains expertise but also and more importantly enables it. People are empowered not in choosing to use this information or not, but rather in choosing to use this information for specific, pre-designed purposes (e.g. as a real estate investor, or a concerned citizen, or both) and thus create themselves as a particular, local expert.

Both concepts (risk subjects and Web subjects), however, appear to assume that this type of consumer choice challenges the basic systems of expert production. But does it? In the context of digital environmental anti-toxics activism, the individual as expert is an adjudicator between competing claims, cobbling together a hodgepodge of pronouncements on a variety of pollution issues that she was told to be concerned about. Placing the subject in a position of adjudicating between competing scientific knowledge claims does entitle that person to become an expert of their own life. Science offers no definitive way. In this model, however, science still offers *the way to the way*. That is, people may no longer be beholden to a single expert, but they are still beholden to expertise. Constraints to the spectrum of available options still operate, contingent upon a certain level of institutional sanction which produces various expert

pronouncements. Science may offer options, but not the option of non-science. Advocates of reflexive modernity, then, must avoid what Star has called the “chimera of infinite flexibility” (1991, 36) – the idea that knowledge-based technological systems (which include science) can accommodate all difference through the proffering of options. You can have red *or* yellow. Maybe green. In the present case, strictures of science as method and institution can still preclude certain possibilities, thus limiting the scope of choice.

Thus, this production of *expertise* is expressed as a consumption of *expertises* (Luke 1989); the notion of expertise is not itself transformed or undermined. The individual’s identity as expert finds validity through choosing access to “authoritative scientific and government data.” Other choices – drawing from non-scientific data, uncertified sources of experience, local values – do not somehow enter into the picture here as constitutive of expertise. No new, previously disempowered voice is necessarily added. Choosing amongst alternatives may create a unique experience for the user, but that experience does not necessarily translate in an increased ability to speak for oneself.

Enabling and Disabling Voice

One means of conceptualizing the positive and negative aspects of this digital environmental anti-toxics activist identity regards the issue of voice. When an individual engages this identity, who speaks and what are the qualities and characteristics of that voice? Because of the particularity of the Web-mediated experience (both in terms of data retrieval and unique hyperlink choices), one can easily presume that an individual is able to construct a singular voice that will be able to effectively engage the decision making process. But closer inspection into

what exactly websites provide reveals problems in that presumption. As I explored above with regard to the concepts of access, individual, local, and expert, the kind of empowerment that websites like scorecard.org offer has severe limitations. Taken in the context of calls for reformulating expertise and valuing local experience, a deceptively individualized medium like the Web can promote individual empowerment while quietly reinforcing those systems that have traditionally disempowered communities in the first place. In this last section, I want to put the contrast between individual empowerment and systemic entanglement into greater relief by tying together the various critiques of this chapter with a focus on the idea of voice.

In his work on Adorno, Eric Krakauer (1998, 90-93) discusses Adorno's use of the idea of *Mündigkeit* or "mouthedness" (the capacity to speak for oneself) in contrast to *Unmündigkeit* (the state of being without a mouth). There are several ways of being without a voice: one can be physically unable to communicate, one can have one's voice taken away through the appointment of a delegate or spokesperson, or one can be designated a delegate and thus have one's voice in a sense not be one's own (Scott McClellan as George W. Bush's spokesperson would be an example here). These categories of "demouthedness" signify a broad range of relationships and contexts.¹² For the sake of clarity, I want to limit their application to relationships between experts and lay persons, especially in decision making processes regarding the presence of toxic substances, along with their associated impacts and risks. The three forms of lacking voice, I would argue, call attention to the various ways lay persons might interact with

¹² Krakauer himself deals most broadly with Adorno's use of this term to explore humans' relationship to technology. That is, according to Adorno, technology "allows humans to speak their own language" (Krakauer 1998, 93) but at the same time humans give up some autonomy as we become dependent on those technological systems to speak.

experts (especially as facilitated through these forms of Web interfaces).

The first two relate the conditions in which someone does not get to speak because others are charged with the task. An inability to speak can occur due to ignorance (have nothing to say) or a lack of power (have no ability to speak in a given context) or a lack of will (have no interest in saying anything). Experts can deign to speak for individuals in all of the above circumstances, by appeal to authority. In the context of pollution struggles, an individual may have no idea that she is being exposed to toxic substances, have no idea about the potential harm such substances cause, may want to speak but be told her fears are unfounded, or simply not want to bother with the whole process, choosing instead to flee or remain unconcerned (for a real-world example of all of those options, see Gibbs 1982; Levine 1982). The third example of *Unmündigkeit* suggests that one may be deprived of a voice of one's own even while talking. That is, individuals may give voice to certain concerns but are representing an opinion not necessarily their own, by speaking for a community or another person.

On the website scorecard.org, one can explore the various ways in which a user is subjected to phases of mouthedness (enabling voice) and demouthedness (disabling voice) simultaneously. *Enabling Voice*. Part of the value of environmental anti-toxics activist websites involves their ability to communicate and distribute information about potentially unknown risk. People can become aware of (and thus be able to speak to) the presence of pollution and the hazards associated with exposure. For those people seeking information about the safety of their home or community, the website provides a voice with which to speak those fears. The digital identity connects the user up with the information about the pollution, the risks involved in living there, and the people with whom the user should communicate. Worries about health and safety,

translated through the new experiences the website provides (place as polluted, user as activist, information as power), become articulatable as (virtually) real. The technology enables those fears to take shape and become digitally public, being sent to people who may be polluting and thus causing this lack of safety. It has the power to give voice not only to “ill-formed” or local experiences of hazard that have not been translated into the appropriate political language, but it may also create or at least expose latent fears that people have not made manifest in themselves (having seen or smelled or felt something funny, for example). Enter. Learn. Send. The user can discover a whole new world in which to inhabit and communicate with others.

Disabling Voice. Just as this technology helps to give voice to possible risks and worries, however, it also takes the voice away from those individuals. This disabling of voice happens in two interrelated ways. First, the sites provide a precise way to experience and subsequently communicate their risk and their community – a way that may be foreign to their actual experiences and desires. The online identity, despite its apparent flexibility and specificity, manages to marginalize all other forms of difference besides geography and distribution of Toxics Release Inventory reporting requirements, leaving no real room for people to own the information and to have their own difference represented within the interface. Regional peculiarity, complex relationships with industry and neighbors, feelings of illness or wellness – all find little or no representation within the site. The digital identity does not have room to accommodate them, as they do not translate well into the medium as constructed. Thus, in gaining the ability to give voice to certain concerns as defined through the online mediation of the website, users may find their ability to give voice to other concerns hindered by that self-same mediation.

Second, even when empowered to speak, the user becomes the spokesperson not for herself, but for a kind of environmental identity given validation by the authority of others. Part of the value for environmental activism with regard to digital means of intervention involves the fact that websites can reach local people – people who may be concerned with their area, and relatedly have a kind of political legitimacy that accompanies that localness. In this case, the displacement of voice that occurs is even more deceptive. The user becomes the spokesperson for the expertise contained on the website and not *necessarily* for themselves. The user's local status retains geographic importance but only as a form of sanction for the information provided by the expert qua website. The local individual is not valued for their knowledge, but for their symbolic position. The users speak not as themselves, but as the digital environmental anti-toxics activists who can deliver the toxics information that has been collected, filtered, and presented by others, made manifest within the environment of the interface.

This transformation of voice results in a peculiar type of empowerment. For the individual, the easiest choice is to subscribe to the environmentalist (and communal and local) identity established by the interface. Again, while this subscription allows the individual to express uncertain fears in more certain language, it does so at the expense of an alteration in her own voice. The user becomes a mouthpiece rather than just a mouth, a conduit through which others speak. Thus, the identity asserted within the interface retains some level of acceptance of the prevailing social conditions and does not allow, or at least discourages, a challenge to more of the underlying issues and inequalities of such “wicked” problems like pollution. Technocratic forms of expertise often embody the kind of inequalities and obstacles to empowerment that community groups face in fighting the problems of pollution. Rather than give people a voice

with which to fight such technocracy, the websites appear to subtly reaffirm its power.

As an exemplar of digital environmental anti-toxics activism, scorecard.org has provided a service in making previously difficult to obtain or non-existent “expert” information widely and easily available. In so doing, however, it has also reinforced a system of expert-mediated dependence, in which certified information predicates political validity, and has weakened more systematic critiques that challenge technocratic decision-making processes and exclusive definitions of expertise. The level of empowerment scorecard.org offers is predicated on even more *loss* of power on alternate sides. In this case, people are not asked to formulate their own knowledge, but to seek out “official” knowledge from certified sources (or at best have their own experiences sanctioned by more legitimate experts). Using the polluters’ own information against them has some appeal. The notion of reliance on outside expertise and other external decision making systems is not subverted, however, but simply reestablished through empowerment as access. People are told to take the information and make of it what they will; they are not asked to formulate what knowledge will be important and why. They are not asked to define the parameters of their own lives in ways that may not be organized around a yearly tally of emissions. Environmental anti-toxins cybercitizens become empowered (and formed) within systems of dependence.

Chapter Eight

Conclusion: Confronting Digital Empowerment and Change

A beginning must be found which is not yet the presentation of an intelligible phenomenon, but which is rather simply a special kind of awakened attention on our part.

Frederic Jameson, Sartre: The Origins of a Style

Throughout this dissertation, I have attempted to interpret, analyze, and critique the emerging, digitally mediated environmental anti-toxics activist. This identity, as inscribed within the Web-based interface, carries with it notions of *empowerment*, presuming to create a new field of personal involvement and political suasion based upon information. The focus of the work, then, has been to tease out the roots and parameters of this kind of empowerment. What might a digital citizen be empowered to do? How robust is digital empowerment? From where is this empowerment derived? What are the accompanying limitations regarding transformation and political voice?

The means by which I have sought to answer these questions involved outlining the contexts, networks, and infrastructures that have made this particular form of empowered digital identity possible. In Part I, I explored the broader technological contexts which have led to fervent belief in the potential of new communication media to root out entrenched hierarchies and limitations in the current organization of society. The Web *will* change. I traced different ways in which the rhetoric of change has influenced the Web and how people have begun to

design and utilize Web spaces. This rhetoric has power itself in giving much Web-based activity the gloss of new, different, better. However, as I hoped to demonstrate, such newness and improvement cannot be taken for granted. The danger lies in presuming that the world will get better by the very presence of the Web itself, that change will occur necessarily. Concepts like empowerment, deployed with and through Webbed interventions, may become hollow if attached to hype rather than solid and meaningful innovations and organizations. As such, I sought to interrogate claims of improvement and change through comparison to existing media and patterns of communication.

I also worked to provide a framework (or two) for closely analyzing *how* websites might alter traditional understandings and relationships. In Chapter Three, I laid out two metaphoric means of thinking about information production, distribution, and consumption – texts and screens. These metaphors help to overlay Web-based relationships atop other, more established media, and thus highlight parts of those relationships which may *have* changed in the new context. Texts, most closely associated with books and writing, promote a focus on the active role that users/readers take in constructing meaning through experiencing a site/text. Also, texts gain their meaning in part through their relationships to other texts – intertextuality. For websites, this intertextuality occurs through hypertext links, but also through (easily overlooked) non-digital entities that help support or undermine the strength of the sites themselves. In this sense, the idea of author as authority becomes important, as the concept of authority as a social function still operates in the wider, non-digital world. The problem of the author-function and non-digital intertextuality, revealed through the text metaphor, becomes particularly important for the transformative goals of online environmental anti-toxics activism.

Switching to the metaphor of the screen, which evokes images of television and viewership, foregrounds the place of the interface/user interaction as well as those networked channels that make the presentation possible on screen. In terms of viewing a screen, the user emerges as much less interactive in the process (at least on the surface). The online “viewer,” then, is not as limited as the televisual viewer; the former has more explicit options for choice and response. Importantly, however, the screen emphasizes the constraining power of the interface, in limiting the options a viewer/user has and even assuming certain qualities the user should possess. This establishment of constraint, suggested by the screen, provides a means for understanding how an identity may inhabit an interface. It also calls into question the level of flexibility Web-based interfaces offer. While the assumption is that users have more control over their online experience, limits exist on just how flexible such an experience may be.

Finally, I end Part I with an articulation of a framework for thinking through the trajectories technologies take. The *Web* will change. When analyzing the Web, one must have/use a general understanding of how technologies themselves change over time, especially with a medium that has undergone such rapid alterations itself. Borrowing heavily from Feenberg, I showed how technologies tend toward stability and why users were vital to the process of stabilization. Importantly, I wanted to set out that this study itself has an important role to play. On the one hand, the ever-changing Web tends toward some baseline features that will become the *givens* of tomorrow. On the other, how people use this technology and understand digital empowerment and identity – blindly or reflectively – will help shape just what *becomes* given. As such, this study points out what environmental anti-toxics activism, and especially empowerment, are becoming on the current technologized trajectory, and what

elements of that digital identity might best be challenged and changed.

For Part II, I moved into more content-specific articulations of those fields that enable Web-based environmental anti-toxics activism. This form of activism translates into a digital clearinghouse of information and a portal for intervention in part because of its historical legacy (or at least one version of it). Tracing political action against toxic exposure since the start of the 20th century, I explore several different activist groups and their intervention strategies. In particular, I show how the problem of toxics can be understood *as* an information problem – knowing what is being emitted, by whom, where, and how it impacts people. For example, industrial hygiene groups like the Workers’ Health Bureau, the National Consumers’ League, and the American Association for Labor Legislation, struggled to produce information about toxic chemicals and to make it available to a wider audience. Also, when pollution became perceived as a broader environmental issue – invading homes, corrupting communities – local community groups like the Love Canal Homeowners Association and For A Cleaner Environment also sought to produce and distribute information about the chemicals as a primary vehicle for change. Such change-through-information strategies got instantiated into law in 1986 – creating the Emergency Planning and Community Right-to-Know Act as well as the Toxics Release Inventory. TRI became the primary raw data for digitally available activism.

Of course, the law, like the history I relate, *selectively* interprets the historical legacy of toxic exposure. Rather than focus on deliberate corporate negligence, systemic production of hazards, or neglected community concerns in the face of institutionally sanctioned expertise, the law reduces the problem to one of information cost and availability. The Web as a communication technology, and more importantly as a tool of empowerment, reinforces this

reduction further still. As I explore in Chapter Five, the Web became a popular internet application because it made it so easy to publish and especially to consume data. The Web moves information around very well, and thus encourages solutions to problems caused by a shortage of information. For digital environmental anti-toxics activism, I argue, the Web's influence is not confined to solutions, but extends to problem definition as well. That is, the technology itself influences the reduction of toxic intervention to information production and distribution. Thus, the technological intervention does not simply emerge from the history of environmental anti-toxics activism and spring into a digital form, but the history of this activism can also be understood *through* the lens implied in the medium. This confluence of technology and historical narrative helps shape the future form that anti-toxics activism will take.

What is that future? To conclude Part II, I examine the specific elements of three main online environmental anti-toxics activist websites: www.epa.gov/tri, www.rtknet.org, and especially www.scorecard.org. The sites each provide access to information on toxic substances, organized in various ways. Importantly, each interface suggests that users will become empowered through this access to information, enabling people to transform their communities and alter the current polluted, political realities.

Part III focuses exclusively on the form of empowered identity that emerges out of the fields discussed in the previous two parts. I analyze the parameters and critique the limitations of the identity that inhabits the digital interface but which seeks to alter the larger world. Drawing on the screen metaphor and ideas on risk developed by Beck and Giddens, Chapter Six sketches out exactly how the specific interface could be understood to contain an identity. In particular, users confront information in context (with meanings and intents attached to modes of

access) and are presumed to occupy roles – in the case of anti-toxics sites, the role is that of concerned citizen wanting to fight for her community. To elaborate this argument, I contrast the environmental anti-toxics activist identity contained in the three sites to the context projected on screen by two contrasting sites: www.disclosuresource.com and www.smarthomebuy.com. These sites promise information to the savvy homebuyer who wants to protect investments and legal liability, not clean up a community. The parameters of the empowered digital activist emerge through connectivity – easy access to information and expertise, easy contact with offending parties. The interfaces project a way of seeing the (digital) world – polluted, in need of action, and easy. A new and improved reality is just a few clicks away.

In Chapter Seven, I offer a critique of this Web-supported identity and its promises of transformation. Taking into account the parameters established in the previous chapter (easy access, expert knowledge, politically efficacious action), I address the subtle and severe limitations of viewing empowerment and citizenship through this digital lens. In particular, I play on the concept of identity – not just user as digital citizen, but user as the same digital citizen, sanitized and universalized through digitization. Local becomes common and informed becomes dependent.

The concept of ease, especially as a selling point for activism, ignores the political realities that inhibit the citizen from participating in the policy process and promote pollution hazards in the first place. Ease presumes that the Web itself changes the existing realities by its very nature. The rhetoric surrounding the Web promotes this idea. However, this digital medium could just as easily reinforce existing political and social inequalities. The Web, through specific use, must be *made* to challenge certain prevailing structures. Assuming that the

Web empowers simply by providing access ignores crucial questions, like who creates the information, how it can be used and by whom, and why this information in particular would promote access to the political process.

In the case of environmental anti-toxics activism, the information comes with a qualifier which promotes its political efficacy, yet at the same time recognizes and reinforces the exclusive power of certain social roles. That is, especially for scorecard.org, information comes certified by experts. Thus, users are empowered not only through information access, but through expert-sanctioned information access. Pushing past the limited historical view of toxic problems, one can find that much successful anti-toxics activism came not merely through established expert channels, but through community-created expertise outside of institutional sanction. In fact, at a time when much research into environmental justice coalitions and the work of Not In My Backyard community groups promotes the importance of new kinds of expertise and community participation, digital forms actually reinforce traditional understandings of who is entitled to speak and who lacks such entitlement.

Digital empowerment is offered under the guise of voice – finally giving the individual a voice in the political process and other forms of governance by removing barriers to information. The user can contact government officials about how polluted her community is becoming, and also tell companies directly to stop producing toxic emissions in the area. The voice, however, is deceptively unique and empowering, deceptively local. The individual user, rather than gaining a new platform from which to speak for herself, simply operates as a conduit for the voices and intentions of others *still* more entitled to speak. Despite the apparent promise for change and improvement, the empowered digital environmental anti-toxics activist identity may offer as

much reinforcement of the same as change to something better.

Meaningful questions still remain regarding the value and potential of this form of Web-based activism. Is conceptual improvement possible given the broader constraints imposed by an increasingly ubiquitous digital media? If so, what might the Web interface look like in order to reflect a complex historical understanding of the problem and to promote an empowered user position not defined by access to information alone?

In order to propose answers to these questions, I need to reflect back on some of the larger issues implicitly suggested but not overtly pursued in previous chapters. Though I introduced some of the many technological layers that enable websites to be projected on individual computer screens in Part I, my subsequent critique has principally centered on the digitized layers of interface and information of the activist websites with which a user interacts. In stressing these layers, I have explicitly emphasized the design choices and assumptions made by the environmental groups who put the sites online – how these specific interfaces organize the experience of potential users. Before suggesting how that interface design might be altered, however, I want to revisit the broader digital context and how it influences online and offline experience generally. That is, what constraints and obstacles might wide-scale Web use impose upon the goals of online anti-toxics activism?

As I noted earlier, websites are defined in part through their very connection to other websites and the movement users achieve through surfing the Web (see Chapter Three). Regardless of the content and number of links any specific website provides, however, each site exists within a broader context of Web-based environments. The Web, and one's experiences on

the Web, influence the constitution of one's reality. People begin to adjust their perceptions of themselves and their surroundings to accommodate experiences in the virtual world. I have dealt with many of these ideas (changes in mediated experience, compression of space/time, embodied/disembodied identity) in previous chapters. Here, I want to explore the specific tensions that emerge between Web-based experience and the place-based, embodied realities emphasized by anti-toxics activism in an effort to highlight the difficulties confronting this form of digitized environmentalism.

The compression of space and time that I examined with regard to the individual user's relationship to information on pollution has a more fundamental impact on the goals of sites like scorecard.org. The purported goal of scorecard.org – in fact a key to the empowered position offered to the user – involves a heightened sense of local, community responsibility. The user gains credibility to speak to government officials and corporate liaisons because she lives in a particular community and is exposed to bodily risk. The notion of community that operates here is one based in large part on geography – a body located in a particular place. The site identifies a user as a member of a community through traditional space-based indicators: zip codes and county boundaries.

The Web, however, and the kind of agency it promotes, function as a challenge to this traditional sense of community, especially as individuals can form new kinds of community based less on location and more on interests or identities. In fact, the institutions of geopolitical government suggested by zip codes and counties and even agencies like the EPA and laws like EPCRA face more and more attacks on relevance in the boundary-less ether of the Web (see Luke 1998; Everard 2000). Thus, as individuals become more accustomed to performing tasks

online (from shopping and communicating, to participating and learning), the importance of geographic locale lessens. Fewer and fewer substantive, community-building experiences may be defined by where one can walk or even drive; instead, people can exchange gossip and ideas within the digital domain, where one can surf.

The screen/interface privileges the digitalizable event/exchange/experience. Even the idea of pollution in one's community could be re-imagined digitally to refer to unsolicited email, undesirable list subscribers, limited bandwidth, or computer viruses rather than chemical toxins. The increasing pervasiveness of digital activity may be de-emphasizing the importance of place-based community integrity at least in terms of everyday experience. Yes, the user still sits at a computer screen, still lives an embodied existence, but that existence is increasingly filtered through the digital medium. Thus, sites like scorecard.org that seek to reassert the value and desirability of a physical place by participating in online media may paradoxically reinforce the primacy of virtual living. What relevance will appeals to traditional senses of community continue to possess?

The broader implications of increased digitization can also be found in two other paradoxes of online anti-toxics activism. The activist websites at issue have attempted to champion healthy offline life by creating yet another kind of digital experience. In so doing, they exacerbate other problems central to fighting community pollution. As noted earlier in the work, the digital medium does a lot of hiding. All the ease and speed the Web offers comes through the production of the very toxic substances these activist sites aim to fight – making the

hardware and the electricity needed to power the network is a highly toxic process.¹ Thus, increasing digital experience (ease and speed) comes at the cost of a larger number of toxic places.

In addition, digital media do not just hide enabling technologies; they also hide people. Not everyone (and not even most people) have the means to the kind of regular and easy access sites like scorecard.org privilege. Ironically, the people lacking access to computers (and thus websites) are the very same people that are the most likely to be suffering the effects of toxic exposure. As the Environmental Justice movement has highlighted, the poor and members of ethnic minority groups bear a disproportionate amount of the risk of toxic waste (see Bullard 2000). These are roughly the same groups that live on the wrong side of the digital divide (see, for example, Norris 2001). Thus, participation in the digital revolution, in reinforcing the primacy of digital experience, also promotes the absence of the people and processes hidden beneath or left outside the screen. Use by environmental anti-toxics activists, then, must come with explicit awareness of these costs – an awareness that is represented within the interface and not just whisked away as an inevitable price of using the technology.

Having explored the larger technological context in which these activist sites operate, I now want to turn toward particular suggestions for articulating an interface that may serve to champion the goals of a cleaner, less polluted world. As I explored in the chapters above, the Web-based environmental activist sites produce an empowerment that emerges from a predominantly digital

¹ The toxic impact of computer manufacture can be located in the production process (see [Heavens 2003](#)), in the bodies of workers who manufacture the components (see [Rendon 1998](#)), and in the disposal of those components after use (see [Mayfield 2003](#)).

experience (especially regarding the “actionware” of scorecard.org). The user can enter the online environment and conduct information from one place to another, and by so doing perform a kind of civic engagement. In focusing on digital experience above, especially within the altering virtual landscape, I sought to foreground the problems for anti-toxics activism associated with the tendency to reduce things to the digitizable. This reduction does speed things up, but it also leaves out too much – people and toxic production processes, for example.

One means of combating this reduction involves revisiting the historical problem of toxins as experienced by (non-digital) people. As I noted in Part II, one could easily convert the struggle against pollution into a struggle for information. I want to complicate this narrative a bit, outside the digital imperative, by examining an event more closely. If one looks again at the struggle in Love Canal, for example, one would find not just a call for information, but the formation of a community, the desire to have fears taken seriously, and the fight over what kinds of data were politically permissible.²

The people of Love Canal did not just seek information from experts. In fact, there were several government-sanctioned experts who told community members that they were safe and to go home and forget about it. Nor did the LCHA’s own data collection ultimately decide the matter politically. Government officials attempted to discredit the scientificity of both the collection method and the consulting scientist. Information did serve as a rallying point for the community as a whole; Lois Gibbs and Debbie Cerrillo were able to create a sense of shared experience and outrage through their canvassing efforts. However, the politically influential

² See Chapter Four for the initial description of the events at Love Canal. The following information was also distilled from Levine (1982) and Gibbs (1982).

spectacle of Love Canal emerged from expressions of fear in the face of uncertain science but strong local experience, from prominent declarations of that fear, and from tireless efforts to make the voice of the community heard. Information played a role, but not the role, in this story, and the effort was by no means easy.

The question, it seems to me, involves the issue of experiences, particularly the experience of empowerment. The members of the LCHA sought to make their experiences from living in that place relevant – not just pollution numbers, but bodily experiences and fears and a sense of pride in their community. Their empowerment emerged through the struggle to make relevant what they knew. Filtered through digital media, the experience of empowerment becomes a ride with information, to and through the user. The interface privileges this experience as quick, easy, and powerful enough to make a difference. However, I want to argue that it remains important to re-imagine the boundaries and values of various experiences not producible, but perhaps representable, online. Rather than limiting the experience of toxic substances to a digital re-representation of place and risk, the websites should provide a set of questions that individuals might want to ask themselves and their community members. What knowledge and what experiences the users already possess – about feeling sick, surely, but also about the value of their community and their environment. In a sense, the websites could advocate for a healthy local community, with all the various meanings health might have here.

As it stands now, empowerment means access to expertise. Instead, the interface should also include explicit reference to other, local experiences – not just as possible, but as vital to the process. As Fischer argued for the value of “cultural rationality,” so too should the websites promote – if only through explanation – the importance of advocating for the political viability

of cultural experience not reducible to scientific discovery. Experts may be able to quantify risks, but not articulate an appropriate ethic for each community. The question of acceptable risk is an ethical question in which community members should have the right to have input.

Another possible means of re-concentrating the message of anti-toxics activism would be to have an essential non-digital component. On scorecard.org, especially, the user need never leave the computer in order to be “active.” Compared with the “activeware” of scorecard.org, the “brochureware” of chej.org does not allow the site visitor to do much online. Instead, the organization leans on the experiences of its founder, Lois Gibbs, and invites the user to read information about the services CHEJ itself offers (see <http://www.chej.org/UsersGuide.pdf>). Those services emphasize visits to the community itself and instructions on how to get people involved. It does not suggest that the effort will be easy, but it should be well worth it. In praising the model of chej.org, I am not trying to suggest that CHEJ has the penultimate model of intervention or that groups would be better simply offline. Rather, I want to emphasize that empowerment and action need not be limited to the digital sphere alone to be cutting-edge, effective, or meaningful. The medium itself need not overly influence the shape, goals, or future of environmental anti-toxics activism. Other forms of intervention and experience unable to be translated into the digital realm of possible experiences need not be left behind.

In completing this analysis, I have attempted to shine a light on the digital and non-digital assumptions built into the online environmental anti-toxics activist identity and the form of empowerment such an identity offers. My intent has not been simply to disparage activist uses of the new communication medium. I would not argue that the Web cannot or should not be

utilized as a tool of intervention. These websites do lower the cost of information for those computer-enabled individuals who seek out data on toxic emissions. The sites help do the work of sifting through the data-luge that increasingly defines modern existence and also package toxic information in a context of action and justice, not flight or acceptance. To the extent that potential activists simply lack access to who is polluting, and what is being polluted, and how that pollution might endanger a community, then the Web offers the promise of more and better involvement. This medium of communication can tackle information problems.

Unfortunately, the problem of toxic chemicals is more than, and not simply, an information problem, and empowerment through information access alone does not represent a very robust form of empowerment. Toxic struggles also involve tough, long-term contestations over expertise, justice, and community self-determination. At times, communities have needed to fight dominant modes of information production (by scientific and technocratic experts) that have relegated community concerns as negligible or wrong. They have had to argue for justice in risk distribution, regardless of how “safe” experts deem the communities to be. They have had to claim the right to determine for themselves what it might mean to be safe, to live a good life, to define a local community.

In analyzing and critiquing this digital activist identity and the form of empowerment it offers, I have not myself proposed much by way of replacement. The suggestions I have offered are more aimed at posing questions and alternatives rather than sprucing up the digital experience itself. I have sought not to impose values, but to augment existing ones and point to possible futures not limited to the digital. In this sense, my primary goal has been to reveal the assumptions and connections and dependencies built into this Web-based method of intervention.

I do this in part to create space for thinking about digital and non-digital empowerment in different ways. The medium itself suggests an *obvious* kind of power – information. And from the present technologically influenced lens, that power can be supported by a kind of historical memory – if only people *knew*. But there is danger in presuming that empowerment through information is a technological and/or historical necessity, and that danger comes from ignoring or dismissing other options and kinds of empowered struggle as technologically untenable. In pointing out the contours of this digital identity, then, I hope to spur reflection on what successful and empowered digital activism might look like for different communities, different localities, different individuals.

Information *is* power. The question, as always, is for whom?

Appendix

Images (Screenshots) by Chapter

Chapter 5

Image 5.1 (from http://www.w3.org/MarkUp/tims_editor)

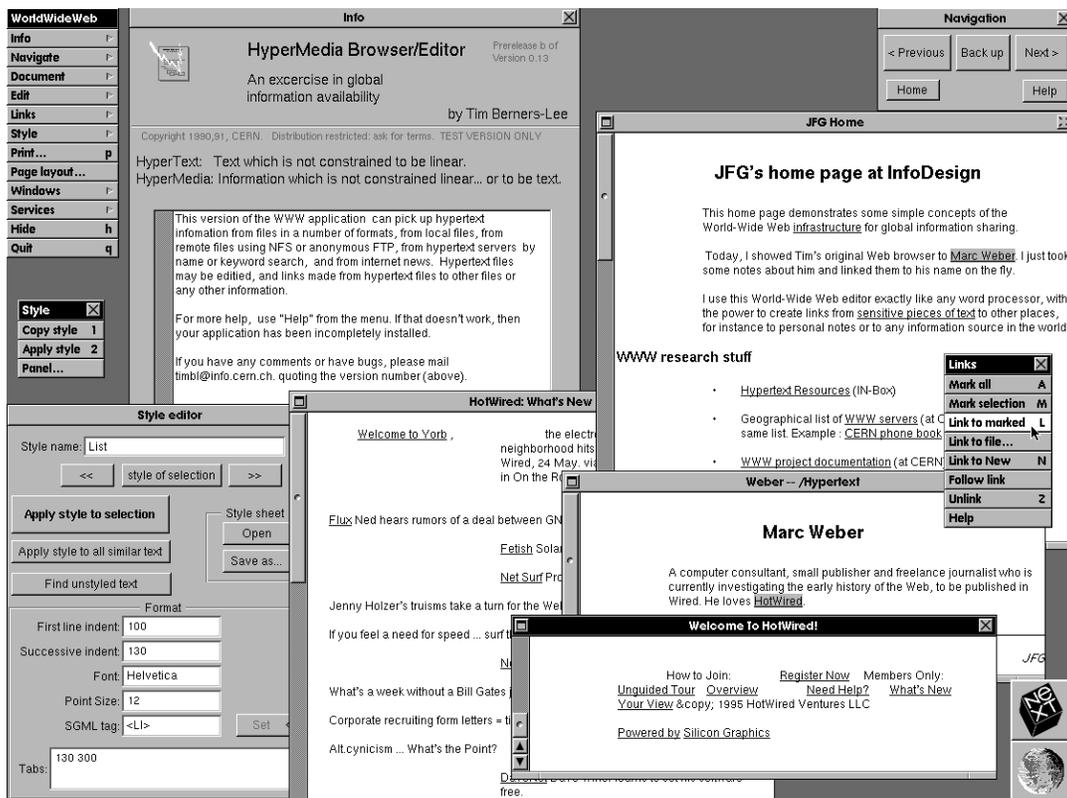


Image 5.2 (from <http://www.epa.gov/tri/>)



U.S. Environmental Protection Agency

Toxics Release Inventory (TRI) Program

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Browse TRI Topics
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 Laws, Regulations
 and Executive Order
 Guidance Documents
 State TRI Programs
 International TRI

NEW RY2003 Release For
[TRI-ME Software](#) and
[Reporting Materials](#)

Please review the [known issues](#) page for software updates.

What is TRI?
 The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. ([more on "What Is TRI"](#) and [TRI Program Fact Sheet](#))

What is TRI-ME?
 To learn about and access the TRI Reporting software, click [here](#) for more information. To view contact information click [here](#).

Featured Topics

- [TRI Stakeholder Dialogue](#)
- [Summary](#) and [Qs & As](#) of EPA's Analysis of the Decision in the Barrick Goldstrike Mines Lawsuit
- [Summary](#) of and [EPA's Response](#) to the National Mining Association (NMA) Lawsuit
- [How Are the Toxics Release Inventory Data Used?](#)
 A new report that contains case studies of government business, academic and citizen uses. (PDF, 790 KB).
- [Address Change](#) - the TRI Data Processing Center* has moved! (*formerly the EPCRA Reporting Center)
- [TRI Brochure - "Factors to Consider When Using TRI Data" \(PDF\)](#)

[Customer Satisfaction Questionnaire](#)

[Spring 2004 TRI TRAINING Workshops](#)

[Classroom Seminar](#)
[Live Web Seminar](#)

[EXIT disclaimer](#)

If you want information about toxic chemical releases in your neighborhood enter your Zip code here



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Last updated on Thursday, March 25th, 2004
 URL: <http://www.epa.gov/tri/>

Image 5.3 (from <http://www.epa.gov/tri/>)


U.S. Environmental Protection Agency

TRI Explorer

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Releases: Facility Report

Data source: 2001 Data Update as of July 25, 2003 [See Note](#) [Get To Home Report](#)

TRI On-site and Off-site Reported Releases (in pounds), for facilities in All Industries, for All Chemicals, zip code 24060 in Virginia, 2001

Row #	Facility	TRIF ID	Fugitive Air	Stack Air	Total Air Emissions	Total On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
1	FEDERAL-MOGUL CORP., 300 INDUSTRIAL PARK RD., S.E., BLACKSBURG	24060FDRLMRT460	1,909	2,569	4,478	4,478	2,821	7,299
	ALUMINUM (FUME OR DUST)		0	2,167	2,167	2,167	1,384	3,551
	ALUMINUM OXIDE (FIBROUS FORMS)		0	0	0	0	0	0
	AMMONIA		NA	NA	NA	NA	NA	NA
	CHLORINE		1,900	0	1,900	1,900	0	1,900
	COPPER COMPOUNDS		0	226	226	226	152	378
	CYANIDE COMPOUNDS		0	0	0	0	0	0
	LEAD COMPOUNDS		0	93	93	93	1,071	1,164
	NITRATE COMPOUNDS		0	0	0	0	0	0
	NITRIC ACID		9	83	92	92	0	92
	ZINC COMPOUNDS		0	0	0	0	214	214
2	LITTON SYSTEM INC. POLY-SCIENTIFIC DIV., 1213 N. MAIN ST., BLACKSBURG	24060LTTNP1213N	0	0	0	0	43	43
	COPPER		0	0	0	0	43	43
3	WOLVERINE GASKET DIV., 201 INDUSTRIAL PARK RD., S.E., BLACKSBURG	24060WLVRN2011N	24,187	30,333	54,520	54,520	0	54,520
	METHYL ETHYL KETONE		3,865	3,779	7,644	7,644	0	7,644
	N-HEXANE		128	614	742	742	0	742
	TOLUENE		20,194	25,940	46,134	46,134	0	46,134
4	WOLVERINE GASKET DIV., 3175 STATE ST., BLACKSBURG	24060WLVRN3175S	21,250	20,427	41,677	41,677	0	41,677
	METHYL ETHYL KETONE		4,962	3,300	8,262	8,262	0	8,262
	TOLUENE		16,288	17,127	33,415	33,415	0	33,415

[Back to top](#)

Export this report to a text file

Create comma-separated values, compatible with spreadsheet and databases.

all records

Image 5.4 (from <http://www.epa.gov/enviro/wme/>)

U.S. Environmental Protection Agency

Window to My Environment



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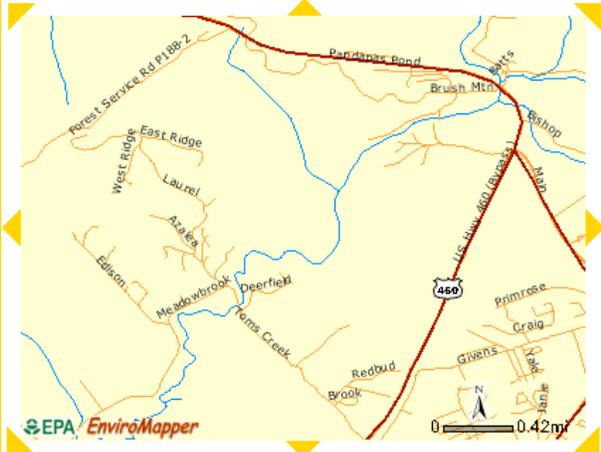
[EPA Home](#) > [Where You Live](#) > [Window to My Environment](#) > [Mapping Results](#)

Redraw Map

Map Features

- Regulated sites
- Places
- Transportation
- Water features
- Political boundaries
 - Congressional Districts
 - Demographics
 - City boundaries
 - ZIP Codes
 - Counties
 - States
- Air monitors
 - Air monitors
- USGS water monitor
 - Surface water
 - Ground water
 - Others
- EPA water monitors
 - Surface water
 - Ground water
 - Others
- Topographic feature
 - Special Flood Hazard Area

Redraw Map



EPA EnviroMapper

Zoom In | Zoom Out | Recenter | Locator Map

Identify | Select a feature | Legend

WME Help | Add a background

Your Window | Your Environment

All features intersecting the map window will appear as part of the information contained in the fact sheet below.

Community (Town, State)	Blacksburg VA
County(s)	Montgomery VA
Congressional District(s)	09(VA)
Urban area	none
Watershed(s)	Upper New. North Carolina, Virginia., Upper Roanoke, Virginia, Upper James, Virginia, West Virginia.
Area / Width of Window	Click Here to View
Approx. population	Click Here to View
No. of facilities reporting to EPA	4

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Last updated on Monday, April 05, 2004
 URL: <http://134.67.99.109/wme/myWindow.asp>

Image 5.5 (from <http://www.rtknet.org/>)

About RTK NET

Databases

Resources

Help

Sponsors

Welcome!

The Right-to-Know Network, a service provided by [OMB Watch](#), provides free access to numerous databases, text files, and conferences on the environment. With the information available on RTK NET, you can identify specific factories and their environmental effects and assess people and communities affected.

[Statement from OMB Watch's Executive Director Regarding Public Access to Databases](#)

TRI Update

EPA released the 2001 Toxic Release Inventory (TRI) data on June 30, 2003. The information is now available on RTK NET.

Related Links:

[EPA 2001 TRI Information](#)
[OMB Watch article on 2001 TRI Data](#)

The Executive Report

The Executive Report, available at <http://www.ombwatch.org/excreport>, is an online report that takes an in-depth look at a variety of executive branch issues. This includes issues such as electronic government, information policy, the regulatory process, devolution, enforcement of health, safety and environmental protections, as well as other cross-cutting issues dealing with government accountability. We invite you to peruse the contents and if you like what you see, please subscribe at <http://www.ombwatch.org/excreport/subinfo.html>.

Search for toxic pollution in your area!

Image 5.6 (from <http://www.rtknet.org/>)

NET

About the Data

About RTK NET

Resources

Help

Area Report (TRI data)

search used-

Zip Code: ALL
 City: BLACKSBURG
 County: ALL
 State: VA
 Chemical: ALL
 CAS: ALL
 Year: ALL
 Database type: Current (last updated 3/08/2003)
 Level of Detail: Summary
 Output Type: Text
 Sort Order: Facility name

This search was done 05/19/2004 using the RTK NET (Right-To-Know Network) copy of EPA's [TRIS](#) database. RTK NET is run by [OMB Watch](#), 1742 Connecticut Ave. NW, Washington DC 20009. helpdesk@rtknet.org (202-234-8494, Mon-Fri 9:00-18:00 ET)

If you don't see the words ****END OF REPORT**** at the end of this search (below), then it did not complete; please try again.

This is a SUMMARY detail report -- a list of hits. If, instead, you would rather have all the TRI data from your search in one file to download, go Back in your browser and choose High in the Level of Detail box.

Reporting Year: 1987

Facility Name	City	State	Total Releases (lbs)
FEDERAL MOGUL CORP.,	BLACKSBURG	VA	61,496.00
KDI ELECTRO-TEC CORP.,	BLACKSBURG	VA	48,850.00
LITTON POLY - SCIENTIFIC,	BLACKSBURG	VA	178,825.00
WOLVERINE GASKET CO., BLACKSBURG DIV.	BLACKSBURG	VA	35,953.00
Total (lbs)			325,124.00

Reporting Year: 1988

Facility Name	City	State	Total Releases (lbs)
ELECTRO-TEC CORP.	BLACKSBURG	VA	55,328.00
FEDERAL MOGUL CORP.,	BLACKSBURG	VA	73,188.00
LITTON POLY-SCIENTIFIC,	BLACKSBURG	VA	106,731.00
WOLVERINE GASKET & MFG CO.,	BLACKSBURG	VA	27,960.00
Total (lbs)			263,207.00

Reporting Year: 1989

Facility Name	City	State	Total Releases (lbs)
ELECTRO-TEC CORP.	BLACKSBURG	VA	37,927.00
FEDERAL-MOGUL CORP.,	BLACKSBURG	VA	70,477.00
LITTON POLY-SCIENTIFIC	BLACKSBURG	VA	170,785.00
WOLVERINE GASKET & MFG CO.,	BLACKSBURG	VA	160,550.00
Total (lbs)			439,739.00

Image 5.7 (from http://www.scorecard.org)



TOP TEN

States with highest total environmental releases of lead

e
ENVIRONMENTAL DEFENSE
finding the ways that work
[\[text-only version\]](#)

GET THE FACTS ON LOCAL POLLUTION

Tuesday, October 14, 2003

Health Effects from Lead at Low Doses

Recent scientific studies suggest that lead's effects on health may be more pervasive and occur at lower doses than previously thought. An analysis of NHANES follow-up data by Lustberg and Silbergeld showed increased risk of dying from all causes, and specifically cardiovascular disease and cancer, among adults with a blood lead level between 20 and 29 mcg/dl. In 1978-1979. In another study, the harmful effects of lead on children's intelligence were shown to occur at blood lead levels below 10 mcg./dl, the current CDC "level of concern" for children. In fact, some investigators suggest that lead has a bad effect on intelligence at very low levels of exposure.

This year's TRI data provides a better picture of lead exposure across the United States, as the EPA has lowered the threshold for reporting lead releases into the environment, meaning more facilities are included this year. To find the biggest lead polluters in the country from the 2001 TRI data, rank facilities by reported releases of [lead](#) or [lead compounds](#).

WHAT YOU CAN DO

You can help us protect children's health.

Donate >>

Take Action >>

Tell a Friend >>

ENVIRONMENTAL MAPS



Choose an environmental issue below:

- ▶ Criteria Air Pollutants
- ▶ Hazardous Air Pollutants
- ▶ Lead Hazards
- ▶ Land Contamination (Superfund)
- ▶ Animal Waste from Factory Farms
- ▶ Toxic Releases from Industrial Facilities (TRI)
- ▶ Clean Water Act Status
- ▶ Watershed Indicators
- ▶ Setting Environmental Priorities

Find Your COMMUNITY

Just enter your zip code and find out what pollutants are being released into your community –and who is responsible.



FIND OUT about pollution from **POWER PLANTS**

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Image 5.8 (from <http://www.scorecard.org/>)

ABOUT YOUR COMMUNITY

Scorecard

Your Zip Code: 24060 Your Community: MONTGOMERY County

Welcome to Scorecard!
If you'd like to personalize Scorecard so that it remembers your community, you may [register here](#).

WASTE

Toxic Chemical Releases from Manufacturing Facilities

- In 2001, this county ranked among the dirtiest/worst 20% of all counties in the U.S. in terms of air releases of recognized developmental toxicants
- [Who is Polluting Your Community?](#)
- [What are the Major Pollutants?](#)
- Learn [more](#) about pollution from industrial facilities in your community

Agricultural Pollution

- [How does Your Community Compare?](#)
- Learn [more](#) about animal waste from factory farms in your community

AIR

Air Quality: Health Risks from Hazardous Air Pollutants

- [Based on EPA's most current data](#), this county ranked among the dirtier 30% of all counties in the US in terms of the number of people living in areas where cancer risk from hazardous air pollutants exceeds 1 in 10,000.
 - 83,629 people in MONTGOMERY County face a cancer risk more than 100 times the goal set by the Clean Air Act.
 - 94% of the air cancer risk is from [mobile](#) sources
 - 6.3% of the air cancer risk is from [area](#) sources
 - 0.043% of the air cancer risk is from [point](#) sources
 - [What's Your Risk?](#)
 - Learn [more](#) about hazardous air pollutants in your community

Air Pollution: What are the Emission Levels in Your Community?

- In 1999, this county ranked among the dirtier 40% of all counties in the U.S. in terms of nitrogen oxides emissions, ozone season daily average
- Air quality is not monitored in your community . [Find out about emissions levels](#) of Criteria Air Pollutants
- [Who is Polluting Your Air](#) with sulfur dioxide?
- Learn [more](#) about criteria air pollutants in your community

LAND

Potential Sources of Land Contamination

- No waste sites in MONTGOMERY County are on EPA's National Priority List of Superfund sites.

Lead Hazards

- [730](#) houses in MONTGOMERY County have a high risk of lead hazards.

WATER

Clean Water Act Status: Do Waterbodies in Your Community Meet Clean Water Act Standards?

- 5 % of surface waters in MONTGOMERY County have beneficial uses which are impaired or threatened. (Reports may be [incomplete](#))
 - Some Rivers, Streams and Creeks are impaired by [Pathogens](#) and [Impaired Biological Community](#)
- The leading source of water quality problems is [Agriculture](#)
- Learn [more](#) about Clean Water Act compliance in your community

Watershed Indicators: How Healthy Are Your Watersheds?

- MONTGOMERY County contains a portion of [4](#) watersheds:
 - EPA has determined that 1 has good water quality but high vulnerability to degradation
- Learn [more](#) about watershed health in your community

ENVIRONMENTAL JUSTICE

- View the [environmental justice report](#) for MONTGOMERY County ([en español](#))

SETTING ENVIRONMENTAL PRIORITIES

- One of the top-ranked environmental problems in your region is Indoor air pollutants other than radon
- Learn [more](#) about environmental priorities in your region

EXPLORE THE MAPS: See how air pollution in your area compares with other communities. Locate polluters, and see how close they are to your home or workplace.

COMPARE THIS COMMUNITY TO OTHERS

TAKE ACTION: Send faxes to the top-ranked polluters in your area, send email to government officials, volunteer with environmental organizations in your area, or join Scorecard's online community forum.

For information about another community, enter the zip code:

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Image 5.9

Scorecard

ENVIRONMENTAL DEFENSE
finding the ways that work

POLLUTION LOCATOR | Environmental Release Report

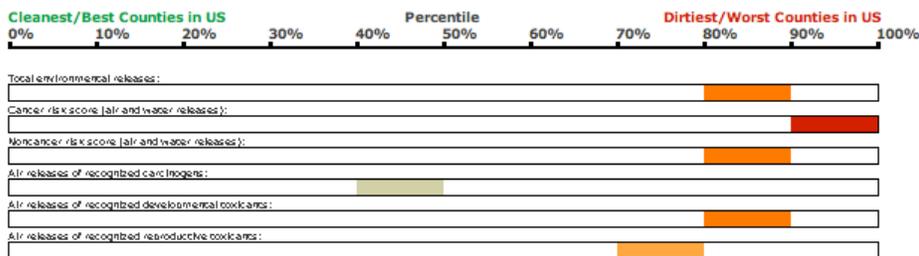
Environmental Release Report: MONTGOMERY County, VA

- Map Locating Toxic Chemical Releases
- 2001 Rankings: Major Chemical Releases or Waste Generation in MONTGOMERY County
- Environmental Justice Analysis for MONTGOMERY County
- 2001 TRI Pollution Releases Ranked by Potential Human Health Risks
- 2001 TRI Pollution Releases Sorted by Health Effect
- What We Don't Know About Chemical Safety and Harm
- TRI Data Summary
- Dioxin Compounds Summary
- TAKE ACTION** →
- Links

- Map Locating Toxic Chemical Releases
 - MONTGOMERY County

100%

- 2001 Rankings: Major Chemical Releases or Waste Generation in MONTGOMERY County*



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Chapter 6

Image 6.1 (from <http://www.disclosuresource.com/>)

DisclosureSource *The Power to Limit Your Exposure* **FNIS™**

INTEGRATED EFFICIENCY

home FAQ reports about support

browse the site
click here to *Order Now*

Download
consumer information booklets
Earthquake Safety: Homeowner Guide Commercial Guide
Protect Your Family From Lead
Environmental Hazards
Get Acrobat Reader

Login:
Password:
Login

Register Here
Printable Order Form

e-mail a friend about us

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*Forget about the lawn, what about the leaking tanks? Let DisclosureSource, your **number one source** for environmental and natural hazard disclosure data nationwide give you peace of mind.*

what you want to know

Q Is your dream home surrounded by environmental hazards? *More Info*

Q Will your dream home be threatened by natural hazards? *More Info*

Q Are you moving to a safe neighborhood? *More Info*

What Disclosure Source reports tell you...

- o Water and Flood Risks
Special flood hazard areas, dam inundation areas...
- o Wildfire Risks
Wildland fire areas, Very High Fire Hazard Zones...
- o Earth Movement
Earthquake faults, Landslides, Liquefaction...
- o Environmental Risks
Superfund sites, leaking tanks, landfills...

Why Disclosure Source?

- o **Most comprehensive disclosure reports--easy to read**
- o **Instant turnaround**
- o **Exceptional customer service!**

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Image 6.2 (from <http://www.scorecard.org>)

Dear Manager:

I just reviewed a detailed, online description of your environmental emissions, and I am writing to express several important concerns. First, I understand that you have reported to the U.S. Environmental Protection Agency that your facility emitted:

41677 pounds of total environmental releases in 2001
723924 pounds of total production-related waste in 2001.

I also learned that this facility ranks among the worst performing facilities in the US in regard to its air releases of recognized developmental toxicants.

I was also surprised to learn that many of the toxic chemicals covered by EPA's reporting requirements do not have government-established safety levels, making it impossible for those of us who may be exposed to know whether present-day exposures are safe or not.

As a neighbor potentially affected by emissions from your facility, I ask you to provide me with information showing that these chemicals, and other chemicals which your facility produces and releases to the environment, are in fact safe.

Finally, I would like information on your efforts to prevent pollution in the first place by changing your use of these chemicals. Experience has shown that there are a number of process and product changes that can substantially reduce toxic chemical use and the generation of toxic chemical waste. If you do not have any in-house expertise in pollution prevention, are you taking advantage of state and private technical assistance in this area?

I look forward to your prompt response. The situation portrayed by your official reports to the U.S. EPA is not reassuring to those of us who are, or may be, affected by chemicals that your facility is emitting.

Sincerely,

-- your name and address will appear here --

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(in order of appearance)

Chapter 1

The National Wildlife Federation: <http://www.nwf.org/> [last accessed: 14 May 2004]

The Izaak Walton League: <http://www.iwl.org/> [last accessed: 14 May 2004]

The National Audubon Association: <http://www.audubon.org/> [last accessed: 14 May 2004]

The Sierra Club: <http://www.sierra.org/> [last accessed: 14 May 2004]

The Wilderness Society: <http://www.wilderness.org/> [last accessed: 14 May 2004]

The Natural Resources Defense Council: <http://www.nrdc.org/> [last accessed: 14 May 2004]

Environmental Defense: <http://www.environmentaldefense.org/> [last accessed: 14 May 2004]

The National Environmental Policy Institute: <http://www.nepi.org/> [last accessed: 14 May 2004]

The National Parks and Conservation Association: <http://www.npca.org/> [last accessed: 14 May 2004]

Environmental Protection Agency (EPA), Toxic Release Inventory homepage: <http://www.epa.gov/tri/> (see also all other chapters) [last accessed: 14 May 2004]

EPA's Window to My Environment: <http://www.epa.gov/enviro/WME/> (see also chapters 5, 6) [last accessed: 14 May 2004]

OMB Watch, Right to Know Network: <http://www.rtknet.org> (see also all other

¹ Content and websites are notoriously ephemeral. As such, a reader of this dissertation may find that some of the links have expired or changed in the coming weeks, months, years. In the likely event of such an occurrence, I would direct the reader to two possible resources. One is an internet archive – the WayBackMachine – found at <http://www.archive.org/web/web.php>. This site provides archiving from 1996 to the present and may provide access to some of the links I have referenced. In addition, I have generated my own archive of the sites relevant to this dissertation and would gladly accept inquiries at wgalusky@vt.edu.

chapters) [last accessed: 14 May 2004]

Environmental Defense, Chemical Scorecard: <http://www.scorecard.org/> (see also all other chapters) [last accessed: 14 May 2004]

Chapter 2

Washington, D.C., Department of Motor Vehicles:
<http://dmv.washingtondc.gov/main.shtm> [last accessed: 14 May 2004]

ParkingTicket.com: <http://www.ParkingTicket.com> [last accessed: 14 May 2004]

Global Exchange, World Trade Organization campaign:
<http://www.globalexchange.org/campaigns/wto/> [last accessed: 14 May 2004]

Global Exchange, World Bank and International Monetary Fund campaign:
<http://www.globalexchange.org/campaigns/wbimf/> [last accessed: 14 May 2004]

Zapatista Movement: <http://www.ezln.org/> (in Spanish) [last accessed: 14 May 2004]
<http://flag.blackened.net/revolt/zapatista.html> (in English) [last accessed: 14 May 2004]

Independent Media Organization: <http://www.indymedia.org/> [last accessed: 14 May 2004]

The New York Times: <http://www.nytimes.com/> [last accessed: 14 May 2004]

Chapter 4

National Consumer's League: <http://www.nclnet.org/> [last accessed 18 May 2004]

Center for Health, Environment, and Justice: <http://www.chej.org/> (see also chapters 5 & 8) [last accessed: 14 May 2004]

Chapter 5

New Jersey Right to Know Program Hazardous Substances Fact Sheet:
<http://www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm> [last accessed: 14 May 2004]

Microsoft: <http://www.microsoft.com/> [last accessed: 14 May 2004]

GetActive Software: <http://www.getactive.com/> [last accessed: 14 May 2004]

Action Network: <http://www.actionnetwork.org/> [last accessed: 14 May 2004]

Alexa.com: <http://www.alexa.com/> [last accessed: 14 May 2004]

EPA, Integrated Risk Information System: <http://www.epa.gov/iris/> [last accessed: 14 May 2004]

Chapter 6

Disclosuresoure.com: <http://www.disclosuresource.com/> [last accessed: 14 May 2004]

Smarthomebuy.com: <http://www.smarthomebuy.com/> [last accessed: 14 May 2004]

E-risk.com: <http://www.e-risk.com/> (reconstituted as <http://www.disclosuresource.com/>)

Nearmyhome.com: <http://www.nearmyhome.com/> (reconstituted as <http://www.smarthomebuy.com/>)

2002 (September) *Global Ethics*, Wyatt Galusky, Andrew Garner, Harlan Miller, & Jean Miller, eds. (Dubuque, IA.: Kendall/Hunt Publishing Company).

2002 Book Review: "Frank Fischer, 'Citizens, Experts, and the Environment: The Politics of Local Knowledge'", *Science, Technology, & Human Values* 27(2), 319-322.

2001 Book Review: "Douglas Torgerson, 'The Promise of Green Politics: Environmentalism and the Public Sphere'", *Environmental Ethics* 23(1), 95-98.

2000 "The Promise of Conservation Biology: The Professional and Political Challenges of an Explicitly Normative Science", *Organization and Environment* 13(2), 226-232.

1999 "'Global Environmental Problems Require Global Solutions': A Case Study in Ecomessianism", co-authored with Tyler Veak, *Bulletin of Science, Technology, and Society* 19(6), 532-538.

**GIVEN PAPERS
AND TALKS**

"History, Technology, Identity and, or, also Digital Environmental Anti-Toxics Activism", Wednesday Seminar, Science & Technology Studies, Blacksburg, VA (April 2004)

"Representing Toxicity: An Analysis of How Environmental Activist Websites Construct the Activist" for a Panel on Representing the Environment at the Society for the Social Studies of Science International Conference, Atlanta, GA (October 2003)

"Identifying with Information: Citizen Empowerment, the Internet, and the Environmental Toxins Movement" at Cyberculture Working Group Conference, College Park, MD (April 2002)

Discussion Facilitator, "Adorno's 'Priority of the Object' and the Question of Material Agency: Pondering the Contribution of the Negative Dialectic to Science Studies", Thursday Lunch Discussion, Science & Technology Studies, Blacksburg, VA (March 2002)

"Evaluating the Internet as a Tool for Communicating Risk and Advocating Activism: Environmental Justice and Toxicity Database Technology" at 2001 Society for Risk Analysis Annual Meeting, Seattle, WA (December 2001)

"IT Toxicity Information: A Tool of Activism or Avoidance?" at Science, Technology & Globalization: Societal, Political, and Economic Impacts Conference, Washington, D.C. (April 2001).

"Conceptual Levels, Metaphor Traps and an Anonymous Framework" at Exhibiting STS Conference, Blacksburg, Virginia (April 2001).

"Environmental Justice and the Feudalization of Scientific Knowledge" at the Mephistos 2001 Conference, Notre Dame, Indiana (March/ April 2001).

"Conservation Biology, Risk, and Scientific Knowledge Production" at the International Association of Environmental Philosophy Conference, State College, Pennsylvania (November 2000).

"The Transformative Power of 'Risk': Negotiating Pluralism and Productive Justice," at the Society for Philosophy and Geography Conference, Baltimore, MA (April 2000).

"Conservation Biology," at the 2000 National Association for Science, Technology and Society (NASTS) Convention, Baltimore, Maryland (March). *Winner – Grad Student Paper Competition*

"'Global Environmental Problems Require Global Solutions': A Case Study in Ecomessianism." [Co-authored with Tyler Veak] at the 12th Annual Conference of Concerned Philosophers for Peace, Radford, Virginia (October 1999)

"Ecomessianism" at the 1999 National Association for Science, Technology and Society (NASTS) Convention, Baltimore, Maryland (March).

**UNIVERSITY &
COMMUNITY
SERVICE**

Liberal Arts Ad-hoc Committee on Plagiarism, Morrisville State College (Spring 2004)

Director, Co-writer, Organizer of interactive play entitled *Me and myGoogle*, produced in conjunction with 2003 Choices & Challenges Forum, 2003 STS Workshop, and 2003 SEWSA Conference, Blacksburg, Virginia (March 2003)

Co-organizer for STS Workshop entitled "Technologies/Moralities: The Ethical Grammar of Technological Systems", Blacksburg, Virginia (March 2003)

Co-organizer for Gender and Technology Exhibit, in conjunction with the Southeast Women's Studies Association Annual Conference, Blacksburg, Virginia (March 2003)

Refereed for Journals: *Science, Technology, and Human Values*; *Techné*

Follow-up session panelist, "Organ Donation and the Popular Imagination," Choice & Challenges Forum, *Reinventing the Human: The Six-Million Dollar Body*, Blacksburg, Virginia (November 2000).

Director, "Pig in the Middle," performed in conjunction with the Choice & Challenges Forum, *Reinventing the Human: The Six-Million Dollar Body*, Blacksburg, Virginia (November 2000).

Planning Committee member, Choice & Challenges Forum, *Reinventing the Human: The Six-Million Dollar Body*, Blacksburg, Virginia (November 2000)

Non-voting Member, Center for Interdisc. Studies Steering Committee (1999-2000)

Member, Preliminary Examination Review Committee (1999)

**RECENT
HONORS**

Grant Recipient – University Office of International Programs/Center for Excellence in Undergraduate Teaching (UOIP/CEUT) International Curriculum Mini-grant: "Comprehensive Database for Philosophy 2304 – Global Ethics". Co-recipient with Andrew Garnar and Jean Miller; Joseph C. Pitt, Principle Investigator.

Nominated for the graduate student service award, 2000-2001, Virginia Tech

1st place, First Annual National Association STS Graduate Student Paper Contest (March 2000)

**PROFESSIONAL
SOCIETY
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Society for the Social Studies of Science (since 2003)

American Philosophical Association (since 2001)