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Forbidden Knowledge: Public Controversy and the Production of Nonknowledge[1]

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Sociologists, philosophers, and historians of science tend to focus their attention on the production of knowledge. More recently, scholars have begun to investigate more fully the structures and processes that impede the production of knowledge. This article draws on interviews conducted with 41 academic researchers to present a phenomenological examination of "forbidden knowledge"—a phrase that refers to knowledge considered too sensitive, dangerous, or taboo to produce. Forbidden knowledge has traditionally been understood as a set of formal controls on what ought not be known. We argue that the social processes that create forbidden knowledge are embedded in the everyday practices of working scientists. The narrative legacies of past controversies in science are of particular importance, as they serve as a tool that working scientists use to justify, construct, and hide their acceptance of forbidden knowledge. As a result, the precise contents of forbidden knowledge are fluid, fuzzy, essentially contested, specialty specific, locally created, and enforced.

KEY WORDS: knowledge; legitimacy; phenomenology; public sociology; science; social control.

INTRODUCTION

Sociologists of science have demonstrated how the social world fundamentally shapes the production of knowledge. Much less is known about how the social world shapes what we do not know, in large part because the absence of knowledge makes empirical work in this area difficult. This article

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suggests that one fruitful avenue for empirical investigation begins by recognizing that working scientists are more than producers of knowledge. They are also active producers of nonknowledge and, as such, they can reflect on the decisions they make not to do "this" or not to pursue "that" line of inquiry. In this article, we gain insight into the production of one type of nonknowledge by asking which questions or methods of inquiry working scientists avoid.

Our article is a modest inquiry: the field of the knowable unknown is a vast landscape, its boundaries are endlessly expansive, ever-changing, and not always within sight. We limit our analysis of the unknown to working scientists' understandings of "forbidden knowledge," a term that refers to knowledge considered too sensitive, dangerous, or taboo to produce. "Forbidden knowledge" is a useful rubric for thinking about debates about the limits of properly conducted inquiry and legitimately produced knowledge.

In public arenas, disputes over the boundaries of objective scientific inquiry include concerns that artificial intelligence or synthetic biology could allow our humanity to be determined by our neural or genetic programming (Goldstein, 2006; Joy, 2000); that new reproductive technologies will commodify bodies (McKibben, 2003; Sandel, 2007);[5] or that research will naturalize social inequalities (Herrnstein and Murray, 1996) or normalize sexual behaviors that we currently pathologize (Rind et al., 1999), to name a few well-known examples.

These debates typically occur on a grand scale, often in the political arena, and can result in formal controls that place limits on the pursuit of knowledge. But public debates represent only the most visible social controls on science. Scientists experience forbidden knowledge as a much broader set of constraints: some knowledge expeditions present practical obstacles, like obtaining institutional review board (IRB) approval for sensitive research; other inquiries stray so far from legitimate modes or topics of inquiry that they have the potential to destroy careers. The everyday experience and existence of forbidden knowledge requires that researchers reconcile a contradiction between their principles and their practice. The working scientist takes as an article of faith that the search for "knowledge is good," even a "moral calling"(Weber, 1946). Despite this article of faith, working scientists forbid the pursuit of knowledge in ways too apparent for them not to notice. This presents a puzzle: How can working scientists reconcile the contradiction between principle (the open pursuit of knowledge is ipso facto good) and quotidian practice (their role in the continuous creation of forbidden knowledge and their empirical awareness that forbidden knowledge exists)?[6] In this article, we offer a localized, phenomenological analysis of how researchers

[5] Here, one might also see a recent symposium in *Sociological Forum* 26(1) on Susan Markens's book *Surrogate Motherhood and the Politics of Reproduction*. See Blum (2011), Markens (2011), Rothman (2011), Sullivan (2011), and Teman (2011).

[6] We thank Reviewer 1 for suggesting this to us.

Table I. Responses to Attitudinal Questions Regarding Scientific Freedom and Constraints (Figures in Parentheses Are Percentages)

Agree or disagree with this statement	Strongly Disagree	Disagree	Do Not Agree Or Disagree	Agree	Strongly Agree
"Science and scientists have a responsibility to seek out and report the truth regardless of its ethical, legal, moral, and social implications."	1 (2)	4 (10)	8 (20)	11 (27)	17 (41)
"Society has the right to place limitations on what scientists study and how they perform their research."	5 (12)	10 (24)	2 (7)	14 (34)	9 (22)
"A journal editor should reject a paper if peer review concludes that the data were collected using unethical methods."	2 (5)	2 (5)	1 (2)	9 (22)	27 (66)
"A journal editor should reject a paper if peer review concludes that the results would undermine or clash with societal norms."	29 (71)	8 (20)	2 (5)	1 (2)	1 (2)

come to identify, manage, and subsequently justify limits on knowledge production.

Drawing on interviews conducted with academic researchers across multiple domains, this article asks: What kinds of research topics or methods are perceived as off-limits to researchers? What mechanisms and patterns of social control keep researchers from pursuing and publishing questions that are "out of bounds"? How do researchers learn which questions not to ask and which results are too contentious to publish? What structures and processes shape the production of unknowable unknowns? What relation do these have to the better researched structures and processes that produce knowledge? How do ideas about "forbidden knowledge" influence the practice of science?

BACKGROUND

References to nonknowledge are found in the earliest writings in science studies (Gross, 2007). Merton (1957), for example, points out that the production of scientific knowledge depends on "specified ignorance." This is the structural as well as stylistic reason that research papers typically begin by identifying gaps in the field. Fleck's (1979) "thought style," Kuhn's (1962) "paradigm," and, later, Foucault's (1970) "episteme" all assume that absence is contained within a dialectical relationship with the production of knowledge. Paradigmatic thinking and systems of classification help us order the world at the same time that they obscure some of its features (Bowker and Starr, 1999; Hilgartner, 2001). Thus, the most potent of all limitations on

knowledge are those questions that we cannot conceive or imagine, ideal-typical unknown unknowns.

Various scholars have called for science studies to shift attention toward a systematic study of the production of the unknown (Frickel et al., 2010; Hess, 2007; Proctor, 1995; Schiebinger 2004). Rather than viewing the unknown as the underbelly of what we do know, this approach seeks to understand the absence of knowledge as the result of structural and cultural forces. Both Hess and Proctor coin terms highlighting the forms of agency that account for absences in knowledge. Proctor (1995) suggests the term "agnotology" to signify "the study of ignorance," which he sees as socially produced rather than a byproduct of knowledge production. Hess (2007; Woodhouse et al., 2002) prefers "undone science" to capture how knowledge production is biased toward the benefit of the privileged, leaving blank spaces where knowledge could empower disenfranchised social groups. Both terms highlight how institutional, political, economic, and cultural constraints create gaps in what we know and what we choose to accept as knowledge. This is the "flip-side" of epistemology, theorizing ignorance as an active production, rather than a simple omission.

Forbidden Knowledge

As a category of knowledge, forbidden knowledge most closely aligns with Knorr Cetina's (1999:64) "negative knowledge," which captures "knowledge of the limits of knowing, of the mistakes we make in trying to know, of the things that interfere with our knowing, of what we are not interested in and do not really want to know." Negative knowledge, according to Knorr Cetina, is not a subcategory of nonknowledge because, first, it demands an awareness of what ought not be known, the so-called known unknowns and, second, because knowing which knowledge *not* to produce is a fundamental skill in the successful production of knowledge. Nonetheless, the boundary separating negative knowledge from the production of the unknown in difficult to draw with an unwavering hand.

Gross (2007) expands negative knowledge to include dangerous knowledge. But dangerous knowledge has long been understood using the more evocative term, "forbidden knowledge," found within the philosophical and bioethical literature (Allen, 1996; Cohen, 1977; Johnson, 1996, 1999; Nelkin, 1982; Rehmann-Sutter, 1996; Shattuck, 1996; Smith, 1978). Unlike negative knowledge, which tends to refer to nonnormative limits of knowing, the term "forbidden knowledge" designates *explicitly normative* limits of knowing.

The extant literature recognizes two primary types of forbidden knowledge. The first is methodological: any knowledge obtainable through unacceptable means is forbidden de facto. The second category of forbidden knowledge is prohibited because it provides human capacities thought to belong to divine power alone. This knowledge is considered dangerous because it fails to keep

separate the spheres of the sacred and the profane, threatening to violate some putative sacred order (Cohen, 1977; Nelkin, 1982; Smith, 1978).

With few exceptions (Johnson, 1996), the existing literature on forbidden knowledge does not attend to issues of power, agency, institutions, or culture; rather, this literature is heavily rooted in a classical tradition and, as a result, highly influenced by the notion of hubris. Literature in this tradition generally presumes that the content of forbidden knowledge is static, universally taboo, and so self-obvious that no further explication is required. However, unlike Adam and Eve, we lack a transcendent, omniscient moral authority to provide guidance for determining exactly which knowledge is off-limits (Johnson, 1999). Instead of a universal guide, forbidden knowledge is more likely to be produced when it undermines or has the potential to undermine beliefs and practices assumed to be fundamental to our nature as humans (Johnson, 1996).

Thus, forbidden knowledge is subversive on two levels, one sacral and one practical. Its very existence undermines the normative structure of science, which holds as an article of faith that for science to flourish limits need to be minimal. Science may reveal the nature of sacral things to mankind; however, if science has no limits, then the sacred loses its mystery, the world is disenchanted, and we become objects to ourselves. More pragmatically, forbidden knowledge is produced when inquiry threatens powerful interests.

Determining the objective boundaries of forbidden knowledge poses significant challenges (Rehmann-Sutter, 1996). First, even the most cursory empirical observation reveals that forbidden knowledge cannot refer to any particular body of knowledge, but is a dynamic category, the contents of which shift depending on culture, political climate, and the interests of researchers.[7] Consider, for example, the differences in debates around cloning and stem-cell research in the United States, the United Kingdom, and South Korea. Second, we cannot predict the consequences of knowledge prior to obtaining that knowledge. Transgressive knowledge is also potentially transformative, and even revolutionary. Socrates, Galileo, Descartes, and Darwin offered new forms of knowledge that dramatically shifted our worldviews, even as their new knowledge claims were resisted.[8]

Forbidden knowledge is "an essentially-contested concept" (Gallie, 1956). Even when researchers agree on the broad principles that determine what is

[7] In fact, the category of "forbidden knowledge" became more salient and broader during the time we began work on this project and the appearance in print of this article. While we were conducting the research, the policing of the boundaries of scientific inquiry became more visible as the result of a number of public controversies, including debates over harvesting stem cells, the status of intelligent design as a "scientific" theory, suppression of research on climate change, and the release of scientists' e-mails that seemed to give credence to arguments that climate change science is exaggerated.

[8] Forbidden knowledge not only poses danger to the social order, it poses risks to the knower. Descartes and Darwin were demonized for their work, Galileo imprisoned, and Socrates executed. Personal risk and perceived threats can be as effective a deterrent as codified rules. Upon learning of Galileo's punishment, Descartes chose not to publish *The World* and *Treatise on Man*. These works were only published posthumously.

forbidden, they still may dispute whether any single empirical case fits the general prohibition. In fact, such debate is necessary for clarifying boundaries. It is, therefore, sensible to discuss *how* knowledge comes to be forbidden rather than to ponder what specific knowledge is forbidden. Only the most visible constraints on knowledge are made explicit via formal regulations. The broadest of these are typically enforced by the state and have grown in response to increasingly potent kinds of scientific knowledge (Holton and Morrison, 1979). Examples of formal regulations include current legal restrictions on human cloning, the use of fetal tissues and embryos, long-standing constraints on nuclear and other weapons-related technologies, and federal requirements for IRB approval.

On rare occasion, scientists may also act to suppress knowledge production through such means as the 1975 Asilomar moratorium on recombinant DNA (Holton and Morrison, 1979). Some scientists have also come to see free flows of information—a vital part of any normative view of science—as dangerous in a post-9/11 world. Renewed concerns about national security have led to calls for greater restrictions on the dissemination of potentially dangerous knowledge (Atlas, 2002). Following a public outcry over *Science*'s publication of a paper disclosing the synthesis of poliovirus (Cello et al., 2002; Couzin, 2002), a consortium of 17 top science journals submitted a statement that included the recognition "that on occasions an editor may conclude that the potential harm of publication outweighs the potential societal benefits" (Journal Editors and Authors Group, 2003).

The foregoing examples notwithstanding, the organizational framework of the scientific community makes formal social controls vague, difficult to enforce, and generally imposed as an external regulation that requires local application of more global principles (e.g., Holden, 2004). This last point underscores an important dimension of public moratoria as symbolic politics (Gusfield, 1963): beyond demarcating time-bound zones of forbidden knowledge, moratoria serve as a device of public reassurance—the scientific community's internal debate and restraint demonstrates that the large grants of trust, autonomy, and fiscal support from the lay public are deserved, while staving off additional external regulation.

Formal constraints are a fact of life that working scientists live with and learn to work around. Much harder to observe are informal constraints that manifest themselves indirectly in the very systems that produce, verify, and disseminate knowledge (Foucault, 1965, 1977), a fact that contributes to the ambiguity of forbidden knowledge's substantive boundaries. For example, increased regulatory requirements, such as those governing work on biohazardous materials, have purportedly discouraged some scientists from pursuing controversial research (Pillar, 2003). Similarly, the agencies, corporations, and institutes that fund and disseminate research have extraordinary power to shape what knowledge is produced, as well as determine when and with whom it is shared. Industrial sponsorship of science and technology clearly promotes research, but it also narrows domains of inquiry, restricts dissemination of

"new" findings as trade secrets, and engages in the outright suppression of findings that could damage corporate earnings (Blumenthal et al., 1997; Rennie, 1997; Steinman et al., 2006; Suchman, 1998).

Informal controls on the production of knowledge extend to knowledge that is rejected or discredited once created (Wallis, 1979). Gieryn (1983, 1999) draws attention to boundary work—the processes, mechanisms, and evaluative criteria that gatekeepers use to determine what constitutes legitimate science. Boundary work is fundamental to the practice of science at every level, but especially to the formation of professional research identities and the establishment of epistemic authority. Peer review is the most visible means through which boundary work is performed. It takes only a few gatekeepers to suppress knowledge through mandated revisions and rejections of submitted papers. This process produces forbidden knowledge when studies are rejected on normative rather than scientific grounds. Parsing the grounds for rejecting knowledge claims, however, is difficult. Although peer review putatively maintains and defines the standards of good science, disciplinary qualifications and disqualifications of data combined with reviewers' oracular judgments create potential suspicion that peer review acts to suppress knowledge, especially knowledge that cuts across the grain of settled pieties or employs unconventional methods (Horrobin, 1990; Martin, 1999).

Boundary work, however, need not be limited to peer review, nor is it always subtle. Public controversies, debates, and other mechanisms of socialization can communicate disciplinary norms, often in quite specific terms. Hess (1992:222) has described how researchers interested in studying extrasensory perception learn from "'horror stories' of academic persecution" that pursuing the paranormal is a form of career suicide.

These "horror stories" are widely shared, making the boundaries of forbidden knowledge more predictable. The combination of clear rules demarcating which knowledge is off-limits and the "essential ambiguity" of applying them forces researchers to make choices about which knowledge to pursue. This ambiguity suggests that forbidden knowledge is a topic gainfully approached from a phenomenological perspective. Using this perspective shifts the focus from the content of which knowledge is forbidden to the interpretive and sense-making work of researchers that either impedes the production of knowledge or allows them to devise strategies that permit innovation without breaching boundaries.

Relying on either public or philosophic debates about the limits of inquiry provides a narrow, abstracted view of forbidden knowledge, one separated from the communities in which discussions take place, decisions are made, and work is done. Studying these absences in science, however, presents challenges. As an empirical social science, we know how to measure occurrences, but have trouble assessing either the occurrence or meaning of absences. We address this problem by viewing the creation of forbidden knowledge as embedded in the process of inquiry, whenever researchers make choices and exercise agency. Further, working scientists do not exercise agency and make choices in a

vacuum. The record of the troubles that other working scientists encountered on knowledge expeditions that became controversial, forbidden knowledge created elsewhere, becomes a yardstick to gauge whether the rewards of a contemplated knowledge expedition are likely to be worth the costs. Researchers can reflect on their decisions about what *not* to do, what leads *not* to follow, and on the decision to do *this* rather than *that*. In this article, our focus is on how working scientists learn to translate consensus about the principles surrounding forbidden knowledge into local practice.

DATA AND METHODS

Data were collected in 2002–2003 through interviews (conducted by Kempner) with researchers from a diverse range of disciplines about the topic of "forbidden knowledge." We designed this interview study on the basis of 10 pilot interviews with researchers from a diverse range of disciplines, including psychiatry, psychology, epidemiology, genetics, economics, criminology, and physics. In addition to these pilot interviews, the final study is based on 41 interviews with academic researchers who were selected using a strategic, multistage cluster sample of academic researchers.

These researchers were drawn from six subject areas: nine microbiologists (MB), six neuroscientists (NS), 10 sociologists (SOC), one computer scientist (CS), six industrial/organizational psychologists (IOP), and nine researchers from the various disciplines that conduct drug and alcohol studies (DA).

Sociologists were included because their work includes intimate portrayals of the social order; neuroscientists and microbiologists because so much of the broader discourse on limitations in science is about their research; industrial/organizational psychologists because of their links with corporate entities; drug and alcohol researchers because their work is focused on stigmatized behaviors, typically within marginalized populations; and computer scientists because much of their work, for example, with encryption, is of interest to national security. We deliberately chose to interview researchers across disciplines, rather than focus on a single controversy or discipline, so that we could discover similarities in the process of identifying and managing forbidden knowledge.

We identified the 10 top-ranked universities in each discipline using 2002 *U.S. News & World Report* rankings. Drug and alcohol researchers were identified from keyword searches of the NIH CRISP database (http://crisp.cit.nih.gov/) for investigators funded in 2001–2002 for research on addiction and related issues. From lists of faculty, we randomly chose names to solicit for participation, with replacement of those who did not respond or refused. We solicited a total of 95 individuals and successfully contacted 76. We completed 41 interviews (43% of the total sample). Except for the computer scientist, there was no difference in response rates across disciplines ($\chi 2 = 4.4$ with 5 df, $P = 0.49$). Our total sample included 10 women and 31 men, ranging in

age from 28 to 76, with a median age of 46. Respondents ranged in academic rank, with 21 full professors, six associate professors, 12 assistant professors, and two adjunct lecturers. Sample size does not allow us to stratify or to examine response rates by gender, age, rank, or discipline. Focusing on successful academics allowed us to locate respondents who are able to navigate successfully the politics of knowledge production, including choices about what not to do.

We introduced our interview as a study on forbidden knowledge, which we defined as knowledge that is "too taboo, sensitive or controversial to produce." The interview consisted of four sections. We began by asking researchers to name a prominent example of forbidden knowledge in their field. These examples mark how forbidden knowledge is transmitted in the socialization of working scientists. Respondents were probed on these responses and asked to pinpoint which aspect of their example had been particularly troublesome to them, that is, whether the entire research question was misguided, the methods were unethical, or the findings themselves were the source of the danger.

This line of questioning was designed to help respondents think through how prohibitions present themselves throughout the research process. Respondents were then asked to comment on their own experiences as well as the experiences of their colleagues. We asked, for example, whether their work had ever been the target of controversy or whether they or one of their colleagues ever shied away from a topic because it seemed off-limits. This part of the interview asked them to consider the impact of global prohibitions on everyday decision making. In the third section, we asked a series of close-ended specific questions about practices and experiences. Finally, each interview ended with four attitudinal questions about scientific freedom and social and professional constraints. All interviews were performed in 2002 and 2003 and audiotaped. Thirty-eight interviews were conducted by telephone and three were conducted in person. Each interview lasted between 30 and 45 minutes. All respondents completed the interview.

In-depth interviews are particularly useful when respondents have not previously elaborated their perspective on a particular topic (Holstein and Gubrium, 1995). They also provide the interviewer with the opportunity to develop rapport with respondents, making it easier to generate bursts of talk regarding sensitive topics. However, these data come with limitations. Most significantly, subjects are not able to address "unknown unknowns," which, by definition, exceed the cognitive capacity of our subjects. Our interview guide allowed our subjects to think about the local applications of global norms. At the same time, it allowed us to see how norms were transmitted, how researchers avoided or invited controversy, and how the existence of forbidden knowledge was justified among working scientists, who hold as an article of faith that the search for new knowledge is a moral imperative. IRB approval was obtained for the study.

Coding and Analysis

Each interview was transcribed and analyzed with the assistance of QSR's NVivo2 (NVivo2, 1998–2002), a qualitative data analysis program. Our coding categories were derived inductively. A single coding scheme was standardized after several iterative rounds of coding and improvements. Transcripts were divided evenly among three coders. Two coders checked each transcript. Disagreements were settled by consensus.

RESULTS

Researchers often responded to our queries with discrete narratives about how they and their colleagues decide what knowledge not to pursue. These narratives came in two modes: descriptive ("I did not publish finding X."), or normative ("X is not an appropriate area of study.") Our codes captured the journalistic components of these narratives: "who" is the subject of the story (the respondent, a colleague, or a prominent researcher); "what" was the subject matter of the research project in question (i.e., race and intelligence, human subject harm, or weapons development); "when" in the research did the event occur (i.e., while formulating the research question, collecting data, analysis, publishing, postdissemination); "how" these constraints were activated (i.e., through an internal sense of unease, institutions or funding sources, pressures from interest groups, IRB, etc.); "why" this knowledge was suppressed (i.e., lack of funding, ideological concerns, disciplinary boundaries, worries about the political (mis)use of findings); and "where" the suppression originated—in the scientific community itself, through the complaints of public officials, or "moral entrepreneurs" in the community who seek to change the everyday practices of working scientists. Our codes were developed to learn how working scientists learned to identify the boundaries of knowledge expeditions.

Support for Norms of Knowledge Production

An article of faith when speaking most generally about constraints on knowledge production, researchers express attitudes that echo Weber's heroic characterization of the scientific vocation. Researchers describe their work as guided by norms of openness and altruistic values in the production of knowledge. Science is generally perceived as responsible and "safe," scientists as "moral," and the pursuit of knowledge as worthy, in of itself: "Truth and knowledge is always the most liberating thing, even though it's often unpleasant and not what people want to hear" (MB); "Our job is not to defend the status quo, our job is to explore truth ... not determining whether that truth

is dangerous or that truth is unpleasant or that truth is going to create too much change" (SOC); "I happen to believe that knowledge is good" (DA); "everything is open for examination" (DA); and a "thorough knowledge of the universe is important" (NS).

Researchers defend this ethos using Merton's (1942) depiction of the normative structure of science, although, like Mulkay (1976), we found that these norms served more as an ideological vocabulary than as true guides to behavior. *Communalism*, under the guise of academic freedom, is invoked: "I'm a First Amendment absolutist and as far as I'm concerned if it's legal, anybody can say anything" (SOC). Researchers claim *universalism* and, with few exceptions, dismiss the idea that they suppress research for ideological reasons: "I don't think you can edit the world to make it come out the way you would want it to for whatever reasons. [T]hat ... violates our charter" (SOC). Researchers advocate for transparency in the scientific method as a precondition for self-correction via *organized skepticism*. "Part of getting it right [is] putting yourself and your methods out there to be critiqued by your colleagues" (SOC). Several respondents referred to the debate following the publication of contentious studies like Rind et al. (1999) and Herrnstein and Murray (1996), asserting that dissemination of these studies enabled critique and *self-correction*. Finally, researchers defend this position by downplaying the significance of any single research product. Research, they argue, provides only a small piece of evidence, not the whole picture. As a researcher explained, "one piece of research is just one piece of research. No one piece of research ever proves anything" (DA).

Others emphasized a distinction between the creation of knowledge and its uses. Examples of representative statements include: "We're working at a very fundamental basic level, so you know, the thing that drives me is just to learn how things work" (MB); "I'm just here to find out what this does and what this doesn't do, [not] what somebody [else] then chooses to do with the information" (SOC); "knowledge in its own light is just that, but what you do with it is something else" (MB).[9]

Exceptions, Qualifications, and Limitations

When probed, most respondents say that there are legitimate constraints on the production of knowledge, but limited their approval to formal rules that ensure that data are generated in an ethical manner. These formal restrictions, they argued, provide valuable protections to society and research subjects. In contrast, researchers broadly opposed limitations on knowledge based on data gathered within the prevailing standards of practice, but that challenges prevailing social norms. Ninety percent of respondents strongly

[9] Many researchers maintained that a crucial distinction exists between knowledge and its uses, despite research from the social studies of science that demonstrates the slipperiness between these categories (Latour, 1987).

disagreed (70%) or disagreed somewhat (20%) that: "A journal editor should reject a paper if peer review concludes that the results would undermine or clash with societal norms." As one psychologist puts it, "I'm not concerned about things which violate the mores. I think we should actually do more of that kind of research ... it gets us out of our cultural box" (IOP).

Researchers were wholly dismissive of specific policies and constraints on science, particularly those that they understood to be motivated by electoral politics, or, as one respondent remarked, are "just typical of American Yahoo politics" (SOC). Stem-cell research stood out as an example of overly restrictive limits. Many respondents expressed a preference that scientists—not policymakers or some abstract notion of "publics"—determine which research is too dangerous to be conducted and published. As one respondent argued, "legislators aren't necessarily the wisest people to make decisions about what is good research" (DA). Another added, "I think it's unfortunate that decisions are being made by people who don't understand the science" (MB).

Identifying Forbidden Knowledge Through Controversy

Despite their strong sense that science is characterized by open inquiry, most researchers are able to articulate entire areas of research that they believed could not or should not be conducted in their fields. Respondents easily identified specific examples of formal restraints, including outright moratoria on some activities (e.g., human cloning or race-norming in competency tests) and severe restrictions on others (e.g., stem-cell research), but researchers were also able to identify entire areas of forbidden knowledge that have not been formally classified as such. They did so by reporting narratives about colleagues whose careers suffered because their work breached unwritten norms. Working scientists use these "cautionary tales" first to stake out the boundaries of knowledge production and then to justify decisions not to pursue certain inquiries—even as these decisions contradict their belief in the "goodness" of free inquiry.

The most frequently cited cautionary tales included celebrated and now institutionalized studies such as Milgram's (1974) obedience studies; Humphreys's (1970) study of anonymous sex in a public bathroom; and Herrnstein and Murray's (1996) *The Bell Curve*. These controversies served as iconic examples of instances in which colleagues' work breached unwritten boundaries of acceptable inquiry in science. Indeed, it is precisely for the purpose of creating a collective memory of "what not to do" that these same studies have been formally incorporated into methods classes and the "ethics certification" required of those who receive federal funds for human subjects research (Geertz, 1974; Schwartz, 1996). However, researchers also talked about less-well-known cautionary tales, which they described as having just as much force as their infamous counterparts. These controversies, which were only known locally within an academic department, a university, or a narrow field

of study, exert a strong influence on courses of conduct and the justifications that researchers offer when framing a course of action.

Thus, knowledge about controversies circulates, becoming an important part of the cultural toolkit from which researchers fashion their conscience (Swidler, 1986). One quality of the toolkit fashioned from past breaches is that it is "essentially incomplete" as well as essentially contested. As a result, researchers often stumble into forbidden territory through no intention of their own. Quite often, the working scientists in our sample only learned that they had encountered forbidden knowledge when legislators, news agencies, activist groups, or IRBs raised unanticipated objections to their research.[10] In these cases, researchers described how their own work had been targeted for rebuke—narrative recountings of past troubles that were deployed to justify measures taken to avoid similar problems in the future. Indeed, the mere anticipation of sanction was the most commonly cited constraint on researchers' inquiries.

At the same time, working scientists do not shy away from all forms of controversy; in fact, they thrive on it as long as it occurs within the local community of working scientists. However, working scientists abhor controversy that pits them against public officials or a public at large with objections to topics or modes of inquiry. Such controversy jeopardizes their ability to be working scientists. Public controversy that is local forces working scientists to spend time in public debate, threatens their funding streams, and forestalls knowledge production. Finally, the greatest threat that local controversy poses is its dynamic capacity. At any moment, local controversies can burst into a national arena. If that happens, an unwelcome spotlight falls on the entire community of working scientists pursuing those questions or using those methods.

How Controversies Produce Forbidden Knowledge

Controversies are the primary mechanism through which the boundaries of forbidden knowledge are simultaneously revealed, created, maintained,

[10] Formal mechanisms of social control also take on an informal character. IRBs, for example, are the result of a legislated requirement that a committee review all research protocols involving human subjects that take place in an institution that receives federal funding. IRBs, therefore, constitute a formal constraint on inquiry and create some global proscriptions limiting inquiry, regarding, for instance, rules about informed consent procedures. However, the decision-making process at IRBs is decidedly local and administering these rules can take on an informal quality. Rules shift over time and rotating committees have differing local interpretations of these formal rules (Bosk, 2007). Researchers must anticipate what the IRB will deem allowable and act accordingly. The anticipation that particular IRBs would not approve certain studies can lead to self-censorship. At the same time, researchers internalize these public debates about ethical research. Thus, the boundaries of forbidden knowledge are not just contingent, they are constituted by multiple, intertwining forces, which, for the most part, work invisibly. (Indeed, it is the invisibility of these constraints that perpetuates both the myth of free academic inquiry, as well as complaints of the "chilling effect" of prior review.)

renegotiated, expanded, or contracted. Perhaps the clearest example of how controversies create and maintain forbidden knowledge comes from those researchers who describe themselves as pitted against an intolerant public.

Drug and alcohol (DA) researchers, for example, lament how a political culture that they perceive as puritanical creates domains of inquiry rendered forbidden by the normative grandstanding of public officials. In this climate, inquiries whose results have the appearance of encouraging, permitting, or normalizing intemperance are prohibited for all practical purposes. The moral concerns of the political culture come in direct conflict with studies that assess the benefits of "harm reduction"—a public health movement that seeks to mitigate rather than eliminate the health costs of engaging in risky behaviors. ("Harm-reduction programs" include free condom distribution at high schools, needle-exchange programs for heroin addicts, or the decriminalization of drugs or prostitution.) DA researchers describe this conflict as a potent constraint on the inquiries that they consider likely to receive funding. Our sample of working DA researchers argue that harm reduction is ethical and effective, but that a great deal of this research has been rendered forbidden via cultural and political opposition.

DA researchers frame the division between these two worlds using an "us versus them" narrative, where "us" refers to truthseekers within science as well as the politically muted voices of public supporters of harm-reduction approaches and "them" invokes conservative cultural alliances (see Morone, 2003). They do so, despite research in the sociology of science that has demonstrated that thinking of science as having an inside or outside limits our ability to understand how knowledge is produced (Latour, 1987). Nevertheless, this distinction is critical to our subjects. It allows them to make sense of their world: obstacles that they perceive as originating outside the formal structures of science are experienced as "irrational" and particularly vexing. A DA researcher provides an ideal-typical set of narratives about "what cannot be done" that draws on an "us versus them" controversy.

> DA: [T]here are some things that would be unwise to study in the United States because of our political system, but would be completely ethical and are constantly and frequently studied in other civilized countries.
>
> I: Can you give me some examples?
>
> DA: Controlled drinking, for example, for alcoholics, or giving of test drugs to people with a history of drug problems in a safe way so that it doesn't precipitate relapse, but since there's a strong political segment of the population in the United States that without understanding the issues just considers the goal of controlled alcohol abuse to be totally taboo, then it would be unwise to study that.

This researcher outlines the core tension that creates forbidden knowledge in his field. "Some things" are prohibited or, rather, "unwise to study" because of "a strong political segment" that objects morally to the provision of alcohol to alcoholics. He describes this objection (and, by extension, this constraint on knowledge production) as a feature of a national political

culture. "Other civilized countries," he explains, conduct such research with good results. However, in the United States, with its history of prohibition and a powerful Alcoholics Anonymous movement that has shaped the definition of alcoholism as a disease, it appears improbable that any researcher will be able to recruit an effective alliance powerful enough to support a robust research agenda.[11]

The researcher goes on to explain *how* he knows that this type of study is forbidden in the United States.

> DA: ... some people have studied [this] in the United States but have generally had so many negative consequences that they, you know, it's hardly ever done anymore.
>
> I: Like what kind of negative consequences?
>
> DA: Bad publicity, loss of funding, those kinds of negative consequences. Some people have just left the field.

For example, he described one colleague whose state funding was pulled when that state's "Council on Drug and Alcohol Abuse" discovered that they were funding a study on controlled drinking interventions. That colleague, "just totally got out of the field ... it made life very uncomfortable for him." He went on to describe other colleagues whose controversial work on drug use and abuse became fodder for political controversy, like a colleague who was denied federal funding for a study on the effects of marijuana on sexual behavior.

> DA: ... some congressman got wind of the study ... and he introduced a bill that essentially held up the whole budget ... Eventually the politicians won and the NIH agreed not to fund the study and then the budget, which, you know, amounted to billions of dollars, was released. [These are] the kinds of problems that can occur if you study something where ... people in political power have already made up their mind about the drug, *you're not allowed to study it.*

Boundaries that separate acceptable from forbidden research are produced through incidents like these—a colleague's funding is pulled, a controversy erupts, researchers and their colleagues bear witness while receiving an "object" lesson on how, where, and by whom such boundaries are drawn. Some controversies are well publicized within the field, with articles occasionally appearing in specialty journals or mainstream newspapers. Such breaches eventually create a set of background expectations informing an occupational culture in which narrowed options become commonsense. A pragmatic approach to the environment in which knowledge is produced is, at the same time, a passive acceptance of the constraints imposed by that environment. DAs have to abandon a commitment to unbridled inquiry in order to be permitted to do any inquiry at all.

[11] The AA's official position, as stated on its website, is that "the alcoholic must learn to stay away from alcohol completely in order to lead a normal life" (Alcoholics Anonymous, http://www.alcoholics-anonymous.org, accessed 2006) For a brief history of the controlled-drinking controversy, see Saladin and Ana (2004).

Another DA researcher explains how perceived sociocultural barriers prevent his own research into cocaine interventions.

> DA: One of the things that works best for the prevention of cocaine addiction is a system where you actually pay cocaine dependent patients to give you clean urine. You sort of reward them immediately for being abstinent. By giving them vouchers which are ... redeemable for goods and services in the community. It works very well, but again, that's something that we haven't pursued here because really it's politically sensitive, I mean, you can't pay people to stay clean. That's something that the American public probably is going to have a hard time dealing with. So as a general rule we kind of avoided that research .... Every time I bring it up here, you know, we sit down, we talk about it and we decide that it's impractical ... as a treatment method because we can't ... although we could, you know, in a laboratory situation and study we can certainly show that it's efficacious, but if we ever try to apply that in community, it just wouldn't work.
>
> I: Now are your concerns about the American public opinion on this based on something that had happened or is it just an intuitive sense?
>
> DA: It's an intuitive sense that, I mean, who's going to pay cocaine addicts to stay clean. Can you imagine that being on the front page of the [local paper]?

Previous breaches created boundaries that now inform this researcher's intuition. The anticipated controversy and media attention inhibit his belief that further research could be done despite positive results from similar inquiries in more tolerant political climates. The reasoning displayed here is typical. Researchers consistently report that the perceived cultural climate shaped their decisions not to conduct certain kinds of research.

It is, however, possible that an unfavorable cultural climate may serve to encourage, rather than suppress, research in controversial areas. Such was the case in a study conducted by Kempner (2008), which gauged how federally funded sex researchers responded to a political attack organized by political conservatives during the second Bush Administration. Although many researchers felt silenced by this hostile political environment, a minority argued that this political opposition strengthened their research commitments. And yet, the same researchers who felt emboldened by what they felt to be morally wrong-headed opposition to their research self-censored what they believed to be the most controversial aspects of their projects in order to obtain funding for their studies. In other words, researchers argued that they were able to continue to do sensitive research only by understanding and adhering to these newly created boundaries of forbidden knowledge.

Practical Matters and Need for Access

Not all controversies revolve around moral issues. Researchers whose data collection depends on free and frequent access to a small community occasionally find their inquiries forbidden if they produce knowledge that threatens to undermine the interests of those who control access to fieldsites. Industrial/organizational psychologists (IOP), for example, described some

difficulties in inducing corporations to agree to allow them to collect potentially controversial data.

> IOP: At times I wanted to collect information about reactions of applicants to the selection system ... But the organization did not want those particular questions on there. In order to gain access and have any kind of publish[able] study, I had to drop certain questions from the survey.

His students experienced similar difficulties.

> IOP: [My student] had a particularly hard time finding organizations that are willing to ask questions about sexual harassment experiences, and what you can understand is since that's a legal issues, the organization would be afraid of the consequences of actually having data documenting the fact that they may have a sexual harassment climate. Unfortunately the student couldn't get her thesis done, and so she had to re-conceptualize her study from sexual harassment climate to something similar but not as controversial as sexual harassment.

Another IOP researcher described obstacles in his attempts to study racial diversity within corporations.

> IOP: Also some of the diversity research that I've done, you know, asking about discrimination, you know, I've also tried to get at white male backlash, and that ... that you have to word rather sensitively too, and I'm not sure ... you know, sometimes you back off a little bit from that because whoever is supporting that, you know, gets a little bit nervous about asking it.

These researchers depend on corporate cooperation in order to collect data. Ample research has demonstrated how corporate funding can systematically bias research findings toward its sponsor (Blumenthal et al., 1997; Bodenheimer, 2000; Cho and Bero, 1996; Chopra, 2003). Our findings suggest that bias can occur without questions of funding arising; the reliance of the researcher on a specific organization (in this case, for access to data) can systematically preclude the researcher from studying anything that may undermine the host's interests. Compiling data that transgress a sponsor's interests transforms this type of barrier from a simple frustration of field research to an instance of forbidden knowledge. In this case, forbidden knowledge is a normal byproduct of negotiating access to fieldsites.

A Single Activist ...

A crucial variable in gauging the force of controversy is the extent to which researchers believe that opposition to their research is an abstraction or an identifiable set of agents whose challenges are able to prohibit their ability to produce knowledge. Thus, the force of an entire corporation is not necessary to produce forbidden knowledge—under the right circumstances, even a single vocal activist is able to create enough of a disruption to dissuade researchers from pursuing particular inquiries. For example, one psychologist (a DA researcher) described an incident in which an individual activist accused him of engaging in "murderous behavior" because the researcher's anonymous

survey did not identify and thereby permit policing of HIV+ research subjects who practiced unsafe sex. When the activist sent letters to his university's administrators and the local police, the researcher needed to mount a defense against the charge of "murderous behavior." Despite receiving official and public support, he still wonders "if there [are] times in the future where I'm going to be more cautious toward maybe getting anonymous data as opposed to just confidential data" and describes limits that he has already placed on his data collection as a result:

> because of reporting requirements and because of things like what I just experienced, I'm much more inclined to ask a [survey] question that would ask somebody about a past [incident, something that happened in the last five years], you know, it's not something that just happened this semester, for example. In which case it would not be as legally or ethically required that I report that.

This researcher had adjusted the limits of inquiry in order to mitigate potential controversy. This researcher's response appears disproportionate to the actual threat, especially when the support received from local police and university officials is taken into account, until we consider how a single person can disrupt a researcher's ability to produce knowledge.

Researchers also take the threat of personal physical harm into account when thinking about forbidden knowledge. Those who collect animal data fear animal rights groups that, on occasion, have taken violent action directed toward researchers. Researchers spoke of the considerable threat posed by these organizations, whose activities researchers characterized as "terrorist action."[12] In turn, researchers explained how the anticipated threat of these organizations can determine which animals they choose not to use. For example, this microbiologist avoids research with primates.

> MB: I would like to lunatic-proof my life as much as possible ... I, for one, do not want to do work that would attract the particular attention of terrorists ... I think that anyone who's doing work on large mammals such as primates does have some sensitivity of this and lives with the possibility that they might be subject to terrorist-type attacks.

To "lunatic-proof" one's life requires that some questions or modes of inquiry become, at least personally, taboo. Like the DA researchers above, controversies produce an anticipated threat. The preemptive response to the anticipated threat then serves as an important social control, limiting the kinds of knowledge that these researchers are willing to produce. The mere potential for negative attention from animal rights organizations is enough to dissuade researchers from working with certain animal models. The volatile and unpredictable response of these groups (these protests have taken the form of pickets, vandalism, and bombs) concentrates the attention of researchers and is a reminder that the threats are not merely rhetorical.

[12] These researchers are not the only ones to accuse animal rights groups of engaging in terrorist acts. During a Senate committee hearing in 2005, the Federal Bureau of Investigation identified animal rights groups as the top U.S. domestic terrorism threat (U.S. Senate Committee on Environment & Public Works, 2005).

> MB: You hear every once in a while how researchers working in such areas receive, for example, razor blades in envelopes ... that they might open their mail, or that they have been ... in some extreme cases where animal rights terrorists have found out their home addresses and have attacked their homes ... Or occasionally you hear that such researchers receive threatening letters, and I'm sure that that's a very, very stressful thing.
>
> I: Has that ever happened to you?
>
> MB: No, it has not, although I once worked in a facility, the location I will not disclose, that an animal rights terrorist or apparent terrorist appeared to track down the site of the facility and had come upon the information regarding that facility by lying to the police, and had thus received by license plate ... information on the home addresses of the individuals working in that facility ... to which I suspect that given the position of the individuals who found that information and their political activities, that they really had no business having the home addresses of where these people lived and where their families were. And I think that's a pretty scary thing.

These tensions were so acute among those who studied animals that one researcher refused to talk to the interviewer until she proved her institutional affiliation: "For all I know, you are somebody from an animal rights organization and you're trying to find out whatever you can before you come and storm the place" (MB).

In addition, these pressures have encouraged researchers to reassess their own research practices, as happened in the dialogue between animal rights activists and this researcher.

> NS: The discussions with the animal rights activists I think have changed the way I do research and the way research is done throughout the world. I think that they ... not so much during the last few years, but during the '60s and '70s they raised the consciousness of the entire world about animal treatment in research, and people became much much more careful to use ... most people became much more careful to use, ah, if you will, less specialized forms of animals, more animals bred for laboratories rather than animals bred as pets and things like that.

The example shows again that the boundaries are not just fluid over time, for society as a whole, but that the interaction with groups of nonscientists influences how working scientists think about and reshape what it is and is not acceptable treatment for the "objects" of scientific experimentation, thereby allowing researchers to enroll the former in their projects. Examples like this undermine the narrative that suggests forbidden knowledge is created by the "irrational" objection of nonscientists.

When Them Is Us: Forbidden Knowledge Within Disciplines

An investigation of forbidden knowledge within disciplines undermines the "us versus them" narrative altogether, while further demonstrating the extent to which forbidden knowledge is embedded in the practice of producing knowledge. The internalization of a system of professional values begins during a researcher's training. Disciplinary identity is constructed out of a sense of mission, specialized bodies of theoretical knowledge, and a toolkit of

acceptable methods. Each disciplinary domain possesses its own "just-so" story of its unique, indispensable contribution to knowledge and progress (Becker and Carper, 1956; Bucher and Strauss, 1961). As a consequence, producing knowledge within disciplinary boundaries requires the forbidding of some knowledge, if only because the disciplinary matrix in which researchers are embedded encourage some lines of inquiry while discouraging others.

More than a third (39%) of the respondents reported that they or their colleagues chose not to pursue or publish research because some aspect of the study contravened their discipline's accepted dogmas. Several researchers also noted (as did Kuhn 1962) that dominant paradigms in their academic disciplines limit inquiry by rendering some ideas natural and others unthinkable. Some of this action is the result of the same kinds of boundary work revealed by Gieryn (1983). For example, this IOP psychologist explains what he sees as a paradoxical limit on studying the paranormal.

> IOP: If you were doing research on ... ESP, even though ... it would perhaps change the way people view reality, and so could arguably be one of the most compelling findings of psychology ever offered, but if you were doing that kind of research, you would clearly ... hear whispers in the hall from your colleagues and ... and you'd also face serious doubts from your colleagues.

Rather than society at large or a specific social group, it is the researcher who bears the brunt of these sanctions; knowledge is forbidden because its pursuit will surely place the individual's career at risk. This stance—avoid questions that kill careers—appears at first blush to be an abandonment of a commitment to unbridled inquiry. However, the social organization of research within disciplinary matrices requires that all working scientists learn to accept the bit so that they can properly march their paces. The acceptance of forbidden knowledge is central to the work of knowledge production.

For example, researchers whose research materials depend on human subjects maintain an ambivalent stance toward studies that could provoke or reify social inequalities. In particular, researchers across disciplines draw on controversies like *The Bell Curve* to talk about why they would not conduct studies that might claim to discover a biological basis for social inequality. Many researchers in the sample explicitly deny that they would ever conduct this kind of study or that such studies could ever produce objective data. Comments like the following are common.

> SOC: [E]ven if there were a billion dollars available I would not want to do research on genetics and IQ ... The issue of the genetic component in intelligence is a legitimate academic issue, but it's so loaded with ideology that ... it's impossible.

> MB: [N]obody in their right mind would ever write a grant to do ... the genetics of race ... it's just too charged of an issue to possibly propose to do some serious science.[13]

[13] The MB quote demonstrates how scientists can be wrong in their disciplinary judgments of what is forbidden. There is now an active interest in the genetics of race. See, for example, the Social Science Research Council's collection of articles gathered online (Social Science Research Council, 2006).

However, such research is potentially acceptable if it demonstrates a social cause of inequality. According to one psychologist:

> IOP: I wouldn't really want to be showing, for example, that African Americans are doing worse in school ... um ... than European Americans ... unless ... I can show that it's due to some social ... I wouldn't want to be showing ... I mean, I don't think my research would go in this direction, but I wouldn't want to be showing that it's genetic.

Here, we see how disciplinary boundaries are, at least in part, motivated by fears of how the "outside" might use scientific findings. It is anathema to social scientists to consider a biological basis for difference because of its political potential to ostracize.

> NS: [A]nybody who does research in sexual orientation is worried about that ... There are ... centers out there for treating homosexuality as ... if it's a disease. So people who do that work are very concerned about providing ammunition for those kinds of groups, because psychologists are almost unanimously opposed to that kind of view of sexual orientation.

An "acceptable" explanation includes an argument that explicitly disengages the subject from any resulting blame, while a "forbidden" one does not. The overall view is that an unscientific public that already appears irrational needs to be protected from misuses, misinterpretations, and manipulative framings of research findings. Researchers usually argued that this work could be accomplished only through the careful packaging, "framing," "nesting," or "couching" of the results. In fact, doing so was described as one of many "professional practices and obligations" (SOC) that social scientists must practice in order to produce ethical research. Knowing how to present sensitive research is, thus, reframed as a fundamental skill in the production of knowledge. A DA researcher who fears that research could be "misconstrued" by a "legislator who has an agenda" explains:

> DA: In my field, in HIV work, any time you publicize data that talks about sexual risk taking in a population that's marginalized, that information can be decontextualized and really misinterpreted. So everything has to be nested very carefully ... I qualify my research in all of my findings making really clear what the circumstances are in which the data collection ... if gay men are having high risk sexual behavior, then I have an obligation to report that ... I also have an obligation to ... make sure that I don't ostracize the people that I'm studying, but at the same time I don't want to sugar coat what's happening out there.

Sociologists, especially, described the self-censorship of potentially stigmatizing research as intertwined with the "core mission" (Bucher and Strauss, 1961) of the profession.

> SOC: Over the past several decades in sociology there has been a persistent feeling that one should not delve too closely in the issues IQ and intelligence that may be linked to racial or ethnic differentials.

> SOC: If you interview a lot of social scientists a lot of it's going to go back to these questions [of] research that tends to put into question the idea of fundamental equality. I think that's going to be the real taboo issue.

> SOC: I think that generally the social biological questions ... Sociologists say what's the point of that? What's the agenda behind that? That's not what we do as sociologists. That's an attempt to naturalize your racism or naturalize your sexism, but it's not ... it's not properly sociological and it's politically retrograde.

Suppression of research agendas that could contribute to inequality are so prevalent and unquestioned among sociologists that it constitutes the way that sociologists identify their core mission—to show how social structure shapes identities, social outcomes, and social differences. Production and suppression of knowledge go hand-in-hand.

CONCLUSION

In this article, we set out to understand how researchers learn which questions not to ask and which results are too contentious to publish. We found that forbidden knowledge is neither a static category, nor are its boundaries clearly demarcated; rather, the boundaries of forbidden knowledge are constantly constructed and revealed through public controversies in science. A few highly publicized cases of controversial science may dissuade innumerable scientists from engaging in particular forms of inquiry, but even very small, or localized, controversies can have a profound effect on what researchers choose not to do. When controversies are told and retold as academic folklore, the forbidding boundaries they delineate become commonsense and, in some cases, a core element of professional identity; the negative from which a profession's "core mission" is developed (Bucher and Strauss, 1961). This core mission is developed in concert with a larger moral economy (Kohler, 1991; Thompson, 1971) that shapes what scientists determine is not worth their energies.

Forbidden knowledge, we discovered, is omnipresent in the research process. As such, we found it puzzling that scientists could maintain an adherence to normative principles of free inquiry, while prodigiously avoiding the production of forbidden knowledge. We argue that it is researchers' ability to recognize and manage forbidden knowledge that allows them to remain working scientists. Indeed, within research communities, controversy is often an indicator of a thriving research domain. When working scientists are in disagreement, there are studies to be mounted to sort out what is in dispute, papers to write, grants to be had, and jobs that need filling. Controversy serves to attract scientists to a research domain. For example, the issues surrounding the workings of stem cells or the nature of climate change create a new opportunity structure for knowledge production. However, controversies over scientific inquiry raised by public officials, moral entrepreneurs, or corporate entities are unwelcome. Such controversies threaten to remove working scientists from the labor force, disrupt funding streams for research, and naturalize existing social inequalities. As a result, scientists in hyper-politicized arenas may choose to selectively self-censor in order to avoid undue attention from

detractors (Kempner, 2008). Indeed, it is the very act of self-censoring that allows these scientists to pursue sensitive topics.

An important direction for future research is to identify the circumstances under which scientists decide either to avoid or to engage in contentious inquiries. One fruitful avenue of research might be to follow scientists' efforts to construct effective networks and alliances (Frickel and Moore, 2006). For knowledge to be produced, a researcher must have in place some combination of the following: funding and institutional support; a fieldsite with research subjects willing to consent to data collection; a set of colleagues who will cite work once it has been completed; media willing to either ignore or disseminate the researcher's findings; and a perceived, if misguided, sense that one can control the knowledge that one will disseminate in the world.

Our findings suggest that knowledge is not produced when researchers determine that they do not possess these fundamental components. Thus, a large organized protest might be easily dismissed if a researcher determines that this dissension will not interfere with his or her ability to conduct controversial research. Meanwhile, a single rogue activist might be difficult to ignore if his or her actions are capable of undermining the research alliances necessary to complete a research study. Thus, threat of force provides another clue to determining the circumstances under which some scientists are silenced and others speak out.

Our article reframes the decision not to pursue a line of inquiry as a conscious choice. In so doing, it makes two contributions to studies of knowledge production specifically and sociology in general. First, we develop a strategy and demonstrate a method for dealing empirically with omissions and absences. Second, we show the social processes that contribute to the production of forbidden knowledge. A full understanding of the social organization of knowledge production also must account for the systematic nonproduction of knowledge. The structural forces and processes that we identify here are both general and, at the same time, specific to the disciplines. Further work with a broader sample of disciplines or a larger number of researchers would no doubt deepen our understanding of the dynamic that constrains, inhibits, or suppresses the production of knowledge.

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