The Subterranean War on Science

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Science denial kills. More than 300,000 South Africans died needlessly in the early 2000s because the government of President Mbeki preferred to treat AIDS with garlic and beetroot rather than antiretroviral drugs (Chigwedere, Seage, Gruskin, Lee, & Essex,2008). The premature death toll from tobacco is staggering and historians have shown how it was needlessly inflated by industry-sponsored denial of robust medical evidence (Proctor, 2011). The US now faces the largest outbreak of whooping cough in decades, in part because of widespread denial of the benefits of vaccinations (Rosenau, 2012). According to the World Health Organization, climate change is already claiming more than 150,000 lives annually (Patz, Campbell-Lendrum, Holloway, & Foley, 2005), and estimates of future migrations triggered by unmitigated global warming run as high as 187 million refugees (Nicholls et al., 2011). A common current attribute of denial is that it side-steps the peer-reviewed literature and relies on platforms such as internet blogs or tabloid newspapers to disseminate its dissent from the scientific mainstream. In contrast, the publication of dissenting views in the peer-reviewed literature does not constitute denial.

The tragic track record of denial has stimulated research into its political, sociological, and psychological underpinnings (Dunlap, 2013; Jacobson, Targonski, & Poland, 2007; Kalichman, 2009; Lewandowsky, Oberauer, & Gignac, 2013; Lewandowsky, Gignac, & Oberauer, 2013; Oreskes & Conway, 2010). Although research has focused on diverse issues — from HIV/AIDS to vaccinations to climate change — several common variables have been isolated that determine whether people are likely to reject well-established scientific facts. Foremost among them is the threat to people's worldviews. For example, mitigation of climate change or public-health legislation threatens people who cherish unregulated free markets because it might entail regulations of businesses (Heath & Gifford, 2006; Kahan, 2010; Lewandowsky, Gignac, & Oberauer, 2013; Rosenau, 2012); vaccinations threaten Libertarians' conceptions of parental autonomy (Kahan, Braman, Cohen, Gastil, & Slovic, 2010; Lewandowsky, Gignac, & Oberauer, 2013); and evolution challenges people's religious faiths (Rosenau, 2012). Another variable that appears to be involved in science denial is conspiracist ideation (Kalichman, 2009; Lewandowsky, Gignac, & Oberauer, 2013; Lewandowsky, Oberauer, & Gignac, 2013; Lewandowsky, Cook, Oberauer, & Marriott, 2013; Smith & Leiserowitz, 2012). Thus, AIDS is

thought to be a creation of the US Government (Kalichman, 2009), climate change is a "hoax" perpetrated by corrupt scientists (Inhofe, 2012), and research into the health effects of tobacco is conducted by a "cartel" that "manufactures alleged evidence" (Abt, 1983, p. 127).

The conspiratorial element of denial explains why contrarians often perceive themselves as heroic dissenters who — in their imagination — are following Galileo's footsteps by opposing a mainstream scientific "elite" that imposes its views not on the basis of overwhelming evidence but for political reasons. Mainstream climate scientists are therefore frequently accused of "Lysenkoism," after the Soviet scientist whose Lamarckian views of evolution were state dogma in the Soviet Union. Other contrarians appeal to Albert Einstein's injunction ". . . to not stop questioning" to support their dissent from the fact that HIV causes AIDS (Duesberg, 1989).

This conspiratorial element provides a breeding ground for the personal and professional attacks on scientists that seemingly inevitably accompany science denial. The present authors have all been subject to such attacks, whose similarity is notable because the authors' research spans a broad range of topics and disciplines: The first author has investigated the psychological variables underlying the acceptance or rejection of scientific findings; the second author is a paleoclimatologist who has shown that current global temperatures are likely unprecedented during the last 1,000 years or more; the third and fourth authors are public-health researchers who have investigated the attitudes of teenagers and young adults towards smoking and evaluated a range of tobacco control interventions; and the fifth author has established that human memory is not only fallible but subject to very large and systematic distortions.

This article surveys some of the principal techniques by which the authors have been harassed; namely, cyber-bullying and public abuse; harassment by vexatious freedom-of-information (FOI) requests, complaints, and legal threats or actions; and perhaps most troubling, by the intimidation of journal editors who are acting on manuscripts that are considered inconvenient by deniers. The uniformity with which these attacks are pursued across several disciplines suggests that their motivation is not scientific in nature.

In light of the lethal track record of denial, one might expect opprobrium to be reserved for those who deny the public's right to be adequately informed about risks such as AIDS or climate change. Paradoxically, however, it is scientists whose research aims to inform the public of such risks who have been at the receiving end of hate mail and threats. Thus, the first author has been labeled a "Nazi zionist kike" and has been accused of "mass murder and treason." The second author has been attacked on a neo-Nazi website and has received envelopes with a powdery white substance resembling Anthrax (Mann, 2012). The third author has received anonymous abusive emails and nighttime phone calls in her home. This abuse is at least in part orchestrated because the frequency of such emails tends to increase when scientists' e-addresses are posted on contrarian websites.

Other attempts of intimidation have involved the solicitation of potentially compromising information from the first author by a non-existent internet "sock puppet" whose unknown creators pretended to be victimized by climate deniers — and who then splattered the private correspondence on the internet (Lewandowsky, 2011). At a public level, an American lobbying outfit has recently likened climate scientists to the Unabomber in a billboard campaign, and a British tabloid journalist entertained the execution of the second author by hanging in what passes for a "mainstream" newspaper in the UK (Delingpole, 2013).

Another common tool of harassment involves FOI requests. Under many legislations around the world, email correspondence by an academic is subject to almost unconditional release. During the last 9 months, the first author has been subject to numerous requests for correspondence and other documents, including trivial pedantry such as the precise time and date stamps of blog posts. In a paradoxical twist, accusations of impropriety were launched against the first author when an FOI-release confirmed that inconvenient research (Lewandowsky, Oberauer, & Gignac, 2013) was conducted *with* ethics approval. The allegations — by bloggers unaccountable to any form of review or ethical scrutiny — cited the fact that ethics approval was granted expeditiously (for details, see Lewandowsky, Cook, et al., 2013). The second author and his former university endured vexatious demands for the release of personal email correspondence by Virginia's Attorney General. Those actions attracted national and international attention and were labeled a "witch hunt" by *Nature* (2010). The demands were ultimately rejected with prejudice by the Virginia Supreme Court. Other attacks on the second author involved front groups like the "American Tradition Institute" and the "Competitive Enterprise Institute" which sought access to his personal emails, professional notes, and virtually every imaginable document from his entire career. The third and fourth authors' research center on tobacco control has been subject to a number of extensive FOI requests from a tobacco giant, Philip Morris International, for confidential interview records involving teenaged participants. Notably, the identity of Philip Morris was disguised during the first FOI request, which was launched with a law firm serving as a front group (Hastings, MacKintosh, & Bauld, 2011). The information requested included "all primary data," "all questionnaires," "all interviewers' handbooks and/or instructions," "all data files," "all record descriptions," and so on.

The use of FOI to obtain correspondence or research data mirrors legislative attempts by the tobacco industry to gain unhindered access to epidemiological data (Baba, Cook, McGarity, & Bero, 2005). At first glance, it might appear paradoxical that the tobacco industry would sponsor laws ostensibly designed to ensure transparency of research, such as the Data Access Act of 1998. However, the reanalysis of inconvenient results by obtaining the raw data is a known tool in the arsenal of vested interests: Michaels (2008) shows how epidemiological data have been subjected to industry-sponsored re-analysis because of their regulatory implications,

such as the link between tobacco and lung cancer or the link between bladder cancer and chemicals used in dye production. Re-analyses by industry bodies often fail to detect such well-established links (e.g., Cataldo, Bero, & Malone, 2010; Proctor, 2011). Similarly, results by the first (see Lewandowsky, Cook, et al., 2013), second (see Mann, 2012), and third (Sims, Maxwell, Bauld, & Gilmore, 2010) author have been reanalyzed on internet blogs (sometimes by the same individuals). Those reanalyses used various tricks, such as the violation of strong statistical conventions relating to the inclusion of principal components, to attenuate the inconvenient implications of the research—specifically, that the warming from greenhouse gas emissions is historically unprecedented (Mann, Bradley, & Hughes, 1998) and that those who oppose this scientific fact tend to engage in conspiracist ideation (Lewandowsky, Oberauer, & Gignac, 2013; Lewandowsky, Gignac, & Oberauer, 2013). Another tactic to discredit "inconvenient" peer-reviewed results involves publishing alternative versions of "the evidence" using different sources that proport to be equally legitimate. For example, the third author's review of the impact of smoke-free legislation in England, published by the UK government (Bauld, 2011) was the subject of a report by Imperial Tobacco, the world's fourth-largest tobacco company. Entitled "The Bauld Truth" as a play on the third author's name (Imperial Tobacco, 2011), it presented alternative, non peer-reviewed evidence as more viable and opened with the statement that the third author's review was "lazy and deliberately selective". Anyone familiar with climate disinformation on the internet will recognize those rhetorical tools as the standard fare of dismissal of inconvenient science.

A further line of attack involves complaints by members of the public to scientists' host institutions with allegations of research misconduct. The format of those complaints ranges from brief enraged emails to the submission of detailed, elaborately-formatted multi-page dossiers. The scientific literature on querulous complainants (e.g., Lester, Wilson, Griffin, & Mullen, 2004; Mullen & Lester, 2006) explicates the nature of the majority of such complaints. However, not all complaints to universities are from querulous individuals: The tobacco industry, specifically Philip Morris, used complaints to scientists' deans or department heads as part of their action plan to discredit researchers who investigated the health risks of smoking (Landman & Glantz, 2009).

The fifth author has experienced a particularly chilling legal attack based on an article that disputed the legitimacy of the claim by an individual (whose name was not released) that she had with the help of a psychiatrist recovered a "repressed childhood memory" of sexual abuse by her mother (for a review of the case, see Geis & Loftus, 2009). Although the suit was ultimately settled, the complaints to the university delayed publication—or indeed any public mention—of the research by several years (Loftus, 2003).

Those attacks on scientists by personal abuse, vexatious use of FOI and the complaints process,

and legal proceedings, have not only consumed valuable time, thereby delaying research, but have also taken an emotional toll. Those attacks have caused considerable trauma among some junior scientists known to us. However, the problem does not end there. Even more concerning is another line of attack that directly targets the integrity of the scientific process: We are concerned about the activities of individuals outside the scientific community and of little scientific standing, who systematically insert themselves into the peer-review and publication process to prevent the publication of findings they deem inconvenient. Those insertions typically involve emails to editors which have been described as "bullying" by some parties involved. Far from being isolated incidents, at last count we have identified 7 editors of several journals who have been subject to such bullying tactics across two disciplines; viz. climate science and psychology.

Once again, precedents for those attempts to subvert the scientific process involve the tobacco industry. A 1995 Philip Morris action plan explicitly devised strategies to interfere with funding of health research. Those strategies included approaches to the appropriations committee of Congress (albeit without raising the profile of the tobacco industry), and the writing of letters critical of public-health research to the editors of scientific journals by associates of the industry's Tobacco Institute (without necessarily revealing their associations). Landman and Glantz (2009) show how this plan was translated into action.

What are the consequences of such insertions by external parties into the scientific process? There is little doubt that pressure from the tobacco industry affected the course of medical research, if only by consuming massive amounts of scientists' time that could otherwise have been devoted to research (Landman & Glantz, 2009; Proctor, 2011). It also delayed the translation of that research into interventions and policies that could have saved lives by reducing smoking rates. There is also a growing body of literature which suggests that the aggressive efforts by climate deniers have adversely affected the communication and direction of climate research (Brysse, Oreskes, O'Reilly, & Oppenheimer, 2013; Freudenburg & Muselli, 2010; Lewandowsky, Oreskes, Risbey, Newell, & Smithson, 2013), and allegations of defamation have led to the re-examination of one of the first author's papers to eliminate legal risks that is ongoing at the time of this writing (Lewandowsky, Cook, et al., 2013).

How should the scientific community respond to the events just reviewed? As in most cases of intimidation and bullying, we believe that daylight is the best disinfectant. This article is a first step in this effort towards transparency. Knowledge of the common techniques by which scientists are attacked, irrespective of their discipline and research area, is essential so that institutions can support their academics against attempts to thwart their academic freedom. This information is also essential to enable lawmakers to improve the balance between academic freedom and confidentiality of peer review on the one hand, and the public's right to

access information on the other. Finally, this knowledge is particularly important for journal editors and professional organizations to muster the required resilience against illegitimate insertions into the scientific process.

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