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# On the suppression of vaccination dissent

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## Abstract

Dissenters from the dominant views about vaccination sometimes are subject to adverse actions, including abusive comment, threats, formal complaints, censorship, and deregistration, a phenomenon that can be called suppression of dissent. Three types of cases are examined: scientists and physicians; a high-profile researcher; and a citizen campaigner. Comparing the methods used in these different types of cases provides a preliminary framework for understanding the dynamics of suppression in terms of vulnerabilities.

Keywords: vaccination; dissent; reputation; free speech; controversy

## Introduction

Vaccination has long been a contentious topic (Colgrove, 2006; Johnston, 2004). The orthodox position, adopted by most physicians and government health departments, is that vaccination is vital in reducing illness and death from infectious disease (Andre et al., 2008; Offit and Bell, 2003). Health authorities specify a recommended schedule of vaccinations for babies and children. As new vaccines are developed and tested, they are added to the schedule to reduce morbidity and death from additional diseases. The orthodox position is that adverse reactions to vaccines are rare, and insignificant compared to the benefits.

In the face of this dominant position, a number of physicians, scientists, and citizens argue that vaccination has significant shortcomings. They question the scale of the benefits, noting how death rates from infectious diseases declined dramatically before the introduction of mass vaccination. They maintain that the adverse effects of

vaccination have been underestimated (Habakus and Holland, 2011; Halvorsen, 2007).

The vaccination debate is not just a disagreement about evidence concerning benefits and risks: values are involved too. For infectious disease to spread, there need to be susceptible individuals. Mass vaccination, according to proponents, reduces the likelihood of spread, because most people are immune. The result is what is called "herd immunity," causing an additional decline in disease even beyond vaccine-induced individual immunity. Because of this collective benefit, including the protection of those unable to be immunized, proponents see widespread vaccination as a moral imperative.

Critics, on the other hand, support parental choice in vaccination decisions. They oppose penalties for not vaccinating, such as requirements that children be fully vaccinated in order to attend school.

The vaccination debate can be incredibly emotional on both sides. Partly this seems to be because children's health is involved: parents react to their children becoming ill from infectious disease or suffering reactions to vaccines. The clash between collective benefits (herd immunity) and freedom of choice adds to the mix. Because vaccination is a signifier for the benefits of modern medicine, some proponents see any questioning of vaccination as a rejection of enlightened thinking.

When physicians and health authorities support vaccination based on careful assessments of benefits and risks, they may dismiss citizen critics as ill-informed. Because nearly all experts endorse vaccination, there may seem to be no rational basis for opposition. In this context, any physician or scientist who questions vaccination is a potential threat to the public perception that credentialed experts unanimously endorse vaccination. This sets the stage for suppression of dissent.

Suppression of dissent is action taken against dissenting individuals, or the research supporting their positions, that goes beyond fair debate. Methods of suppressing individuals include spreading of rumors, vilification, harassment, reprimands, demotions, deregistration, and dismissal (Martin, 1999a). Methods of suppressing research data include censorship, denial of funding, and denial of access to research materials (Martin, 1999b). There is an overlap between these modes of suppression. For example, a scientist's grant applications might be rejected, thereby denying opportunities for research.

Debate is a normal and desirable feature of the scientific enterprise. Suppression is different from debate in that individuals, and their capacity to do research and engage in debate, are targeted. Suppression is important because it skews research agendas and public discussions.

The focus here is on suppression of vaccination critics. In principle, it is possible for vaccination supporters to be suppressed, though in practice this is unlikely because critics do not have any significant capacity to impose sanctions.

It is worth mentioning that the existence of suppression of dissent does not necessarily mean dissenters are correct, nor that researchers deserve funding merely

for dissenting. However, even if dissenters are completely wrong, suppressing them can be damaging in several ways (Sunstein, 2003). It sets up a pattern of unfair behavior that can hinder open discussion of issues even within the dominant viewpoint. It discourages supporters from thinking for themselves about the evidence and arguments, because they encounter contrary views less frequently. Critics can keep advocates honest and alert, with their arguments well formulated. Finally, suppression can aid the cause of critics by making them feel unfairly treated: some observers may wonder why proponents cannot rely on the arguments. When the struggle is open and honest, the outcome will seem more legitimate.

My own involvement in the vaccination debate is primarily as a defender of fair and open debate on contentious issues, given my long-term interest in dissent (Martin, 1981; Martin et al., 1986). Personally, I do not hold strong views about vaccination.

The next section provides additional background about suppression of dissent, including triggers, methods, patterns, and tests. The following sections outline several cases, falling into three main types: scientists and physicians; a high-profile researcher; and a citizen campaigner. Following this is a comparison of the suppression methods used in the three types of cases. The conclusion spells out the implications of suppression for the vaccination issue.

## Suppression of dissent

Dissent is a disagreement with or challenge to standard views. Historically, the most familiar type is political dissent, especially any questioning of an authoritarian government. Struggles for political freedom have included, as a central feature, struggles for free speech, most famously articulated in the first amendment to the US Constitution.

Free speech remains contested even in countries where it is rhetorically supported and legally protected, with many examples of attacks on those who speak out (Boykoff, 2006; Curry, 1988; Ewing and Gearty, 1990; Goldstein, 1978; Hamilton and Maddison, 2007; Jones, 2001; Soley, 2002). In many countries, especially those with repressive governments, criticism of the government remains a subversive activity, sometimes met with harsh measures.

Political speech is only one type of dissent. Others include challenges to corporations, professions, churches, and indeed any group with the capacity to influence opinions and exact reprisals.

A major gap in free speech protection is speech within organizations. Employees are seldom granted the same protections as citizens (Barry, 2007; Ewing, 1977; Kassing, 2011). Whistleblowers, who are often employees, are often met with reprisals (Alford, 2001; Glazer and Glazer, 1989; Miceli et al., 2008).

Dissent in science can be understood within this wider context. In principle, scientists can speak out, challenging orthodoxy or powerholders. Indeed, within science, being able to question and challenge ideas is widely seen as essential for scientific advance. When governments impose a view about a scientific matter, as in

the case of Lysenkoism in the former Soviet Union (Joravsky, 1970), this is seen as an outrageous denial of scientific freedom.

In practice, scientific dissent remains risky (Deyo et al., 1997; Martin, 1999a, b; Moran, 2004; Sommer, 2001). A typical scenario goes like this. A scientist does research, or speaks out, in a way that threatens a powerful group and, as a result, comes under attack. The form of the attack depends on the circumstances, in particular on the scientist's vulnerabilities and on the resources available to attackers. The scientist's reputation can be harmed by the spreading of rumors, open denunciations, and formal proceedings with attached stigma. The scientist's opportunity to express views can be hindered by direct censorship (such as refusing permission to give talks or make public comments) and by rejecting articles. The scientist's opportunity to do research can be hindered by refusing access to data or research facilities, and by rejecting research grant applications. Finally, a scientist's livelihood can be threatened by dismissal.

The four areas of reputation, speech, research, and employment often interact. For example, a formal investigation into a scientist's alleged misdemeanors serves to harm the scientist's reputation and, by requiring large amounts of time and effort to defend, limits the scientist's opportunity to do research.

It is reasonable to ask, how can anyone know whether suppression of dissent is involved? After all, many of the actions involved, such as rejecting articles, rejecting grant applications, and dismissal, can be taken for quite legitimate reasons. The rumors might well be true, and public denunciations warranted. A scientist subject to such adverse actions might just be a poor researcher or, even worse, a cheat.

To determine whether actions are taken for legitimate reasons or can be characterized as suppression of dissent, there is ultimately no substitute for a detailed analysis of claims and actions. This can be a major undertaking, because many cases involve incredible detail, with claims and counter-claims and a complex set of circumstances (e.g., Delborne, 2008). However, there are a few convenient tests that can be used to make a preliminary judgment (Martin, 2013). In the following, for convenience I refer to a scientist; the same sorts of processes apply to physicians and others with specialist training and credentials.

First is the timing of actions. If a scientist speaks out and shortly afterwards is subject to adverse actions, this increases the chance that the adverse actions were reprisals. Reprisals against whistleblowers often display this timing correlation.

Second is the question of who receives criticism and complaints. When criticisms are made directly to a scientist, this usually can be understood as part of a process of dialogue and debate. When complaints are initially made to a scientist's boss, a government agency, or professional association, this often indicates an attempt to suppress dissent, aside from those situations in which mandatory reporting procedures are applicable.

Third is the double standard test. The scientist who is the target of adverse actions can be compared to other scientists who are not, in terms of publications, reputation, rank, seniority, and prior work evaluations. If the targeted scientist is equal to or

superior to others in terms of performance, this raises suspicion that suppression is involved.

Fourth is the relationship to vested interests. If the scientist's research or public statements are threatening to a government, powerful corporation, profession or dominant orthodoxy, this is a plausible reason for suppression to occur.

Fifth is a pattern of similar adverse actions. In some fields, there are many examples of critics who experienced adverse actions. For example, quite a number of scientists who are critics of nuclear power, pesticides, and fluoridation have been targets of attack (Martin, 1999a).

When several of these criteria are satisfied, this is a strong indication that suppression could be involved. Consider a scientist who speaks out critically about an issue and threatens a group with vested interests. Shortly afterwards, the scientist is denounced for poor work, whereas colleagues of lesser standing are left untouched. This combination of events provides strong prima facie evidence that suppression is involved.

Note that the analysis of suppression is largely independent of an assessment of the scientific validity of the claims made. The index of suppression is whether norms of fair treatment are followed, including for assessing publications, allowing free speech and allowing investigation of unfashionable topics. It is quite possible for a researcher to be completely wrong scientifically and yet be suppressed; likewise, it is quite possible for a researcher to be vindicated scientifically and yet to have been the recipient of favoritism in violation of norms of fairness. A classic case is the response to the astronomical and geological theories of Immanuel Velikovsky when first publicized in the 1950s: mainstream scientists, in rejecting Velikovsky's ideas, violated norms of fair play, for example in condemning Velikovsky by appealing to their own authority as scientists rather than examining the evidence, and by seeking to censor publication (de Grazia, 1966). Nearly all scientists believe Velikovsky was wrong, but aspects of his treatment can still be classified as suppression.

The consequences of suppression can be severe: harm to reputation, hindrance of research, and even destruction of a career. Although the individual who is targeted suffers the most, the wider impact can be greater. Suppression of dissent can send a powerful signal to other scientists that it is risky to do research or speak out on certain topics. This chilling effect on research and speech can lead to entire research areas being neglected or distorted. Suppression thus operates as a tool in struggles over research agendas.

## Suppression cases

Here, several cases are described that seem to fit the criteria for suppression of dissent. The accounts here are brief and intended only to introduce material relevant to the possibility of suppression being involved, not to provide comprehensive treatments. Further information about the cases, from different perspectives, can be found in the references cited, and additional references cited in them. The accounts here do not address the validity of the dissent; rather, they invoke the tests, outlined in the previous section, for making a preliminary judgment.

First are two cases, involving a researcher and a physician, that are typical of suppression cases in other fields. Next is a high-profile case involving a researcher. The final case involves a citizen critic of vaccination.

### *A researcher and a physician*

From 1995 to 2002, Gary Goldman served as the research/epidemiology analyst on a project studying chickenpox funded by the Centers for Disease Control and Prevention (CDC). The project was run in cooperation with the Los Angeles County Department of Health Services (LACDHS). Goldman discovered an increase in shingles among *un* vaccinated children and adults and hypothesized that this was associated with the universal varicella (chickenpox) vaccination program, with the idea that prior to widespread vaccinations, most people through interpersonal interactions were repeatedly exposed to varicella, thereby preventing shingles. Apparently because the co-principal investigators on the project wanted to protect the varicella vaccination program, Goldman's collaboration with a CDC modeler was terminated and Goldman was instructed not to continue his investigations into the incidence of shingles.

When Goldman sent copies of papers to his superiors, he received no feedback for months, even years; in contrast, their own paper, not challenging vaccination orthodoxy, was reviewed within a day. Goldman was formally required to have all his e-mails pre-screened by his superiors. He asked to interview ten shingles patients to gain extra information; his request was not answered. He resigned in 2002, feeling he did not have proper support to undertake objective research.

After Goldman independently submitted papers to peer-reviewed journals and contacted the CDC about appropriate co-authorship credits, he received a letter from the Los Angeles County Legal Department to "cease and desist" publication in a medical journal. This letter was initiated by Dr Laurene Mascola, head of the Acute Communicable Disease Control Unit of LACDHS. Goldman's lawyer said this order had no legal merit and that if it was pursued, he would file a legal action under state and federal false claims acts. The LA County Legal Department did not follow up with any action. Goldman's opponents also contacted editors to try to prevent or postpone publication of his papers (Goldman and King, 2013; Orrin, 2010). Goldman's claims about varicella have been challenged in print (Myers, 2013) but not his claims about his treatment.

Jayne Donegan, a British general practitioner, was initially supportive of vaccination. Years into her practice, she had doubts and undertook a comprehensive study drawing on the medical literature. She later agreed to testify on behalf of two mothers who opposed vaccinating their children: the children's absent fathers had gone to court to mandate vaccinations. The General Medical Council, hearing comments about the case in the mass media, accused Donegan of professional misconduct. More than two years later, in 2006, the GMC produced its charges that Donegan had misrepresented the scientific evidence she had quoted in the court case (Dyer, 2006). The GMC lost the case and Donegan was completely exonerated (Dyer, 2007; GMC, 2007). However, the bringing of charges stigmatized her, and the necessity to prepare lengthy rebuttals to the GMC's chosen experts took an enormous amount of time and effort. Donegan was only able to afford to contest the GMC's charges because of Medical Indemnity Insurance, which covered the more than

£100,000 cost of legal fees, but not the considerable costs of accommodation and lost income. In the conclusion of Donegan's account of the experience, she states, "Pleased as I am with the successful conclusion of my hearing, it has taken an inevitable and heavy toll on my children, our family and my professional life." (Donegan, 2008)

### *A high-profile researcher*

Andrew Wakefield was a gastroenterologist at Royal Free Hospital in Britain. He was lead author in a study of 12 children who developed gastrointestinal symptoms linked to regressive autism. The paper, published in 1998 in the prestigious medical journal *The Lancet,* was a case review study: it presented evidence suggestive of a new disease syndrome, with a possible but unproven link to the MMR (measles, mumps and rubella) triple vaccine (Wakefield et al., 1998).

On publication, and with the approval of the hospital administration, Wakefield took part in a press conference. Wakefield suggested it might be safer for the measles vaccine to be taken separately - he did not argue against vaccination - and many parents opted for single vaccines. Six months later, the British government withdrew the availability of single measles, mumps and rubella vaccines on the National Health Service, and vaccination rates declined.

The *Lancet* study became a major media event, with the possible link between MMR and autism turned into a giant scare. Much of the blame for the decline in vaccination rates was attributed to Wakefield; Goldacre (2009: 290-331) instead blames the media.

Journalist Brian Deer (2004) made allegations about Wakefield, leading to a lengthy case before the General Medical Council (GMC), which found Wakefield guilty of dishonesty and abuse of children who were subjects in the research, and stripped him of his license to practice medicine (GMC, 2010). *The Lancet* then retracted the paper as flawed, a rare event in scientific publishing. Wakefield left the country and started a new career in the US. Later, Deer (2011) made new allegations against Wakefield. John Walker-Smith, a co-author with Wakefield of the paper in *The Lancet,* who was found guilty by the GMC along with Wakefield, was later cleared in a court action.

Critics of Wakefield say the sanctions taken against him and his work were justified by the seriousness of his transgressions. Wakefield (2010) contests the claims made by Deer, the General Medical Council, and others. The issues in the Wakefield saga have been analyzed at great length, and it is impossible to do justice to all the arguments in a short account. The modest aim here is determine whether the treatment of Wakefield fits into the category of suppression of dissent. The key criterion used here is the double standard test: have others guilty of transgressions similar to those alleged of Wakefield been treated in a similar way?

There is evidence of extensive bias in biomedical research, including undeclared conflicts of interest, withholding evidence, manipulating statistics, using bioactive placebos, ghostwriting, and much else (Abraham, 1995; Angell, 2005; Braithwaite, 1984; Goldacre, 2012; Kassirer, 2005; Krimsky, 2003; Smyth et al., 2010; Stamatakis

et al., 2013). These serious violations of research ethics seldom result in any penalties for the violators, much less the sort of banner treatment suffered by Wakefield. Plagiarism by students, for example, is treated as a serious violation; ghostwriting is a form of plagiarism, but is seldom penalized: "... to the best of my knowledge, no academic anywhere in the world has ever been punished for putting their name on a ghostwritten academic paper." (Goldacre, 2012: 298).

Thus, even if Wakefield is guilty as charged, his treatment might be considered excessive by the norms in the field. If he is not guilty, as he argues (Wakefield, 2010), then his treatment is even more obviously excessive. The key difference between Wakefield and others in the field is that the others are working for or funded by pharmaceutical companies and/or not challenging biomedical orthodoxy.

Some critics of Wakefield refer to the further claims by Brian Deer (2011) of fraud in clinical practice. There is a double standard here in the level of scrutiny to which Wakefield has been subjected. Few other scientists have had their research put through such an intense interrogation. Given the prevalence of bias and poor-quality research in biomedicine, it is quite possible that others subject to the same level of scrutiny would come up wanting.

Unlike most of his peers, Wakefield has been subject to a degradation ceremony, a ritualistic denunciation casting him out of the company of honest researchers (Thérèse and Martin, 2010). By degrading Wakefield's reputation, vaccination is symbolically vindicated and the credibility of any criticism undermined. Supporters of vaccination have repeatedly used the example of Wakefield to suggest that criticism of vaccination is misguided (e.g., Grant, 2011: 105-124; Offit, 2010). The logic of using Wakefield's ignominy as an argument in defense of vaccination is not replicated in the case of a single biomedical scientist who supports standard views. Considering that bias and conflict of interest are endemic to pharmaceutical-company-sponsored research, it is striking that no supporter of orthodoxy concludes that this discredits support for pharmaceutical drugs generally. (Some critics draw this conclusion.)

Wakefield's extended degradation ceremony has served as a warning to others not to follow in his footsteps. In contrast, no pharmaceutical company scientist has been subject to an equivalent investigation and denunciation. There seems to be relatively little career risk in accepting corporate funding and participating in biased research, undeclared conflicts of interest, or ghostwriting. The public signal then is to avoid challenging orthodoxy.

This assessment of the Wakefield saga has had a limited objective: to determine whether he has been dealt with in the same way as other scientists with similar records but who have not challenged orthodox views on vaccination. If the case presented by Wakefield and his supporters (CryShame, 2014; Wakefield, 2010; Walker, 2012) is accepted, then suppression of dissent definitely has been involved. If, on the other hand, the case presented by Wakefield's critics (Deer, 2011; GMC, 2010) is accepted, it is not feasible to make an informed assessment about suppression on present evidence: because the scrutiny of Wakefield has few comparators, it is not possible to do a simple double-standard comparison.

This assessment does not address the question of whether Wakefield's research was valid or whether he violated medical ethics by not declaring a conflict of interest, much less whether his views about the measles vaccine are valid. Wakefield may have been suppressed, or he may have been treated fairly in light of his transgressions, but it is difficult to say for sure given that none of his orthodox peers have had their work investigated to the same level.

### *A citizen campaigner*

Meryl Dorey is an Australian campaigner critical of government vaccination policy. After her son suffered adverse reactions to vaccines, in 1994 she set up a citizens' group, the Australian Vaccination Network (AVN), which presented the negative aspects of vaccination and argued for parental choice in vaccination choices for their children. The AVN is similar to other vaccine-critical groups in various countries (Hobson-West, 2007).

Although Dorey lacks any training or credentials relevant to the vaccination issue, through years of personal study she became a formidable commentator and debater. This was significant in the Australian context, because there has been only one Australian scientist or physician - namely, scientist Dr Viera Scheibner - who has been an outspoken critic of vaccination (Scheibner, 1993). Dorey, through her strenuous efforts, became the highest profile figure able to muster facts and figures critical of vaccination.

In 2009, a group called Stop the Australian Vaccination Network (SAVN) was set up with the stated aim of shutting down the AVN. SAVN's main presence was a Facebook page with thousands of friends. Those linked to SAVN - called here SAVNers - included some physicians, nurses, and other professionals, but there were no apparent links to professional organizations, such as the Australian Medical Association.

SAVNers and others used various techniques to attack the AVN. Dorey was singled out as a key target (AVN, 2014; Martin, 2011, 2012a; SAVN, 2014).

- SAVN made unsupported claims that the AVN believed in a global conspiracy to implant mind-control chips via vaccination.
- SAVNers made abusive comments about Dorey and vaccine critics, and created derogatory images.
- SAVNers made dozens of complaints about the AVN to government agencies, serving as a form of harassment on those occasions when the AVN had to respond.
- When Dorey was scheduled to give a talk, SAVNers wrote to the venues criticizing her and seeking to prevent her speaking.
- After Dorey was interviewed or reported in the media, SAVNers complained to the media companies, seeking to discourage them from giving her any visibility.
- When Dorey commented on blogs of other vaccine-critical groups, SAVNers joined the blogs and disrupted the conversations through hostile comments about Dorey and the beliefs of the bloggers.
- Another group, Vaccine Information and Awareness Society, posted a "Hall of Shame" with names and addresses of critics of vaccination and of individuals

and businesses who had advertised in the AVN's magazine *Living Wisdom,* opening them to harassment.
- Anonymous individuals sent pornographic images to Dorey and others in the AVN.
- Anonymous individuals made threatening calls to Dorey's phone. Two such calls were recorded and traced to the home of a founder of SAVN.

## Discussion

Each of the individuals discussed here was critical, to some degree, of vaccination orthodoxy, and each was subject to adverse actions. The question, in each case, is whether the adverse actions were linked to their dissent on vaccination.

Their antagonists, in every instance, justified their actions by the shortcomings of the individual. What is distinctive is they never use the double standard test: in no case have the vaccine critic's performance and behavior been carefully compared to others who are pro-vaccination. Adverse actions are always justified on a case-by-case basis, with the standards essentially created for the occasion.

The analysis here is preliminary. Each of these cases could be investigated in more detail, and other cases examined. However, even with this limited data set, it seems plausible to conclude that a key factor in the actions taken against these individuals was their criticism of vaccination. Additional support for this conclusion comes from the pattern in this area.

The best counter-evidence to this conclusion would be a set of examples in which individuals supportive of vaccination suffered reprisals. Many more cases would be needed to provide convincing counter-evidence, given that there are many more supporters than critics of vaccination, especially among scientists and physicians.

One argument for the actions against critics is that it is not credible to criticize vaccination. Sometimes the label "anti-vaccination" is used, though seldom defined. For supporters of the orthodoxy, it seems that anyone who criticizes the orthodoxy in any way is labeled "anti-vaccination," though many of the critics have concerns only about some vaccines or about vaccination schedules. Sometimes the label "anti-science" is applied to critics, implying that there can be no legitimate scientific concerns about vaccination.

Although the number of cases is small, they can be used to illustrate the different sorts of vulnerabilities of individuals in different situations. It is useful to consider the four key areas of reputations, speech, research opportunities, and employment.

***Reputation*** In all cases, the individual's credibility was a key target for attack. Credibility can be damaged in several ways. The most direct is through derogatory comments, for example through abusive blogs or hostile media stories. However, probably more important is the reputation damage caused by official actions, such as deregistration hearings and adverse findings, such as *The Lancet* 's retraction of Wakefield's paper and the public warning about the Australian Vaccination Network issued by the Health Care Complaints Commission (HCCC). Official bodies are seen by many in the public as being fair-minded, namely as dispensing justice, even when

they are running an agenda, so when they take action it can be highly damaging to reputations. This is true even when the actions are later exposed as invalid, as was the HCCC's legal authority to issue a warning about the AVN. The impact of official actions is augmented by the efforts of pro-vaccination campaigners, who repeatedly highlight the official actions, and by journalists, who treat the statements of official bodies as newsworthy.

***Speech*** Communication opportunities include publication of scientific articles, papers given at scientific conferences, interviews in the mass media, and public talks. Different forums offer differing levels of credibility and different sorts of audiences. Attempts were made to prevent Goldman from submitting scientific papers and having them published. This sort of censorship was aimed at limiting his access to a highly credible forum, namely the scientific literature. In contrast, a citizen campaigner like Dorey seeks primarily to address wider audiences. Attempts were made to block her access to speaking venues and to news media.

***Research opportunities*** For scientists, doing research may require laboratory facilities, access to research subjects, and funding to hire staff and pay for materials. Withdrawing or preventing research opportunities is a means for suppressing dissent. For example, Goldman was not given permission to interview parents about shingles, thereby blocking his capacity to deepen his studies. Research opportunities are less relevant to those not undertaking research, such as physicians and citizen campaigners.

***Employment*** Having a job provides income and sometimes may offer professional opportunities and enhance one's reputation. The threat of losing one's job or even one's career can be enough to discourage dissent. Scientists and physicians alike are vulnerable to threats to their employment. Deregistration can serve to bar a physician from their career, at least without making a huge upheaval. Donegan was threatened with deregistration; Wakefield was deregistered and left Britain to continue his career. In contrast, some citizen campaigners, such as Dorey, are less dependent on career employment. They may need to a job for purposes of income, but are not tied to a particular profession: they can obtain a job in an area unrelated to their dissent.

## Conclusion

The cases described here provide evidence for a pattern - not a conspiracy - of suppression of vaccination dissent. A more comprehensive analysis would look at a larger number of cases and do a more systematic comparison between dissenters and non-dissenters. However, even the limited number of cases treated here is enough to suggest that suppression of dissent occurs and to give some preliminary indications of methods used in different circumstances.

It is predictable that attacks on dissent will target the specific vulnerabilities of individual dissenters. Four main areas of potential vulnerability are apparent from the case studies: reputation, speech, research opportunities, and employment. Researchers can be targeted in all four areas, whereas physicians and citizen campaigners do not need to do research. Citizen campaigners are especially difficult

to suppress, as suggested by the scale and diversity of the attack on Meryl Dorey and the Australian Vaccination Network.

Researchers are especially significant because of their status as scientists. In an area where health departments, prestigious scientists and physicians all support a position, even a few dissenting scientists can make a huge difference to public perceptions: they change the issue from apparent unanimity into one involving credible debate. This is why, in such circumstances, suppression of dissent is so important. If dissenters can be silenced or discredited, then it seems as if all experts agree. All that remain are citizen activists.

In an arena where citizens are the main critics of orthodoxy, a slightly different process can occur. Citizen campaigners who develop a profile remain a threat to orthodoxy, though not so potent as dissident scientists and physicians. Dorey developed considerable knowledge and skills, and few supporters of vaccination were willing to debate her. By silencing and discrediting her and her organization, visible dissent would be greatly reduced.

The consequences of suppressing dissent can be quite significant. Most obviously, the careers of those targeted can be disrupted or destroyed. Probably more important is the chilling effect: when others see what happens to dissenters, many will become less likely to do anything that risks triggering the same sort of reaction. Most of Wakefield's collaborators signed a retraction of an interpretation of their findings, something unlikely without the storm of protest against the paper. Because of the abuse experienced by Dorey, other members of the committee of the AVN preferred that their identity not be known so they would not be subject to similar treatment.

When researchers are reluctant to undertake studies in particular fields, and governments and corporations do not want to fund studies, the result can be a gap in knowledge: particular topics are understudied, even though resources are available to study them and some people would like them investigated. Such gaps in research due to the influence of vested interests are called "undone science" (Frickel et al., 2010; Hess, 2006, 2009). The primary cause of undone science is the unwillingness of funding organizations to support research in the area, because the findings might be unwelcome. Suppression of dissent operates as a supplementary mechanism to prevent and discourage researchers from studying these topics.

Suppression of dissent, through its chilling effect, can skew public debates, by discouraging participation. In Australia, critics of vaccination have become aware that if they become visible, they are potentially subject to denigration and complaints. Because of the level of personal abuse by pro-vaccinationists, many of those who might take a middle-of-the-road perspective, perhaps being slightly critical of some aspects of vaccine policy, are discouraged from expressing their views. The result is a highly polarized public discourse that is not conducive to the sort of careful deliberation desirable for addressing complex issues.

According to the highest ideals of science, ideas should be judged on their merits, and addressed through mustering evidence and logic. Suppression of dissent is a violation of these ideals. Challenging suppression is part of the struggle to push science towards its own stated principles.

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## References

Abraham, J. (1995). *Science, Politics and the Pharmaceutical Industry: Controversy and Bias in Drug Regulation*. London: UCL Press.

Alford, C. F. (2001). *Whistleblowers: Broken Lives and Organizational Failure*. Ithaca, NY: Cornell University Press.

Andre, F. E., Booy, R., Bock, H. L., et al. (2008). Vaccination greatly reduces disease, disability, death and inequity worldwide. *Journal of the World Health Organization,* 86(2), 140-146.

Angell, M. (2005). *The Truth about the Drug Companies: How They Deceive Us and What to Do about It*. New York: Random House.

AVN (2014). Australian Vaccination Network Inc. http://avn.org.au/. Accessed 1 February 2014.

Barry, B. (2007). *Speechless: The Erosion of Free Expression in the American Workplace*. San Francisco: Berrett-Koehler.

Boykoff, J. (2006). *The Suppression of Dissent: How the State and Mass Media Squelch USAmerican Social Movements*. New York: Routledge.

Braithwaite, J. (1984). *Corporate Crime in the Pharmaceutical Industry*. London: Routledge & Kegan Paul.

Colgrove, J. (2006). *State of Immunity: The Politics of Vaccination in Twentieth-Century America*. Berkeley, CA: University of California Press.

CryShame (2014). GMC hearings. http://www.cryshame.org/. Accessed 1 February 2014.

Curry, R. O. (ed) (1988). *Freedom at Risk: Secrecy, Censorship, and Repression in the 1980s*. Philadelphia: Temple University Press.

Deer, B. (2004). Revealed: MMR research scandal. *Sunday Times,* 22 February.

Deer, B. (2011). Piltdown medicine: the missing link between MMR and autism. *BMJ Blogs,* 6 January.

De Grazia, A. (1966). *The Velikovsky Affair*. London: Sidgwick & Jackson.

Delborne, J. A. (2008). Transgenes and transgressions: scientific dissent as heterogeneous practice. *Social Studies of Science,* 38(4), 509-541.

Deyo, R. A., Psaty, B. M., Simon, G., Wagner, E. H., and Omenn, G. S. (1997). The messenger under attack - intimidation of researchers by special-interest groups. *New England Journal of Medicine,* 336 (17 April), 1176-1180.

Donegan, J. (2008). Dr Jayne Donegan: GMC. http://www.jayne-donegan.co.uk/gmc. Accessed 1 February 2014

Dyer, C. (2006). Doctor who used "junk science" in court faces GMC hearing. *The Guardian,* 2 October.

Dyer, O. (2007). GMC clears GP accused of giving court "junk science" on MMR vaccine. *BMJ,* 335 (1 September), 416-417.

Ewing, D. W. (1977). *Freedom Inside the Organization: Bringing Civil Liberties to the Workplace*. New York: Dutton.

Ewing, K. D., and Gearty, C. A. (1990). *Freedom under Thatcher: Civil Liberties in Modern Britain*. Oxford: Clarendon Press.

Frickel, S., Gibbon, S., Howard, J., Kempner, J., Ottinger, G., and Hess, D. (2010). Undone science: charting social movement and civil society challenges to research agenda setting. *Science, Technology, & Human Values,* 35(4), 444-473.

GMC (2007). General Medical Council Fitness to Practise Panel, 7 to 24 August (Dr Jayne Lavinia Mary Donegan).

GMC (2010). General Medical Council Fitness to Practise Panel, 28 January (Dr Andrew Jeremy Wakefield; Professor John Angus Walker-Smith; Professor Simon Harry Murch).

Glazer, M. P., and Glazer, P. M. (1989). *The Whistleblowers: Exposing Corruption in Government and Industry*. New York: Basic Books.

Goldacre, B. (2009). *Bad Science*. London: Fourth Estate.

Goldacre, B. (2012). *Bad Pharma: How Drug Companies Mislead Doctors and Harm Patients*. London: Fourth Estate.

Goldman, G. S., and King, P. G. (2013). Review of the United States universal varicella vaccination program: herpes zoster incidence rates, cost-effectiveness, and vaccine efficacy based primarily on the Antelope Valley Varicella Active Surveillance Project data. *Vaccine,* 31, 1680-1694.

Goldstein, R. J. (1978). *Political Repression in Modern America from 1870 to the Present*. Cambridge, MA: Schenkman.

Grant, J. (2011). *Denying Science: Conspiracy Theories, Media Distortions, and the War against Reality*. Amherst, NY: Prometheus Books.

Habakus, L. K., and Holland, M. (eds) (2011). *Vaccine Epidemic*. New York: Skyhorse.

Halvorsen, R. (2007). *The Truth about Vaccines*. London: Gibson Square.

Hamilton, C., and Maddison, S. (eds) (2007). *Silencing Dissent: How the Australian Government is Controlling Public Opinion and Stifling Debate*. Sydney: Allen & Unwin.

Hess, D. (2006). *Alternative Pathways in Science and Industry: Activism, Innovation, and the Environment in an Era of Globalization*. Cambridge, MA: MIT Press.

Hess, D. (2009). The potentials and limitations of civil society research: getting undone science done. *Sociological Inquiry,* 79, 306-327.

Hobson-West, P. (2007) "Trusting blindly can be the biggest risk of all": organised resistance to childhood vaccination in the UK. *Sociology of Health & Illness,* 29(2), 198-215.

Johnston, R. D. (2004). Contemporary anti-vaccination movements in historical perspective. In R. D. Johnston (Ed.), *The Politics of Healing: Histories of Alternative Medicine in Twentieth-Century North America* (pp. 259-286). New York: Routledge.

Jones, D. (Ed.) (2001). *Censorship: A World Encyclopedia*. London: Fitzroy Dearborn.

Joravsky, D. (1970). *The Lysenko Affair*. Cambridge, MA: Harvard University Press.

Kassing, J. W. (2011). *Dissent in Organizations*. Cambridge: Polity.

Kassirer, J. P. (2005) *On the Take: How Medicine's Complicity with Big Business Can Endanger Your Health*. Oxford: Oxford University Press.

Krimsky, S. (2003) *Science in the Private Interest: Has the Lure of Profits Corrupted Biomedical Research?* Lanham, MD: Rowman & Littlefield.

Martin, B. (1981). The scientific straightjacket: the power structure of science and the suppression of environmental scholarship. *Ecologist,* 11(1), 33-43.

Martin, B. (1999a). Suppression of dissent in science. *Research in Social Problems and Public Policy,* 7, 105-135.

Martin, B. (1999b). Suppressing research data: Methods, context, accountability, and responses. *Accountability in Research,* 6, 333-372.

Martin, B. (2011). Debating vaccination: understanding the attack on the Australian Vaccination Network. *Living Wisdom,* 8, 14-40.

Martin, B. (2012a). Online onslaught: Internet-based methods for attacking and defending citizens' organisations. *First Monday: Peer-Reviewed Journal on the Internet,* 17(12). http://firstmonday.org/ojs/index.php/fm/article/view/4032/3379

Martin, B. (2013). *Whistleblowing: A Practical Guide*. Sparsnäs, Sweden: Irene Publishing.

Martin, B., Baker, C. M. A., Manwell, C., and Pugh, C. (Eds.) (1986). *Intellectual Suppression: Australian Case Histories, Analysis and Responses*. Sydney: Angus & Robertson.

Miceli, M. P., Near, J. P., and Dworkin, T. M. (2008). *Whistle-blowing in Organizations*. New York: Routledge.

Moran, G. (1998). *Silencing Scientists and Scholars in Other Fields: Power, Paradigm Controls, Peer Review, and Scholarly Communication*. Greenwich, CT: Ablex.

Myers, M. G. (2013). Vaccination to prevent varicella. *Vaccine,* 31, 1695.

Offit, P. A., and Bell, L. M. (2003). *Vaccines: What You Should Know* (3rd edition). New York: Wiley.

Offit, P. A. (2010). *Autism's False Prophets: Bad Science, Risky Medicine, and the Search for a Cure*. New York: Columbia University Press.

Orrin, M. (ed. Goldman, G. S.) (2010). *The Chickenpox Vaccine: A New Epidemic of Disease and Corruption*. Pearblossom, CA: Medical Veritas.

SAVN (2014). Stop the Australian Vaccination Network. https://www.facebook.com/stopavn. Accessed 1 February 2014.

Scheibner, V. (1993). *Vaccination: 100 Years of Orthodox Research Shows that Vaccines Represent a Medical Assault on the Immune System*. Blackheath, NSW: Viera Scheibner.

Smyth, R. M. D., Kirkham, J. J., Jacoby, A., Altman, D. G., Gamble, C., and Williamson, P. R. (2010). Frequency and reasons for outcome reporting bias in clinical trials: interviews with trialists. *BMJ* doi 10.1136/bmj.c7153

Soley, L. (2002). *Censorship, Inc. The Corporate Threat to Free Speech in the United States*. New York: Monthly Review Press.

Sommer, T. J. (2001). Suppression of scientific research: *bahramdipity* and *nulltiple* scientific discoveries. *Science and Engineering Ethics,* 7(1), 77-104.

Stamatakis, E., Weiler, R., and Ioannidis, J. P. A. (2013). Undue industry influences that distort healthcare research, strategy, expenditure and practice: a review. *European Journal of Clinical Investigation,* doi:10.1111/eci.12074.

Sunstein, C. R. (2003). *Why Societies Need Dissent*. Cambridge, MA: Harvard University Press.

Thérèse, S., and Martin, B. (2010). Shame, scientist! Degradation rituals in science. *Prometheus,* 28(2), 97-110.

Wakefield, A. J. (2010). *Callous Disregard: Autism and Vaccines - The Truth Behind a Tragedy*. New York: Skyhorse.

Wakefield, A. J., Murch, S. H., Anthony, A., et al. (1998). Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *The Lancet,* 351, 637-641 [retracted].

Walker, M. (2012). Lots of law but little justice: the acquittal of Professor John Walker-Smith and the case of Dr Andrew Wakefield. http://www.anh-europe.org/news/lots-of-law-little-justice. Accessed 2 March 2013.