# The Sociology of Ignorance and Post-Truth Politics

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During the 2010s, the rise of right-wing populism affected the United States and several other countries, where voters mobilized against centrist and left politicians, the mainstream media, the academy, and scientists. The changes are continuous with a longer process of neoliberalization driven by conservative donors, who have funded an alternative ecosystem of foundations, public relations campaigns, and think tanks. These organizations have "corralled" the government away from a previously settled political order, in which the state intervened more consistently in the economy for purposes of economic fairness and environmental protection (Barley 2010). The current phase of these historical changes involves the growing influence of a right-wing, alternative media ecosystem that supports populist and "post-truth" attacks on the mainstream in its various guises (Kelkar 2019).

It is impossible to know at present if these changes represent excesses that will be corrected with the ebb-and-flow of electoral cycles or if the long-term trend will spell a shift to increasingly authoritarian politics throughout the world. Just as segments of capital invested in an alternative public sphere, other segments of capital could see a threat to growing right-wing populism, and they could mobilize to restore something approximating the "mainstream" social order of liberal capitalist democracy.

Within this context of an unstable present and uncertain future, the question emerges of how the sociology of science and technology, together with the broader field of "science and technology studies" (STS) of which it is a part, should respond to the rise of post-truth politics and related historical changes, or if it should respond at all. Approaches range from embracing the fox of post-truthism (Fuller 2016) to staying the course (Fujimura and Holmes 2019). This essay will adopt an approach that is perhaps somewhere between the two perspectives. It will present an argument that within the STS field, research on the sociology of scientific ignorance provides some resources that could be of value in understanding post-truth politics, and the development of this subfield of research warrants more attention from sociologists and other social scientists.

The study of scientific ignorance is an inverse problem to the sociology of scientific knowledge that defined the early research programs of STS in the 1980s. One indication of interest in this topic is a handbook of "ignorance studies" (Gross and McGoey 2015), which provides a historical and cross-disciplinary overview of research on the topic. The topic of ignorance, even scientific and technological ignorance, is much more general than post-truth politics. But right-wing populists and conservatives in some countries reject the consensus of scientific research fields such as climate science, and they have amplified this rejection in both traditional and social media. Moreover, they have also contributed actively to the production of ignorance by removing information from government web sites, closing down government research and monitoring programs, and suppressing government scientists. Thus, the broader study of the forms, mechanisms, and remedies of scientific and technological ignorance may provide some new ways to formulate research questions and analytical perspectives that are relevant for the general analysis of post-truth politics.

This essay will begin with a discussion of some concepts in the sociology of scientific ignorance and the mechanisms for the construction and maintenance of scientific ignorance, then it will discuss the pathways for addressing and redressing one type of scientific ignorance: undone science.

Categories and Mechanisms

Among the various types of ignorance, the concept of "undone science" is especially relevant in a neoliberalizing world. The changes in the capacity of the state to defend the environment, the poor, the discriminated against, and the local community create the conditions for ongoing community, civil society, and social movement mobilizations that often identify missing areas of research. The concept of undone science has been defined somewhat differently across studies, but there are two main elements in common (Hess, 2007: 22; Frickel et al. 2010: 445). First, there is an absence or "empty space" of research that did not take place, that takes place in low quantity, or that has insufficient scope, especially in comparison with research that is funded by or aligned with industry and that is consistent with the view that changes in industrial practices and technologies are not needed. Second, civil society organizations, social movement organizations, and other types of "mobilized publics," such as community groups or families, have identified a public interest in having scientific questions answered, generally about environmental and health risk.

In the analysis of undone science, I discussed how powerful actors, generally in the industry and state, benefit from the absence of research that mobilized publics and community groups would find useful for their claims-making goals (Hess 2016). This particular type of scientific ignorance is systematically produced because of the strategic value of ignorance to public and private organizations that generate environmental and health risk. To maintain the absences, powerful groups affect public and private funding priorities. Moreover, because funding priorities and opportunities influence the priorities of a research field, the tastes of the research field become aligned with the priorities of the dominant actors. In turn, undone science can become embedded in the habitus of research fields (Jeon 2019), and researchers who do not follow the priorities of the field can become targets of suppression (Hess 1999, Martin 2007).

A closely related form of scientific ignorance, which is termed here "second-order undone science," can appear when the desired need is addressed, but the research is designed in a way that precludes some categories of data collection and research questions because of methodological preferences. One mechanism for generating second-order undone science is the "epistemic form" or culture of regulatory science, which varies across countries (Suryanarayanan and Kleinman 20140). Kleinman and Suryanarayanan (2013) showed how the "epistemic form" of regulatory science defines the problems that can be researched and those that cannot. For example, in the case of the relationship between insecticides and colony collapse disorder of honey bees, methodological preferences enabled regulators to identify lethal effects of specific chemicals but did not enable them to study or identify complex causality associated with cumulative, sublethal effects from multiple types of exposure. Likewise, in a study of the database constructed by the U.S. Environmental Protection Agency for the soil samples in New Orleans to measure the effects of Hurricane Katrina, Frickel and Vincent analyzed how the methodological preferences of the regulatory agency created spatial

knowledge gaps, or "spatially realized forms of undone regulatory science—the institutionalized outcomes of EPA knowledge production systems organized by a logic of epistemic efficiency" (2011: 22). These preferences can also be driven in part by the exigencies of limited government research and monitoring budgets.

Along the same lines, Allen and colleagues (2017) showed that in an industrial region of France, research by state agencies and their partners responded to community concerns about pollution by funding various studies about potential health risks, but the narrow formulation of research questions left residents with unanswered questions and second-order undone science. Again, the mechanism here was more a methodological preference associated with a research field's epistemic culture. In another study, Allen (2005) also pointed to another mechanism for creating second-order undone science: data aggregation in epidemiology can make it difficult to use the method to prove causal connections that are visible to community members on a smaller scale. More generally, Frickel and Kinchy (2015) point to how the scale of data (either aggregated or disaggregated) can mask evidence of patterns, thus creating gaps in completed research.

Although direct industry influence is not necessarily evident in second-order undone science, the preferences of government-funded health and environmental science, especially those of regulatory agencies, often are aligned with industry preferences against precautionary stances. Again, there is a strategic value that comes from the maintenance of second-order undone science even as new research is generated, especially if the new research leads to inconclusive results or failure to prove causal connections, which weaken the case for regulation and also the value of research in claims of liability (McGoey 2012, Oreskes and Conway 2010).

A third type of scientific ignorance, controversial science, emerges when the state of research in a field is embroiled in a controversy, and thus it becomes difficult to translate research into policy action. Controversial science may emerge because the problem area is new and not much research has been completed. It may also emerge when researchers have locked into positions due to network allegiances that involve commitments to methodological preferences and interpretations of data. In neither case is the situation necessarily undone science in the sense described above. However, controversial science can also emerge as the result of external intervention into the research field, such as when industry funds its own researchers to discredit research that points to health, environmental, and other risks and uncertainties. Thus, the closely related form of scientific ignorance, contrarian industry science, is used not only to stall regulation and confuse the public but also to throw a research field into a state of controversy. Types of contrarian industry science include diversionary research (research that suggests alternative causes of risk), attacks on scientists and research projects that have documented risk, and studies that produce no effect or negligible connections (Goldman et al. 2014, Oreskes and Conway 2010).

## Ignorance and the Circulation of Knowledge

A related approach in the sociology of scientific ignorance is the study of the circulation and non-circulation of scientific research across social fields. One form of scientific ignorance identified in the sociology of science literature is "sequestered knowledge" or "unseen science" (Frickel 2014; Richter, Cordner, and Brown 2018). Industry or government sequestering of

research and data that could potentially save lives has been recognized in studies of diverse industries such as tobacco, nuclear energy, asbestos, and hydraulic fracturing (Greene 1999, Kinchy and Schaffer 2018). However, it is difficult to keep the science unseen, especially if scientists within an organization have identified risks and are concerned with the ethics of keeping the knowledge from public scrutiny. Sometimes they leak the knowledge or decide to become a whistleblower. Doing so generally triggers suppression such as job loss, reassignment, investigations, litigation, reputation attacks, and loss of funding (Martin 2012). As knowledge spreads about suppression, the cautionary tales can contribute to a perception among researchers in the field that the research topic constitutes "forbidden knowledge," or normatively proscribed knowledge that is "too taboo, sensitive or controversial to produce" (Kempner et al. 2011: 483). Like undone science, there is a second-order form of unseen science, which occurs because of the self-censorship of researchers in the field who do not want to get tangled up in a controversy.

Even when science is communicated outside the scientific field, it can be subject to distortions (Oreskes and Conway 2010). The distortions can include attacks on the methods and reputations of scientists by contrarian industry scientists. However, there is a broader set of distortions that occurs as the knowledge circulates in the media and other social fields. Cordner terms these distortions of science in the public sphere "strategic science translation," or "the process of interpreting and communicating scientific evidence to an intended audience for the purposes of advancing certain goals and interests" (2015: 992). She describes three mechanisms for the generation of distorted science: selected publicizing of evidence, describing findings to highlight uncertainty, and deliberate misrepresentation of research.

## Remediation

Research on scientific ignorance has also identified mechanisms of remediation. In the case of science that has been censored or suppressed, media coverage can lead to backfire that encourages other scientists to investigate the problem and to engage in independent research (Martin 2007). Another mechanism is litigation, where the discovery process can show that companies censored the knowledge or otherwise worked to suppress its visibility in the public sphere. For example, in an analysis of industry-produced science about the health risks of fluorinated compounds that was not disclosed to regulators or the public, Richter and colleagues (2018) described one of the mechanisms by which the sequestered knowledge becomes unlocked. In a civil lawsuit, which emerged from lay knowledge of the effects of exposure on farm animals, regulators became aware of the research through the discovery process.

A second mechanism of remediation is to develop sources of funding to get undone science done. In the same study, Richter and colleagues (2018) showed how in a second lawsuit, funding became available to undertake epidemiological studies, thus making it possible to get some of the undone science done. As knowledge of suppression and potential risks and uncertainties circulates, policymakers may respond by earmarking some funding. If they do not, independent foundations, large civil society organizations, and social enterprises, which have resources to hire scientists, can provide some countervailing power by funding alternative research programs and technologies (Hess 2009, Williams 2019).

Another mechanism of remediation involves developing counter-expertise to challenge patterns of distorted science that support official reassurances of safety. For example, in a study of undone science in an environmental contamination site in West Virginia, Bray (2017) showed how journalists demystified and interpreted the science for readers, challenged existing reassurances of safety with counter-expertise, and introduced new scientific forms. The journalists often did so by mobilizing the counter-expertise of scientists not affiliated with industry. The challenges help to motivate a study by the state government that showed how individuals were able to detect chemicals by smell at a threshold below that of existing analytical methods.

A fourth mechanism of remediation involves citizen science and popular epidemiology (Brown 1997). Growing interest in citizen science projects also indicates how communities can translate lay knowledge into research that in turn can help to bring in collaborations with scientists (Brown 2007, Ottinger 2010, Kimura and Kinchy 2019, Kinchy 2017). In addition to finding scientific experts such as toxicology researchers, communities also need to find experts in the law and in the government to ensure that the results are translated into remediation (Arancibia and Motta 2019). Increasingly, information technology and crowdsourcing are being used as resources to mobilize citizen science on a larger scale (Jalbert et al. 2017, Ottinger 2017).

Scientists or social scientists can also help to instigate community-based participatory research that helps to get undone science done. For example, Allen (2018) went beyond a critical analysis of undone science described above to formulate a second project that involved a high level of community participation in research that formulated questions that addressed their interests. This study showed elevated rates of adult asthma, cancer, diabetes, and other diseases in the communities in comparison with the country as a whole. The study was designed, conducted, and analyzed with community participation, thus creating a model of what Allen called “strongly participative” research, in line with Harding’s (2015) concept of “strong objectivity.” In a similar way, Kleinman and Suryanarayanan devised a series of collaborative experiments to use a more field-oriented methodology for evaluating the causes of honey-bee colony collapse disorder (Suryanarayanan et al. 2018). The teams included beekeepers, farmers, policymakers, and social scientists, and the deliberative process allowed trust to develop and methodological improvements that would not have been possible in field projects run completely by scientists. The results did not achieve statistical significance, but they displayed a pattern that associated higher intensity of agriculture with higher pathogen and parasite loads for the bees.

Likewise, Cordner, Richter, and Brown (2019) developed an analysis of the elements of “engaged public sociology” that can include participatory research. Their project on highly fluorinated compounds addressed undone science through multiple interventions, including working with environmental organizations, developing research projects, sharing results in the media, participating in regulatory processes, advising government officials, working with government scientists, and helping to network advocacy organizations and researchers through conferences. They also noted the consistency of their approach with the interest in STS in “making and doing” (Downey and Zuiderent-Jerak 2016, Wylie et al. 2017).

The analysis of remediation should also include the conditions under which actors may decide that gaining additional expertise and research may not be the best use of limited

resources. In other words, there are conditions under which it may be better to accept ignorance on a strategic basis. For example, in one area of France, community-based civil society advocacy organizations decided not to seek new research because they came to the conclusion that it would be dismissed as methodologically indecisive or lacking in rigor (Cardon et al. 2018). Likewise, the inquisitorial judicial system (compared with the adversarial system in the U.S.) grants judges more leeway in determining whether they will allow scientific evidence, thus giving the research more potential influence in judicial processes, or whether they will not allow it. Thus, one question that the sociology of scientific research can ask is under what conditions do mobilized publics find the tactics of getting undone science done and of mobilizing counter-expertise to be important in comparison with other tactics such as organizing public protest, lobbying government officials, and engaging in media campaigns. The choices are not mutually exclusive, but the selection of tactics is an important part of a general strategy, especially for groups that have limited resources.

## Conclusion

This brief review has shown how researchers have begun to delineate different types of scientific ignorance and to develop an analysis of the causal mechanisms for both the generation and remediation of ignorance. Sociological studies of ignorance have preceded the emergence of post-truth politics, and they likely will continue to exist when and if the term loses currency. This is partly because research on the sociology of scientific ignorance draws attention to the underlying structures of societal inequality that enable historical changes such as neoliberalization and post-truth politics to flourish (Hess et al. 2016). For those who wish to develop a sociological understanding of the institutional and structural dimensions of post-truth politics in addition to the types and mechanisms by which scientific ignorance is constructed, maintained, and undermined, the emerging tool-kit of concepts and mechanisms in the sociology of scientific ignorance is likely to be of value.

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