SEX! ALIENS! HARVARD!
RHETORICAL BOUNDARY-WORK IN THE MEDIA
(A CASE STUDY OF ROLE OF JOURNALISTS IN THE SOCIAL CONSTRUCTION OF SCIENTIFIC AUTHORITY)

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Submitted to the faculty of the University Graduate School
in partial fulfillment of the requirements
for the degree
Doctor of Philosophy
in the School of Journalism,
Indiana University
September 2, 2005

Note:
As of October 2005, my dissertation is in the process of being copyrighted and published through the standard university dissertation publication system. Once this process is complete, my dissertation will be available through that system. I plan to publish this work in book form and parts of this work as journal papers, but as yet I have no publication schedule.
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ACKNOWLEDGEMENTS

I would like to thank my mother and father (deceased), my brother, and other members of my loving family for years of support and encouragement of my academic endeavors. I would like to extend special thanks to the members of my dissertation committee, particularly my doctoral advisor and committee chair, for their guidance, patience, and inspiration throughout the development of this project. I thank the members of my dissertation support groups for their collegiality and good advice. I thank my partner and my many good friends for enduring this project with me and cheering me on. And I thank my colleagues at NASA who made it possible for me to finish this project. Finally, I give special thanks to the people who give us the invaluable resource of Google.

Abstract

With science and the media playing prominent roles in contemporary life, it is important to understand the cultural authority of science and the role of the media in maintaining this authority. This paper will report on a case study of journalists' participation in the social construction of scientific authority. The case involves print media coverage of controversial scientific research conducted by a tenured professor of psychiatry at Harvard Medical School, a Pulitzer Prize winner, and a well-known authority in his field. When this elite scientist embarked upon the study of people who believe they have been abducted by aliens he drew fire for stepping outside the boundaries of "real" science, despite his stellar credentials and long history of accomplishment. Much of this fire took place on the field of the mass media. The boundaries of science and scientific authority were tested in this case, and journalists played a role in the boundary-work. Employing the sensitizing concept of boundary-work to guide analysis of media content, this case study explores how journalists constructed scientific authority in their coverage of Mack's abduction research, and to what ends, and how scientific and journalistic norms operate in media coverage of science. Rhetoric is a primary tool for constructing social reality, and the rhetoric of science is a key source — for the purposes of this study, arguably the sole source — of the cultural authority of science. Burke's dramatistic criticism is thus employed as a primary analytic tool in this study, to excavate the landscape of symbolic communication. The aim of this study is to illuminate ambiguity, complexity, motives and meanings in this case. It is intended to be thought provoking, instructive, and productive, to enrich the ongoing examination of the cultural roles of science and journalism.

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Preface

Where I am and how I got here…

"Sex! Aliens! Harvard?" Got your attention, didn't I? Every journalist who writes a news story wants people to read it. Journalists might — and, I would argue, do — have other motives as well, but their most pressing pragmatic objective is to write a story that people will read, to write a story *so* that people will read it. From the *National Enquirer* to *The New York Times*, journalists know that grabby headlines work. Sex always sells – it's a journalistic convention to focus on the sensational. Aliens? More sensationalism, in accordance with the convention of reporting on the unusual. Harvard represents (scientific) authority – it's another journalistic convention to report on official, authoritative sources.

But what *else* might stories about sex, aliens, and Harvard be about?

Given the prominence of science and the ubiquity of mass media in culture, and the influence of media coverage on public understanding of science, it is important to understand the cultural authority of science and journalism's treatment of it. I aim to contribute to this understanding by addressing this question herein: how do journalists participate in the social construction of scientific authority in the mass media?

I have addressed this question in a case study of elite print media coverage of Harvard Medical School psychiatry professor John E. Mack's alien abduction research. I chose this case because it seemed to bring to the surface assertions about scientific authority – involving credentials, credibility, authority, evidence, methods, peer review, publicity, worldview. (I'll return to the "surface" shortly….)

This project is a qualitative, interpretive study. I first conceived it as a predominantly social study of science in the media employing tools of rhetorical analysis to examine texts. I followed guidelines for qualitative, naturalistic research – selectively assembling a sample of texts to consider rather than discard "outliers," for example, and adjusting my analytic framework over time as new findings came to light. As I proceeded with my

study I gradually came to (re)conceive it as a rhetorical analysis based upon a substrate (conducted within a framework) of social theory. The language at play in this case was so rich, provocative, and ambiguous that ultimately I chose to employ rhetorical analysis as my primary analytic tool, proceeding on the assumption that rhetoric is a primary means of constructing social reality. I have focused on meanings in this analysis. For the purposes of this study, words are *the* means of making meaning.

My project has benefited from the guidance of a multiperspectival committee of Gurus: a Sociology of Science Guru, a Productive Criticism Guru, a Science Communication Guru, and a Journalism Guru. Each has contributed a different expert perspective. All of these perspectives enhanced and also "complexified" the project for me. As a consequence of these and other influences, my theoretical framework for this analysis is multiperspectival, drawing on social constructivism, critical theory, cultural studies, dramatistic and productive rhetorical criticism, the concept of framing and the attitude of deconstruction.

I was aware from the very beginning that I was not mapping out a quick and easy route to my final destination (that is, a "done diss"). Nonetheless I chose to proceed without knowing what my final destination would be. I knew the journey would not be easy, but I knew it would be interesting, and I believed that, in the end, it would be productive, in the sense that my Productive Criticism Guru and other like-minded scholars have explored. So I continued down what turned out to be a long and winding road – at some points rather tortuous ("twisted," my Sociology of Science Guru said), and rather poorly marked.

At times I felt lost. I would be certain I was beginning to see clearly what was going on in these texts – I could identify the action taking place, the rhetorical motives of journalists and their sources, the values and interests at play in their stories. Or so I thought. Then I would read and re-read and think some more, reorient my analytical framework, and see something else going on – other actions taking place, other rhetorical motives exhibited, other values and interests at play. Over time, however, letting reason and intuition guide me (in the vernacular, listening to my head and my gut), I finally began to see that I was not looking at an "either-or" but a "both-and" situation. In these stories both pragmatic social action and symbolic ritual action was taking place. What first appeared to be conflicting interpretations turned out to be evidence of complexity.

From the social constructivist perspective I could see journalists and scientists acting out their roles as they perceived them, following professional conventions as they perceived them, toward ends they perceived to be in their own interests. From the Burkean dramatistic perspective I was able to scan the landscape of meaning in this case and uncover and examine ambiguity, complexity, motives, and meanings. Burke's pentad of scene, act, agent, agency, and purpose was a useful matrix for analyzing symbolic action in these texts, a good tool for examining them from different angles. From the critical perspective I could more clearly see journalists' (and scientists') professional and self-interested motives for their symbolic actions. And from the productive-critical perspective I could see the possibility of raising their awareness of those motives, toward evaluating whether they yielded the most useful results. From a cultural studies perspective, I could see a mythic narrative being retold – I could see journalists enacting rituals in their communications about science, maintaining the culture (the cultural authority) of science over time. The metaphor of the frame enabled me to examine and compare text and text, text and metatext. In keeping with the attitude of deconstruction I could pick apart the range of possible meanings of key words employed in these texts.

My Productive Criticism Guru asked me if I could justify my idiosyncratic approach and explain what I gained by sacrificing "efficiency" and stopping short of "closure." Why is a multiperspectival approach better? What might I have missed, he asked, if I had aimed for efficiency instead of delving into ambiguity and complexity? Is it possible to remain open to all possible interpretations *and* maintain some direction in such an analysis?

As I began this study, following a cue from John Pauly (1991), I thought about the "potentially rich mix of overt and covert meanings" that might be embedded in my sample of texts, hinted at by words that glittered with the promise of gems buried in sand (but, then again, might turn out to be a trick of the eye…). Examining these texts as pragmatic social action, cultural maintenance, and ritual performance allowed me to consider the range of motives, acknowledged or not, that journalists could enact in reporting news. Without the benefit of multiple analytic perspectives, I might have gotten bogged down indefinitely in what I initially perceived to be contradictions in and among my texts. With the benefit of multiple perspectives, I was able to see competing narratives – boundary-tending narratives of transgression, and boundary-testing narratives of heroic acts.

I could have focused solely on pragmatic social action – but then I likely would have missed the ritual enactments performed in some of these texts. I could have conducted a more strictly sociological analysis of boundary-work – but then I would have passed over much of the richness of the rhetoric deployed in this case, where so much ambiguity and complexity lurked. I could have conducted a more conventional framing analysis of journalists' texts – but I might have missed the ritual enactments, much of the richness of rhetoric, and the operation of these texts as a sort of metatext. By foregoing the perspective of productive criticism, I would have foregone the opportunity to consider how my findings might be useful in the everyday action of science communication. By stopping short of closure, I have left plenty of room for other analysts to conduct their own explorations of various aspects of this case and also my findings and conclusions about it. A "mono-perspectival" approach could have been more efficient, but it would not have been as interesting, illuminating, and productive.

My Science Communication Guru and my Journalism Guru expressed concerns about my findings about my sample of texts as a group (a metatext) when the texts I had chosen to analyze varied so broadly. They appeared in newspapers and magazines, as news reports, features, profiles, reviews, columns. Each story was unique, displaying the marks of particular authors, editors, and sources and conforming to the styles of particular media outlets. However, I found that these stories were linked; they hung together somehow as a narrative. My general statements about these texts are a product of my understanding that these individual texts somehow function as a metatext. By the end of this analysis I found this effect almost overwhelming….

My Sociology of Science Guru helped me to articulate more clearly the role that I found journalists played in the social construction of scientific authority in this case. "Aha!" he said as we were discussing my findings. What is going in this case, he said, is that no matter what journalists were doing in reporting on Mack's research – no matter who they were (science writers, book reviewers, feature reporters…) or what their interests might be (trashing a book, reporting official views, providing entertainment…), no matter what sources they cited (skeptics, supporters, friends, foes…), no matter what outlet they reported for (newspapers, magazines, mainstream, fringe…), no matter what form their stories took (news, features, profiles, reviews…), no matter how they framed those stories (critical, skeptical, serious, humorous…) – journalists were reproducing scientific authority.

They were maintaining the boundaries of science. At some point in our discussion about my findings, my Journalism Guru asked whether it mattered what position journalists took in relation to Mack. With regard to their role in constructing scientific authority in this case, it appears that, no, it did not matter.

I saw pragmatic social action taking place in the stories I examined. But ultimately I came to see that this pragmatic action was superficial – not (turning to dictionary definitions) "shallow" or "trivial" but "on or near the surface"; true to the derivation of the word from "super," on, and "ficies," face; "apparent rather than actual." The same stories that performed pragmatic actions also performed symbolic, ritual actions. Following established conventions and routines, journalists took practical action in these stories, employing frames, headlines, and leads to construct interesting stories and pull in readers. Following cultural cues, journalists took symbolic action in these stories, employing rhetorical strategies that reinforced the boundaries of conventional science and at the same time challenged them, all the while constructing meaning. And some also enacted rituals, telling the story of a scientist's heroic journey, engaging in a performance intended to maintain order, their protagonist a stereotypically heroic scientist. Some or even all of these actions were taking place concurrently in journalists' stories about Mack.

In the end, my Science Communication guru observed that my study "contributes less to our understanding of different journalists' constructions of scientific authority than it does to our understanding of journalists' constructions – across media – of the cultural authority of science. There were superficial differences, to be sure," she said, in how journalists treated Mack. "But all the stories, at a deep level…reinforced the cultural authority of science because it was in the *interests* of all the actors to do so," she said. "Even the portrayal of Mack as a hero in some stories did not detract" from journalists' fulfillment of the task of reinforcing the boundaries of science.

This study affirms the findings of other scholars that the working world of journalists is a world defined by professional practices; that journalists decide what is news out of routine adherence to conventions; that by following conventions journalists maintain order, make myths, manage symbolic reality; that journalists both reinforce and contest authority in reporting on science, and they construct authority for so-called maverick science and scientists simply by reporting on them; that communication can, indeed,

function as ritual performance.

In our final deliberations on my project, my Gurus asked me what changes are necessary to make science journalism better. Building on the work of scholars before me as well as my findings in this analysis, I believe that science journalism could benefit from a more multiperspectival approach to reporting science news, that science journalists could improve their reporting by taking a more mindful approach to the news, that rhetorical frames of acceptance (open and inclusive) are more useful in reporting science news than are frames of rejection (closed and exclusive). Frames of acceptance that Kenneth Burke called comic correctives can provide a link between the journalistic right to inform and the responsibility to do so thoughtfully. Such a corrective could be a bridge to the transcendence of debunking and other strategies of rejection that are all too common in science communication today.

As my Productive Criticism Guru has said, an analyst is taking social action simply by engaging in this sort of criticism, determining that a particular topic is worthy of analysis and examining it from a particular perspective. I have attempted to maintain an awareness of my purpose, intent, and perspective throughout this project. I intend for the results of this act of productive criticism to be useful in heightening journalists' awareness of their own rhetorical strategies and aims, an awareness that might help them to make more informed decisions about the ways in which they communicate about science. For this reason I hope my findings will be useful to teachers of journalism and to scientists as well, toward the same ends. I intend for my findings to foster discussion, and I would not be unhappy if they stirred debate as well (though discussion can take place in a frame of acceptance, while debates tend to occur in frames of rejection). I am already applying my findings in my daily work with scientists and journalists. In my everyday social life, I intend to promote dialogue in science communication.

My dialogue with my gurus "allowed an opening," as my Science Communication Guru has said, "to different ways [of] viewing my work, to a wider, more spacious view" of my analysis, findings and conclusions. "I know it did that for me," she has observed. My Productive Criticism Guru asked me how I might amend my approach for another study of this sort: I would be more confident about starting out without a rigid framework for analysis, as I have learned that an open "frame" allows one to see more (and maybe further and better). It has been said that the exploratory sort of

criticism I have engaged in rarely proceeds in a linear fashion. Now that I have completed this work of criticism I can say, emphatically, with regard to that warning: no kidding! This preface constitutes a map you can use to walk through this study, with just enough details to keep you moving forward and plenty of room for side trips if you wish.

And now, here is how I got here….

Chapter 1

Introduction to a case of a deviant doctor:
a rhetorical analysis of journalistic boundary-work

Alien abduction is a familiar theme in popular culture. It is the subject of newspaper reports and magazine features, true confessions and science fiction, television documentaries and big-budget Hollywood movies.[1] Toward the end of the 20th century, alien abduction arrived on the campus of Harvard University. And the authorities were not pleased....

John E. Mack, M.D., was a tenured professor of psychiatry at — as well as a graduate of — Harvard Medical School. He spent his entire career at Harvard, making a name for himself through achievements such as the conversion of a declining urban hospital into a thriving medical teaching center, the creation of Harvard's well known Center for Psychology and Social Change, the winning of a Pulitzer prize for a psychobiography of T.E. Lawrence, and the continuing education of the public about the psychological effects of war and other traumas. In the early 1990s, Mack embarked upon a new research project: the study of people who believe they have been abducted by aliens — extraterrestrial intelligent beings. Despite his stellar credentials and long history of accomplishment, he drew fire from colleagues for stepping outside the boundaries of real science. Much of this fire took place on the field of the mass media.

Inside and outside Harvard's home town of Cambridge, Massachusetts, members of the scientific establishment expressed displeasure with their colleague for devoting his time to people who believed they had been kidnapped by extraterrestrials. In the face of rising criticism and a formal investigation of his research methods, this particular scientist, instead of backing away from his new study subject, publicly and repeatedly asserted that the conventional, positivistic scientific worldview[2] might be too limited in scope to explain the phenomenon he was investigating. Journalists writing about Mack's new research interest probed for personal and professional flaws, critiqued his research methods and questioned his conception of reality.

A tenured professor affiliated with an elite institution at the top of the heap of the scientific establishment, who used hypnosis and other controversial techniques to work with alleged alien abductees, who published a best-selling book on his research before publishing his findings in peer-reviewed journals, who appeared on popular television talk shows and openly discussed the politics of science — this appeared to be a case of transgression. This was the stuff of news.

But what exactly *was* the news?

Given "the centrality of science to modern life" (Leshner, 2003), the ubiquity of journalism and mass media in contemporary culture, and the influence of media coverage of science on public knowledge and attitudes about science (Pellechia, 1997), it is important to understand the cultural authority[3] of science (that is, scientific authority) and journalism's treatment of this authority — what this authority is, where it comes from, how it is used and to what ends. This study examines how journalists covered controversial research conducted by an elite scientist in a case that appeared to involve the definition, contestation, and reinforcement of scientific authority.

The key question addressed in this study is, how do journalists participate in the social construction[4] of scientific authority in the mass media? This study focuses on how a select group of journalists reporting for elite mass media participated in the social construction of scientific authority in their coverage of John Mack's abduction research.[5]

Science in culture

Like science, culture has been widely and variously defined.[6] For the purposes of this study, Geertz's (1973) definition of culture applies: culture is "an historically transmitted pattern of meanings embedded in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate and develop their knowledge about and attitudes toward life" (p. 34). Thus conceived, culture is a context, within which social action can be "intelligibly — that is, thickly — described" (p. 14). As Carey (1983) noted, "Societies...are threaded throughout...by culture: by the production and reproduction of systems of symbols and messages" (p. 313). Building on Geertz's conception, Carey (1992) described culture "as a set of practices, a mode of human activity, a process whereby reality is created, maintained and transformed" (p. 65) and posited

that Geertz's theory of culture "progressively becomes a theory of communication as well" (p. 40).

That is, "what is called the study of culture can also be called the study of communications," as Carey (1992, p. 44) observed. The conception of communication explored in this case study is Carey's conception of communication as ritual enacted to maintain culture over time, a symbolic process of creating, maintaining, and transforming reality. "Communication," Carey said, "comprises the ambience of human existence" (p. 24), the way that we construct and experience reality. Science and journalism are among the many symbol systems constructed communicatively to "express and convey our knowledge of and attitudes toward reality" (p. 30). Carey's concept of communication as ritual locates this symbolic action in culture and also characterizes it as constituting culture

Culture is the context in which power arises and operates, and the mass media are an integral element of culture and a site where power arises and operates. In Carey's (1992) view, it would be useful for communication studies to explore how various symbol systems are constructed and used and how "groups in society struggle over the definition of what is real" (p. 31) through the construction and deployment of these symbolic forms. The question driving this study encompasses both of these questions. Zelizer (1997a) noted that mass communication research has not addressed the ritual functions of journalism, as narrative or performance; this study attempts to do so.

The public representation of science is "part of scientific work, conducted by professional scientists and other spokespeople who are actors in science social worlds [sic] or networks," according to Zehr (1994a, p. 604), and public representations of science are a worthy subject of study "because of the authoritative position of science in society." One place where science is symbolically represented and constructed is the mass media. This study explores the role of journalists in constructing scientific authority through their public representations of science and scientists in the media. Its aim is to contribute toward enhancing understanding of science in, and as, culture. It examines the symbolic action[7] by which journalists participate in the social construction of scientific authority, the deployment of journalistic conventions, practices and values in the course of this action, and the broader cultural context in which they operate.

I believe it is important to articulate some of the assumptions under which I have proceeded with this study, as follows:
• Science — including scientists, the process and practice of science, scientific knowledge, scientific institutions, scientific authority — is a social construction created by scientists and others through the symbolic action[7] of communication;
• Science has cultural authority, a quality created by scientists and others in the process of the social construction of science, a quality that scientists claim and nonscientists grant them to act as arbiters of reality;
• Journalists play a role in the construction of this authority; and
• Rhetoric is a primary tool in this construction.

Setting the stage: the 1990s
Given his public prominence, professional credentials, and institutional affiliation, perhaps John Mack would inevitably attract attention by announcing a new research project. Mack drew considerable attention when he went public about his professional interest in what he came to call the alien abduction phenomenon — his work with emotionally traumatized people who believed they had been abducted by extraterrestrial intelligent beings. But why exactly was Mack's research news?

The aim of the practice of psychiatry, Foucault (1965) asserted, is not to understand mental states but to control and discipline them. The practice of psychiatry especially exemplifies the mutual dependence of knowledge and power, he wrote (Foucault, 1977). At the same time, according to Scull (1989), psychiatry historically "has enjoyed a perpetually marginal and unenviable position in the social division of labor — a profession always, so it seems, but a step away from a profound crisis of legitimacy" (p. 21). Psychiatry is thus a newsworthy subject, with its focus on mental and behavioral norms and deviance and its purported agenda of social control.

Media coverage of Mack's abduction research unfolded in the 1990s, a decade permeated with the residue of the previous decade's public skirmishes in the so-called culture wars.[8] In addition, the '90s encompassed many events marked as skirmishes in the so-called science wars[9], events at least in part a response to the cultural critique of science that arose in the 1970s, questioning the philosophical foundations of science (Harding, 1991), the role of science in society (Ben-David, 1991), and the legitimacy of "scientific rationality itself" (Ross, 1991, p. 12). LaFollette (1990) has

explained this critique as a reaction "to decades of mismatch between positive messages and negative effects, between an idealized expectation of benefit and the reality of unpredicted harm, between the scientists' endless promises and the public's unfulfilled desires" (p. 17).

By the beginning of the '90s one observer (Ross, 1991) claimed: "It is safe to say that many of the founding certitudes of modern science have been demolished" (p. 12). Some scientists cultivated the defensive attitude that the public was not only losing interest in science but also growing hostile toward it, and they pointed to postmodernism and cultural studies as a possible culprit, accusing relativists, deconstructionists, and other non-believers of undermining public faith in science. Gross and Levitt's (1994) *Higher Superstition* — published in the same year as Mack's book *Abduction* — drew a lot of attention in circles where the cultural critique of science was of interest.[10] The so-called Sokal hoax of 1996 — publication of physicist Alan Sokal's *faux* postmodern analysis of quantum gravity in the cultural studies journal *Social Text*, and all the brouhaha that ensued — generated extensive coverage in elite media.[11]

The '90s were also colored by ongoing public debate about the validity of Freudian concepts and psychoanalysis and related disagreements over claims of repressed and recovered memories (see Beaubien, 1994; Borch-Jacobsen, 1997; Carman, 1995; Crews, 1995; Gardner, 1994; Goleman, 1992; Kaminer, 1996; Loftus, 1993; Loftus & Ketcham, 1994; Ofshe & Watters, 1994; Showalter, 1997; Zitner, 1992). The so-called memory wars focused on controversy over the scientific reality of the psychoanalytic concept of repressed and recovered memory, a contested idea virtually ever since Freud first put it forward. Freudian literary critic turned Freud-basher Frederick Crews lit a fire under the topic in 1993 when he published the first of a series of articles about the so-called memory wars, the term he used to describe the ongoing dispute over the validity of repressed and recovered memories, a struggle he deemed part of a wider argument over the validity of all Freudian theories and methods, none of which, Crews insisted, had received any scientific validation (Crews et al, 1995). Crews, an emeritus professor of English at the University of California-Berkeley, rejected Freud's theories and methods, blamed Freud for the current belief in repressed and recovered memory, and pronounced such memories false.

The debate over memory was further fueled through the '90s by the publication of several popular and provocatively titled books about the

subject, including psychologist and memory expert Elizabeth Loftus's *The Myth of Repressed Memory: False Memories and Allegations of Sexual Abuse* (Loftus & Ketcham, 1994); Lawrence Wright's (1994) *Remembering Satan*, an investigation of allegations of satanic ritual abuse that was excerpted in *The New Yorker*; and psychologist and recovered-memory debunker Richard Ofshe's *Making Monsters: False Memories, Psychotherapy, and Sexual Hysteria* (Ofshe & Watters, 1994). All of these authors claimed memories could not be repressed and recovered and further argued that making a case for their reality was dangerous.

Ofshe[12], a professor at the University of California-Berkeley, an expert in his own right, and one of the most sharp-tongued public critics of the idea of repressed and recovered memory, wrote in *Making Monsters* that he intended "to prove without a doubt that devastating mistakes are being made...within certain therapy settings" and to expose "a pseudoscientific enterprise that is damaging the lives of people in need" (Ofshe & Watters, 1996, p. ix). He called therapy for it a fad "as damaging as any the mental health field has produced in this century," practiced by "professionals who have built a pseudoscience out of an unfounded consensus...[and] slipped the ties that bind their professions to scientific method and sound research...." He accused recovered-memory therapists of "brutalization and psychological torture" and claimed a subset constitute "a new class of sexual predator...causing the same emotional and psychological trauma as an actual rape or sexual assault" (p. 7). Ofshe dismissed Freud himself as "the very figure of a recovered memory therapist" and the creator of a "pseudoscientific paradigm" and "prescientific" theories "based on no reliable empirical evidence" (pp. 293-294). He opened his book claiming that a "bitter debate" was raging "over...recovered memory therapy," and he closed it with the claim that "a civil war" was under way between "romantics who rely on inspiration and myth and empiricists who argue that practice...should be based on scientific observations" (p. 298), declaring empiricists were winning the war because romantics made claims they could not prove. Some journalists (see Chapter 5) would turn to Ofshe for comment on Mack's *Abduction* (Mack, 1994a), and Ofshe would deliver, with harsh words for Mack and his validation of the idea (see Chapter 5). (In *Making Monsters*, Ofshe listed media sources he claimed had contributed to the construction of the idea of repressed traumatic memories.)

The False Memory Syndrome Foundation, created in 1992 in response to media reporting on repressed and recovered memory, coined the term "false

memory syndrome" as a substitute for repressed and recovered memory and ultimately succeeded in replacing the latter with the former term, consequently redefining the idea of repressed and recovered memory as false, largely through media exposure (Pope, 1996).[13] The foundation's advisory board of psychologists, psychiatrists, sociologists, and cognitive scientists helped disseminate the false memory syndrome thesis in scientific journals and expert testimony as well as the mass media. Thus the foundation's claims that all memories are reconstructions and that no scientific evidence supports the so-called repression theory surfaced often in media accounts. Meanwhile, the American Psychiatric Association (APA), producer of the *Diagnostic and Statistical Manual of Mental Disorders*, linked the experience of childhood sexual abuse, often coupled in the media with the idea of repressed and recovered memories, with dissociative identity disorder, "a failure to integrate various aspects of identity, memory, and consciousness" (American Psychiatric Association, 1994, p. 484). APA also noted that the accuracy of reports of such abuse was questionable. In 1995, the American Psychological Association "approved [the False Memory Syndrome Foundation] as a provider of continuing education programs for psychologists" (False Memory Syndrome Foundation Newsletter, November-December, 1995, e-mail edition, as cited by Pope, 1996, p. 957).

News stories through the '90s offered a range of views about repressed and recovered memories and false memory syndrome. In 1992 *The New York Times* reported that claims of recovered memories of childhood abuse had "set off a debate" among psychologists of memory (Goleman, 1992). The *Times* cited two psychologists who claimed repressed memories were a real problem and four psychologists — all affiliates of the False Memory Syndrome Foundation — who dismissed such memories as the creations of therapists. Reporting on "a problem that Freud himself struggled with: whether to trust adult memories of childhood," the *Boston Globe* (Zitner, 1992, p. 25) quoted the False Memory Syndrome Foundation and a woman claiming to have recovered memories of childhood satanic ritual abuse. Psychiatrist Walter Reich (1994) claimed in *The New York Times Book Review* that the subject of recovered memory had captured popular interest because of increasing attention to childhood sexual abuse, prompted in part by criticism of Freud's theories about such abuse. Reich asserted that reports of recovered memories of childhood sexual abuse had drawn a great deal of attention in the mass media and that experts, not journalists, should have the authority to determine what counts as legitimate memory.

"Recovered memory is a fact, says Chicago psychiatrist, though others call it fiction," claimed a 1994 headline in the *Chicago Tribune* (Beaubien, 1994, p. C1). Citing "bitter national debate over the validity of recovered memory therapy" (p. C1), this story claimed the practice was "destroying families and dividing the psychiatric profession." The story quoted Ofshe dismissing "the recovered-memory epidemic" as "quackery" (p. C1). Meanwhile, the *Des Moines Register* claimed the media had gone "overboard" in the 1990s with coverage of false memory claims (A profession under siege, 1994, p. 1). *U.S. News and World Report* (Schrof, 1997) called the debate over repressed and recovered memory "a furor that has ripped apart many families" (p. 67). In reporting a state decision to stop paying therapy costs for people who claimed to suffer from repressed and recovered memories, a story in the *Sacramento Bee* (Hallinan, 1997) began, "First, there was the woman with 3,000 personalities, Then there was the one who said she was forced to eat a baby's heart" (p. F1). The *Bee* went on to claim the decision was "part of a national backlash against recovered memory" (p. F1).

As the discourse of the '90s on memory continued to unfold, fretting continued in the science community over scientific literacy and public understanding of science, or the lack thereof (see Hartz & Chappell, 1997; Hofstadter, 1998; Lederman, 1998; Sagan, 1995). Scientists concerned about public science literacy, or the lack thereof, were quick to remind journalists of their responsibility to help scientists educate the public.[14] In parallel with these currents in the public discourse about science, reports of unidentified flying object (UFO) sightings, alien abductions, and government-coverup conspiracies continued to proliferate in the mass media along with fictional treatments of these subjects.[15]

Claiming the influence of pseudoscience was growing, the American Physical Society proposed in 1998 that the science community should adopt a formal definition of science and sought the approval of other scientific societies for the following:

> Science is the systematic enterprise of gathering knowledge about the world and organizing and condensing that knowledge into testable laws and theories. The success and credibility of science is anchored in the willingness of scientists to: 1) Expose their ideas and results to independent testing and replication by other scientists. This requires the complete and open exchange of data, procedures and materials. 2) Abandon or modify accepted conclusions when confronted with more

> complete or reliable experimental evidence. Adherence to these principles provides a mechanism for self-correction that is the foundation of the credibility of science" (American Physical Society, 1998).[16]

At about the same time, the prestigious journal *Nature* reported on "Calls for a cease-fire in the science wars" (Henry, 1998, p. 557). By the turn of the century Harvard scientist Stephen Jay Gould (2000) was deconstructing the wars in *Science.* "The objectivist myth of science as a fully general method," he wrote, "rooted in observation by minds consciously free of constraining social bias and using universal tools of reason to accumulate reliable knowledge leading toward an increasingly synthesized theoretical understanding of causes" (Section II, para. 1) creates a "false dichotomy" (Section II, para. 1) between science, or realism, and social constructivism, or relativism, "that defines and fuels the illusory science wars" (Section III, para. 1). He concluded:

> The true, insightful, and fundamental statement that science, as a quintessentially human activity, must reflect a surrounding social context does not imply either that no accessible external reality exists, or that science, as a socially embedded and constructed institution, cannot achieve more adequate understanding of nature's facts and mechanisms (Section IV, para. 7).

It is not clear what the science wars, or the memory wars, were, if anything, or what they were about (though they appeared to involve disputes over claims to authority), or whether they amounted to anything more than a jumble of public (or publicized) events involving (or manufacturing) controversies somehow relating to science and plastered with a catchy label. In any case, whatever did or did not happen, postmodernism and cultural studies were not erased from the intellectual landscape, and science was not vanquished.[17] This analysis proceeds on the assumption that what journalists and scientists called the science wars were simply, as Gieryn (1999) observed, particularly public episodes in the ongoing discourse on the origin, nature and functions of science in culture, especially scientific authority and the ways in which that authority is sustained.[18] This study considers a particular case in a particular cultural moment, a case in which science was in dispute, memory was a cause for battle, and aliens were everywhere.

Parameters of the case

Media coverage of Mack's abduction research initially drew my attention because it appeared to be atypical science news. Stories were published in elite media, typical sites for science news. They addressed controversial research, a typical focus of science news. But they featured sensational headlines and leads, foregrounding a Harvard professor, extraterrestrials, and alien sex. A story in the sedate, white-collar *Boston Globe* (Kahn, 1994) was one of the first that stood out with its tabloid-style headline, "ET, phone Harvard: Dr. John Mack could use the help as critics rip his research on alien abductions," and lead, "The big Mack attack has just begun. And no one has heard from the little people yet" (p. 61). It appeared that something interesting might be going on beneath the surface of these stories. On closer examination I found these stories not only provocative but also thought-provoking. It appeared that something interesting might be going on beneath their superficial framing, emphasizing Harvard, aliens, and sex. Stories clearly and consistently identified Mack as an elite scientist and often focused virtually exclusively on his status. But the journalists who wrote these stories appeared to be questioning Mack's authority to speak as a scientist at the same time that they were constructing him as a scientific authority and using him as an authoritative source. The case of media coverage of Mack's abduction research appeared to be sufficiently rich to warrant a full-blown analysis.[19]

The Mack case is interesting because it involves pace-setting elite media, a prominent scientist and a member of the scientific elite, and what appears to be a controversy over authority and legitimacy. In this case, Mack, his supporters and his critics argued over whether his latest endeavor was legitimate or illegitimate science.[20] Journalists and scientists appeared to be questioning not only Mack's claims and methods but also the legitimacy of his work as science and his own credibility as a scientist. A systematic exploration of this case yields new and useful insights into how journalists participate in the construction of scientific authority. This study is intended to be thought-provoking, instructive, and productive[21], to enrich the ongoing critique of the cultural roles and functions of science and journalism.

Study approach, goals and purpose

This project is a qualitative, interpretive study. Its theoretical foundation is social constructivism (Berger & Luckmann, 1966), with guidance provided by the sensitizing concept (see below) of boundary-work (Gieryn, 1983, 1995, 1999), which aims to explain "when, how and to what ends the boundaries of science are drawn and defended in natural settings often

distant from laboratories and professional journals" (Gieryn, 1995, p. 394).[22] (For the purposes of this study, boundary-work is any rhetorical strategy or tactic employed to reinforce, test, blur, erase, or reconstruct the rhetorically constructed boundaries maintained by the scientific community to demarcate science legitimated by consensus from claims made by individuals, inside or outside of that scientific community, that do not fit within that consensus worldview.)

In the constructivist view, the practice and process and worldview of science, and the cultural authority of science, are social constructions contingent on their time and place. Constructivist studies depend on observations of the world of everyday life, and so the method of case study fits this research project. The case-study method is well suited to accommodating "multiple realities" (Lincoln & Guba, 1985, p. 214), including those of the researcher and the research subject(s), in a complex cultural context. Given its focus on cultural authority, this study draws on the literature and employs some of the approaches of cultural studies, with its critical, post-positivistic focus on the role of the mass media in social life and power relations in communications and society (Carey, 1983). Because rhetoric is a primary means of constructing social reality, rhetorical analysis is employed as a primary analytic tool in this study. The rhetoric of and about science is a means of maintaining, defending, remodeling and demolishing the boundaries of science, between science and non-science, between scientific disciplines, between science and the public. This case study builds upon findings in studies of the rhetoric of science to examine the deployment of rhetoric in a particular case of elite media coverage of an elite scientist engaged in controversial research. Burke's (1969a, 1969b, 1973, 1984) dramatistic criticism is the analytic method of choice for exploring in depth the rhetorical strategies deployed in texts selected for analysis.

This study explores how journalists define and use key terms such as science and objectivity in the texts selected for analysis, employing loose definitions of these terms that may function as "sensitizing concepts" (Christians & Carey, 1989, pp. 369-370). Such loose definitions allow the researcher to consider a potential multitude of meanings and uses of terms; they are intended to be meaningful to the researcher "yet sufficiently powerful to explain large domains of social experience" (p. 369-370). A range of definitions for the term "science" is reviewed in Chapter 2. This study employs a broadly and loosely defined conception of science, operating on

the assumption that what science means depends on who is employing the term, and when, and where, and toward what ends. Science herein is generally considered a cultural phenomenon, involving scientists, scientific practices, scientific values, scientific institutions, scientific authority, and scientific communication. As "objectivity" is very much tied up with conceptions of science, a range of definitions for this term are reviewed in Chapter 2 as well.

Wilcox (2003) has asserted that analysis of media coverage of science requires consideration of "the full circuit of communication, including discourse about [science] originating from social locations other than science, the full set of studies produced by science, and the requirement of the media for dramatic stories" (p. 241). According to Fursich and Lester (1996), while science communication research has sometimes taken a critical approach, researchers generally have not pursued analyses "based in a thorough concept of science and culture" (p. 24). This project attempts to do so, following the lead of studies that "focus on the diverse encounters with science and expertise that typify everyday experience," as Wynne (1991) has characterized them, "a central analytical issue being the construction of authority" (p. 111). By documenting and analyzing a particular case in considerable depth and breadth, this study aims to enhance understanding of how journalists contribute to the social construction of scientific authority and the boundaries of science through the symbolic action of communication and, perhaps, broaden understanding of science, communication, and culture. Given the theoretical foundation and methodological approach of this study, the aim here is to explore and reveal rather than explain and resolve complexity, ambiguity, and uncertainty in this case. I have conducted this analysis with an awareness of what Ivie (1995) has described as "simultaneously representing and enacting reality-defining discourse" (n.p.) while doing the work.

If, as Wilcox (2003) has claimed, "media coverage is part of a circuit of communication between other institutions and knowledge communities," then examining media content within a broad cultural context is a means toward revealing "the active role of the media in constructing narratives and meanings" (p. 244) through reporting on science. This research project is intended to contribute to the scholarly discourse on science communication, the practice of journalism, and the cultural roles of journalism and of science. It aims to shed light on the processes by which scientific information and scientific legitimacy are conveyed throughout the public

domain, a subject that has been declared a worthy goal of science communication research (Dunwoody, 1992)**.** As this study may broaden understanding of the role of the media in the social construction of scientific reality, it may also broaden understanding of the role of the media in society, a subject of continuing debate.

Rationale for case and approach

Consideration of how journalists portray science and scientists in the media warrants some consideration of the image of science and scientists in society and culture. The common wisdom regarding the cultural role of science and scientists in contemporary culture might be summarized as follows: science is a rational enterprise dedicated to producing knowledge for the public good, public understanding of science is necessary to maintaining a free and open society, scientists understand science and non-scientists do not, and scientists are responsible for informing the public about science. The common wisdom further posits that journalists are responsible for conveying this information about science from scientists — the authoritative sources — to the ignorant public and that good science journalism is a matter of getting the facts right.[23] But what happens in a case where journalists intent on getting their science right are reporting on an elite scientist whose peers say he is wrong?

This case study documents a dispute over knowledge claims, examining elite-media coverage of the controversial research and controversial claims of an elite scientist who questioned the dominant scientific paradigm. Disputes over scientific knowledge claims warrant more systematic study, according to Brante (1993). This study approaches the discourse on Mack's abduction research as a scientific controversy (Brante, 1993; Hagendijk & Meeus, 1993; Martin & Richards, 1995; McMullin, 1987; Mendelsohn, 1987), a public conflict over scientific knowledge claims that some members of the scientific community appeared to take seriously.[24] Such conflicts have been described as cognitive and social disputes over what constitutes legitimate scientific knowledge (Gieryn, 1999) and "valuable sites for carrying out research into the nature of scientific knowledge claims" (Martin & Richards, 1995, p. 510) and scientific worldviews. "Unresolved controversies" have been deemed "particularly rewarding sites" (p. 513) for study. Conflicts over scientific knowledge claims tend "to reveal some of the assumptions upon which science is built," according to Brante (1993), and thus studying them is "a useful method for determining hidden norms and values in scientific communities" (pp. 186-187). Examining conflicts over

who has "the right to speak" about science, "who has the true (scientific) knowledge on his or her side" (p. 189) is a useful way to attempt to understand struggles over scientific authority. A contextual, multiperspectival approach to analyzing a controversy over scientific knowledge claims promises to provide a useful view of the symbolic action taking place in the dispute (Martin & Flores, 1998).

Rhetorical analysis of science news has been identified as "a potentially rich area of study" that could broaden understanding of "the structure and significance of texts" and "has not received the attention it deserves" (Evans & Hornig-Priest, 1995, p. 328). Digging into the discourse of science[25], through which scientific knowledge is constructed (Woolgar, 1988), is a useful way of exploring the social construction of the boundaries that separate legitimate from illegitimate science. Media coverage of science is an especially interesting and public element of this discourse. The media content chosen for examination in this study appears typical in its representation of science, focusing on elite scientific credentials, scientific methods, and controversy. It is atypical, however, in its focus on an elite scientist who engaged in what some argued was illegitimate science. "The empirical naming and knowing of the physical world is nothing if not a cultural expressive act with fully political meanings," according to Ross (1991, p. 13). Consequently, examination of the rhetoric employed to define and defend science and scientific reality in this case is a useful method of exploring the social construction process.

This study examines the symbolic action of communication in a particular case. It is not a content analysis but a meaning-of-content analysis. It is not concerned with the accuracy or adequacy of explanation in science journalism, nor does it examine readers' roles in the social construction of reality in this case. It focuses on the texts, the producers of the texts, and the cultural context in which they produced them.

Analyst's perspective

Because this is an interpretive analysis, I am attempting here to identify the values, beliefs, and other personal factors I am aware of bringing to the project as they may influence my process and outcome. I believe that the individual perspective and idiosyncratic approach guiding this study inevitably have yielded research results that no one else could replicate.

My choice of case, construction of theoretical framework, and selection of analytic methods and tools are products of my upbringing, education, experience and interest in the worlds of journalism, science, and politics. Just as a journalist makes subjective decisions every time she chooses to do a particular story (or not) or consult a particular source (or not), a qualitative researcher makes subjective decisions in choosing a subject of study and a method by which to study it. My interest in and perspective on the cultural roles of science and scientists and journalism and journalists, which led me to choose a particular subject and methodological stance for this study, are a product of a lifetime of influences.

I began learning about the natural world empirically, through observation and experience, guided by members of my extended family of Eastern-European-immigrant farm workers, who validated the importance of wondering and learning about one's environment. These teachers were functionally illiterate; they learned about the world not by reading and theorizing about it but by being in, doing in, and practically thinking in and about it, and they passed on this way of knowing, which is both rational and intuitive. Public educators supplied me with literate, primarily rational knowledge about the natural world. I am consequently equipped to employ reason and experience in learning how to be and do and think in the world.

I developed what I think of as a political consciousness in the late 1960s and came to assume (and, after frequent reconsideration, still do assume) that authority can be, and often should be, questioned. A new wave of feminism played a prominent role in the development of my thinking about the world. I received my undergraduate education at a university of the liberal arts that encouraged its students to question everything, especially authority and reality. Among faculty and students, politics were not hidden from view. I majored in social sciences and planned to be a social worker. But with jobs in the field scarce when I graduated, instead I ended up in Washington, DC, and in 1978 I began a career as a journalist, reporting environmental news. I was dispatched to the White House, Congress, federal agencies, and elsewhere to decipher debates over toxic waste cleanup, industrial air and water pollution, land use decisions and so on. Editors and other colleagues worked with me to ensure that I learned and abided by the conventions, values and practices of journalism — though no one, as I recollect, ever identified them as such.

Over the next several years I came to specialize in reporting science and technology news. My work as a journalist sharpened my political consciousness, and after my first few years of reporting I began to realize that I had political interests that affected how I saw the world of news. I began to realize that I could choose what to tell my readers to think about — *and* what to think about those things. I had power of a sort, I suppose, though I preferred to think of it as influence. From my perch inside the Washington Beltway, I watched scientists acting as cultural authorities and gradually realized over the course of these observations that I had not been, and should be, questioning why they had that authority, or whether they should have it.

They were scientists; therefore they were authorities, I had been assuming. I watched others validating that authority, for some time unaware that I myself was participating in the process. I watched other journalists judging scientists' authority according to their institutional affiliations, ranks, prizes, publications — and I followed suit, without much awareness of what I was doing and why I was doing it. I suspect that many of my colleagues were in the same boat; we did not talk about where and how and why we learned the rules by which we did our work. But perhaps we should have been asking more questions about our authoritative sources — why those particular people at that particular time in that particular place on those particular issues?

By 1984, reporting on policies and plans for the commercial development of outer space, I could see that the issue I was covering was an ideological rather than a practical matter, a product of the Reagan administration's "let the private sector do it" philosophy rather than any real potential for profit. My publishers declined my request to start an opinion column in my publication, for fear of offending readers. I realized I had other options for reflecting my views in my work — for example, paying closer attention to what was said and not said in my stories, who was quoted and who was not. I left journalism in 1988, in part over struggles with a publisher over what constituted news and who should have the authority to make those decisions. I began consulting work for government clients, observing from a different vantage point how credibility, authority, and power are constructed and deployed.

Over years of following the politics of science, I observed how government, industry, and academia defined science to serve their interests. As I watched

scientists, and others, spar over global warming, missile defense, asteroid threats, and other issues defined as scientific problems through the 1980s and '90s, I began to wonder — and I still do wonder, often — how does one decide who is telling the truth? And what is the truth, anyway? These questions, among others, led me to pursue doctoral studies in communication. Looking back, I suppose it is reasonable to say that I left journalism because I had become more interested in "how" and "why" than in the "who-what-when-where" of social action. As many scientists have discovered in their work, I have found in my research that the more I explore these questions, the further away I seem to be from answers…. But I am more interested than ever in the exploration of space.

I do not believe that science is apolitical or value-free, and I do not assume that the cultural authority of science is beyond question. I also do not assume that the scientific establishment is *not* justified in its claims to cultural authority. I do assume that those who possess it, or want to possess it, should be able to justify possession. My interest in the cultural authority of scientists and journalists stems from working with scientists and journalists. I want to better understand this cultural authority — where it comes from, how it works, who has it and why. And given that scientists claim this authority and non-scientists continue to validate this claim, I believe that contributing to a better understanding of this authority is a productive social endeavor.

As a moderate social constructivist, I assume that a physical reality exists independent of human perception and that social interactions define how we perceive and relate to this reality. My inclination to look at the world from a critical perspective is a product of my interest in authority. My interest in exploration as an analytic approach is a product of my early experience in a family of self-taught naturalists as well as my two decades of professional experience in the field of space exploration. I have an interest in things extraterrestrial which is largely a product of my work with NASA's search for extraterrestrial intelligence program in the early 1990s. [26]

I also admit to a lifelong interest in, and ambivalent feelings about, psychology and psychiatry. Through the 1970s, I studied the works of Carl Jung and developed a distaste for all things Freudian. By the 1990s I ended up in the care of a psychiatrist for clinical depression and resented it a lot. The neuroscientific perspective was (and still is) dominant in psychiatry, and doctors treated my depression as a chemical imbalance. I believed that my

problem was more complex, not only neurobiological but also, somehow, spiritual. I am still in treatment for depression, the chemical-balance treatment is working, and I still feel the same way about my illness. I have developed a considerable interest in psychiatry and in Freud. And I have joined a Unitarian Universalist congregation to tend to my spiritual needs.

With regard to structuralist, functionalist, structural-functionalist, postmodernist, poststructuralist, feminist, and deconstructionist perspectives on social reality, my own perspective on social reality is none of the above in any strict sense and all of the above in at least some small sense. I am interested in how structure, function, values, interests, and any other social or cultural factors that appear to be operative and relevant may play a role in the social construction of reality, in this case and in general. Though I am now inarguably a member of the socioeconomic middle class, I continue to think of myself as a member of the subordinate culture of the working class in which I grew up as well as the subordinate culture of womanhood in which I still live. (My male colleagues and associates argue with me that women are no longer members of a subordinate culture, but I beg to differ.) I am familiar with the practices and perspectives of the dominant culture as well as those of my subordinate cultures, and consequently I have developed a preference for considering multiple perspectives in exploring empirical and social reality. As feminist theorists of science have observed, and I have come to believe, drawing on multiple perspectives in attempting to understand the world is useful (Haraway, 1991; Harding, 1991, 1987). And I agree with Walters (1997) that understanding the origin, nature and deployment of scientific authority is necessary to determining “the place of science in shaping a democratic society” (p. 2).

Chapter 1 Notes

1. Some of the better known alien abduction vehicles include Stephen Spielberg's 1977 film "Close Encounters of the Third Kind"; Whitley Streiber's best-selling book *Communion* (1987) and its sequels; numerous episodes of Fox TV's "X-Files" series of the 1990s; frequent documentaries on the Discovery Channel, the History Channel, and other cable outlets; and, most recently, the Sci-Fi Channel's much-hyped 2002 mini-series "Taken."
2. For the purposes of this study, worldview is a set of attitudes, beliefs, and values employed to explain and understand one's environment, a way of perceiving and interpreting the world, "a collectively agreed-upon and thus collectively valuable way of organizing social reality" (Rosenberg, 1996, p. 10.). For the purposes of this study, the positivistic worldview is a way of looking at the world in which legitimate, objective scientific knowledge is that acquired by observation, experiment, and verification; the world of scientific reality is the world that can be observed. Comte's "positive philosophy" lent a name to this worldview and conveyed the idea that scientific method depends on reason and observation.
3. This analysis uses the term "cultural authority" as defined in Gieryn (1999): "the probability that particular definitions of reality…will prevail as valid and true" (Starr, 1982, as quoted in Gieryn, 1999, p. 1). Gieryn says by this definition cultural authority resembles what he calls epistemic authority, "the legitimate power to define, describe, and explain bounded domains of reality" (p. 1). Between these two definitions, the cultural authority whose construction is examined in this analysis is well described. The cultural authority of science is also referred to herein as scientific authority.
4. In this proposal, the terms "social construction" and "construction" encompass a range of activities, including building, maintenance, remodeling, renovation, and demolition.
5. For simplicity's sake I use Mack's term "abduction phenomenon," or "abduction" for short, throughout this analysis to refer to the claims that people have made that they have been abducted by extraterrestrial intelligent beings and the subject of Mack's research. This choice of terms is not intended to convey any judgment about the reality or non-reality, truth or non-truth, validity or non-validity, of these claims or Mack's research project.

6. Fukuyama (1995) cites a single survey of research on anthropology, psychology and sociology that includes 160 definitions of culture.
7. Blumer (1969) called the interaction by which people construct social reality "symbolic interaction." Burke (1973) called this social interaction "symbolic action." Since I will be employing rhetorical analysis as a primary tool in this study, I will use the term "symbolic action" to describe the interaction by which people construct social reality.
8. See, for example: Bloom, A. D. (1987). *The closing of the American mind: how higher education has failed democracy and impoverished the souls of today's students*. New York: Simon and Schuster; Hirsch, E. D., Jr. (1987). *Cultural Literacy; What Every American Needs to Know*. (With an Appendix, What Literate Americans Know, by E. D. Hirsh, Jr., J. Katt, & J. Trefil.) Boston, MA: Houghton Mifflin; Sine, Thomas (1995). *Cease fire: searching for sanity in America's culture wars*. Grand Rapids, MI: W.B. Eerdmans Pub. Co.; Jacoby, R. (1994). *Dogmatic wisdom: How the culture wars divert education and distract America*. New York: Doubleday; Wallis, B., Weems, M. & Yanawine, P. (Eds.) (1999). *Art matters: how the culture wars changed America*. New York: New York University Press; Gitlin, T. (1995). *The twilight of common dreams: why America is wracked by culture wars*. New York: Metropolitan Books.
9. An early volley in the science wars was a report from the American Association for the Advancement of Science in 1991. "Science: End of the Frontier?" claimed shrinking federal funding for academic research threatened an end to science as we know it (Mervis, 1991). Fuller (1998) marked "the first salvo of the Science Wars" as occurring in 1992 with the publication of Steven Weinberg's *Dreams of a Final Theory* and Lewis Wolpert's *The Unnatural Nature of Science*, books reflecting a positivistic worldview and criticizing historians, philosophers and sociologists of science who had challenged the common wisdom about what Wolpert termed the nature of science.
10. Gross and Levitt (1994) argued that "the status of science as a reliable, profound, and productive source of knowledge ought to be beyond serious question" and that humanists who were questioning this status were undermining the authority of science. Not all "scientific" thinkers were in full agreement with them. A review of *Higher Superstition* in *Skeptic* magazine (Shallit, 1994) faulted the authors for "indulging in some of the same tactics it decries," mainly

"sloppy polemic" (para. 1). However, *Skeptic* called the book "a revealing expose" of the science wars, described as "unprecedented efforts by certain members of the academic left to topple science's dominance as the pre-eminent tool of Western rationalists" (para. 1). In this review, the claims of science critics were labeled "ignorance, pure and simple...commentary without knowledge" (para. 3), "pseudoscientific analysis" and "claptrap" (para. 4). At the same time, though, *Skeptic* accused Gross and Levitt of "undisguised partisanship" (para. 12), calling those they agree with authoritative and marginalizing others. And while Gross and Levitt were praised for "poking fun at the rhetorical pretensions" of science critics, they also were charged "guilty of the same offense" (para. 21). Martin (1996) called *Higher Superstition* "a political intervention...a form of boundary work...a means for bolstering 'science' against funding cutbacks and loss of public credibility" (p. 170).

11. In the academic journal *Lingua Franca*, Sokal (1996a) said he was "troubled by an apparent decline in the standards of rigor in certain precincts of the academic humanities" and wrote his article "so that any competent [scientist] would realize that it is a spoof" (pp. 62-63). That the editors of *Social Text* accepted his article (Sokal, 1996b) for publication "exemplifies the intellectual arrogance" (p. 63) of postmodern thinkers, he said. The Sokal hoax prompted more than a year of heated public debate. In the *New York Review of Books,* physicist Steven Weinberg (1996) praised Sokal's hoax, claiming it "served a public purpose, to attract attention to...a decline of standards of rigor in the academic community...." (p. 11). Asserting his faith in the positivistic worldview, Weinberg said "if we ever discover intelligent creatures on some distant planet and translate their scientific works, we will find that we and they have discovered the same laws" (p. 14). He concluded by observing: "We will need to confirm and strengthen the vision of a rationally understandable world if we are to protect ourselves from the irrational tendencies that still beset humanity" (p. 15). In a 1998 *Science* magazine essay entitled "Popular culture and the threat to rational inquiry," physicist Douglas Hofstadter echoed these concerns, claiming contemporary society was anti-science.
12. Ofshe is emeritus professor in the department of sociology at the University of California-Berkeley. *Making Monsters* was released in the same year as *Abduction*, by the same publisher, Scribner's. Ofshe describes his research interests include "coercive social control; social

psychology; influence in police interrogation; influence leading to pseudo-memory in psychotherapy" (n.p.). His published papers include such titles as "The Decision to Confess Falsely: Rational Choice and Irrational Action" (*Denver University Law Review*), "The Consequences of False Confessions: Miscarriages of Justice and Deprivations of Liberty in the Age of Psychological Interrogation" (*Journal of Criminal Law and Criminology*), and "Coerced Confessions: The Logic of Seemingly Irrational Action" (*Cultic Studies Journal*). I obtained this information on Ofshe's research and publications from his U.S.-Berkeley faculty Web page. Retrieved September 8, 2004, from http://sociology.berkeley.edu/faculty/OFSHE/. According to the False Memory Syndrome Foundation, Ofshe has served as an advisor to that group.

13. The False Memory Syndrome Foundation claims its "focus [is] on science." It offers information on "the current controversy about the accuracy of adult claims of "repressed" memories of childhood sexual abuse that are often made decades after the alleged events, for which there is no external corroboration." Information accessed on the World Wide Web June 10, 1997, at: http://www.fmsf.org. The foundation succeeded in its mass media campaign to reconstruct this concept into something called "false memory syndrome": I documented how the media participated in reconstructing the concept of repressed and recovered memory as "false memory syndrome" in a paper, "Controlling minds and memories: medicine, the media, and the social construction of mental disorders," written for an independent study project supervised by James Capshew, Department of the History and Philosophy of Science, Indiana University, summer semester II, 1997.
14. One widely publicized report ostensibly aimed at journalists and scientists (Hartz & Chappell, 1997) made the claims that: the public is ignorant about science but needs to understand it to appreciate and support it, scientists are responsible for informing the public about science, and journalists are responsible for working with scientists to convey this information to the public. Science in the United States "has no organized constituency except itself...no spare cash...and little experience in...Washington politics," and thus "science is justifiably worried that it is now playing a losing game." The report expressed concerns about "unscientific Americans," "unfriendly assessments,"

"rampant illiteracy," "scientists who don't speak English [and] reporters who don't speak science" (p. v).

15. Fox TV's lineup for the '90s included the documentary *"Alien Autopsy: (Fact or Fiction?),"* broadcast in 1995; the popular series *"The X-Files,"* frequently dealing with alien visitations; *"Strange Universe,"* a paranormal-news program broadcast Monday through Friday; *"Dark Skies,"* a series dealing with an alien conspiracy, premiering in fall 1996; and *"Alien Nation: The Enemy Within,"* a made-for-TV movie broadcast in November 1996. Meanwhile, NBC offered its humorous take on the alien-invasion story, the series *"Third Rock from the Sun"*; PBS broadcast the "NOVA" documentary *"Kidnapped by UFOs?"* in February 1996; and the Hollywood blockbuster "*Independence Day"* opened on the 4th of July, 1996, preceded by a sneak preview at the White House.
16. It is worth noting that the American Physical Society's attempt to establish an "official" definition of science, "to help the public sort science from nonsense," was a failure. Even its own members could not reach agreement on the public meaning of science. See Fountain (1998).
17. The American Association for the Advancement of Science reported in the November 2003 issue of the e-newsletter "AAAS Advances" that the U.S. Congress would be approving "a record-breaking $126 billion" for research and development in fiscal year 2004.
18. In *Cultural Boundaries of Science,* Gieryn (1999) sought "to make the science wars historically mundane by showing that they are of a piece with the five episodes of cultural cartography" (p. 337) he documented in the book.
19. In *Pictures at an Execution* (Lesser, 1993), her analysis of murder in the mass media and elsewhere in contemporary culture, critic Wendy Lesser explains that she chose a particular case to study — a controversy over media access to a prison execution — because it was "odd and compelling" (p. 25). It was explicitly about one thing — First Amendment rights — she says, and implicitly about many other things -- public fascination with murder, controversy over the death penalty, violence in the media. The Mack case intrigues me in a similar way. It is explicitly about the legitimacy of a scientist's work but could be implicitly about other things.
20. In this study, "illegitimate science" refers to activities labeled "science" by some but deemed illegitimate science, nonscience,

pseudoscience or junk science by the scientific establishment, though elsewhere these terms may have separate and distinct meanings.

21. For a discussion of the idea of productive criticism, see Chapter 3, especially Nothstine, Blair, and Copeland (1994) and Ivie (1995, 2001). Like rhetorical criticism, mass communication research can be productive. It can heighten awareness and understanding of public values and public interests; a scholar can contribute to civic life by broadening understanding of communications between scientists and journalists and the way that values and interests play out in these communications. Productive criticism is addressed in greater depth in Chapter 3.
22. According to the sensitizing concept of boundary-work, boundary-workers use intellectual constructs such as fact, reason, logic, and objectivity to establish and maintain boundaries between science and other cultural practices associated with what are considered to be "non-scientific" qualities, such as faith and belief. The social constructivist perspective on boundary-work assumes, however, that "no demarcation principles work universally and...the separation of science from other knowledge-producing activities is instead a contextually contingent and interests-driven pragmatic accomplishment drawing selectively on inconsistent and ambiguous attributes" (Gieryn, 1995, p. 393).
23. These common conceptions of science and journalism reflect the conventional transmission or cognitive-deficit model (Carey, 1992; Gross, 1974) of communication as a one-way process in which information is transmitted from informed authoritative sources to uninformed audiences. In the case of science communication, scientists determine what non-scientists need to know about science and convey that information to ignorant non-scientists, and journalists serve as conduits for relaying this information to the public. Though it may be considered outdated, no longer the dominant model, in science communication research, the deficit model is believed to be still "generally followed by scientists" (Gregory & Miller, 1998, p. 97) and "pervasive" in public discourse about science (Nieman, 2000, p. 21). See Chapter 2 for further discussion of these common conceptions.
24. In my judgment, Harvard Medical School's investigation of Mack's abduction research methods and the media's interest in this investigation were evidence that the scientific community has taken Mack's work seriously.

25. For the purposes of this study, discourse encompasses spoken and written communication among scientists, between scientists and journalists, between scientists and the public, between journalists and the public in which cultural roles, functions, and ideologies are defined, executed, affirmed, and questioned.
26. I contributed a chapter to a book on the search for extraterrestrial intelligence (Bova, B. (Ed.) (1990). *First contact: the search for extraterrestrial intelligence*. New York: New American Library.) Since September 2002, I have been on the payroll of the SETI Institute.

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