Debating vaccination:

by Brian Martin

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Summary

The Australian Vaccination Network (AVN), a citizen group advocating parental choice in whether children should be vaccinated, has come under an extraordinary attack by advocates of vaccination. Controversies over vaccination involve both disagreements about scientific matters, such as the effectiveness of vaccination to prevent disease, and clashes of values, including compulsion versus free choice. To help understand the attack on the AVN, I give an overview of the nature of scientific controversies, including the roles of evidence, vested interests, solutions, paradigms and methods of debate. I analyse a formal complaint against the AVN to highlight the assumptions underlying the anti-AVN position. I describe some of the methods used to attack the AVN: unsupported claims, formal complaints, and harassment. Finally, I discuss tactics for opposing the attack.

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Introduction

Vaccination is a public health measure intended to reduce the incidence of infectious disease. The idea is to expose people to small, controlled amounts of modified disease pathogens — enough to trigger the body's immune system to respond and become resistant, but not so much as to cause full-blown disease. For example, a live-virus polio vaccine involves a small volume of three strains of polio virus that have been selected, after careful processing in the lab, to have a low risk of actually causing polio.

Vaccination issues

The most common differences between the supporters and critics of vaccination can be put into four categories.

Benefits

According to supporters, vaccination has been responsible for dramatic reductions in death and illness from infectious disease and vaccination continues to be a vital measure to prevent a resurgence of disease.

Critics say the benefits of vaccination are not as great as claimed by supporters. Critics attribute the large reduction in mortality from infectious disease in rich countries to public health measures such as clean water supplies, improvements in hygiene, and higher incomes.

Risks

Supporters say the risks of vaccination are very small. They argue that many of the alleged adverse reactions from vaccinations are unproven — they may have occurred around the time of vaccinations, but this could well be coincidental. They reject claims that vaccination is linked to diseases such as autism.

Critics pay special attention to adverse vaccination events, namely when individuals react badly to vaccines. Developing a disease, like polio, is one possibility; others include convulsions, brain damage and death.

understanding the attack on the Australian Vaccination Network

Critics also say adverse reactions are far more common than generally recognised, in part because doctors do not look for them or record all of them. They say increases in some diseases — for example, autism spectrum disorders and auto-immune diseases such as multiple sclerosis and diabetes — may be linked to greater numbers of vaccinations in children.

Ethics

Supporters say vaccination of most of the population has the spin-off benefit of herd immunity: when a high enough proportion of people are immune, viruses have difficulty spreading due to a shortage of susceptible targets. Supporters see herd immunity as a collective benefit that should not be denied. In other words, to promote the collective good, it is ethical to take strong measures to promote vaccination.

Critics say compulsory or semi-compulsory vaccination is a denial of human rights. Because individuals are potentially at risk from vaccination, they should have a choice whether or not to vaccinate.

Decision-making

Supporters typically believe vaccination policies should be decided by governments following advice from medical professionals.

Critics say individuals, or parents in the case of children, should make vaccination decisions, and that governments should not require vaccinations or have policies that make it difficult for people to refuse vaccination.

Vaccination has been hailed as one of the greatest contributions of medicine to human health, dramatically reducing the incidence of infectious diseases. However, it has been controversial from the beginning. Critics say the seriousness of infectious disease was declining before the introduction of vaccines, and that the mass introduction of vaccines made little or no contribution to reducing death rates.

There are numerous areas of tension and disagreement in the vaccination debate. Here, my aim is not to canvass the issues but rather to provide information and analysis for understanding and judging the attack on the AVN.

The AVN is a citizen group critical of vaccination and advocating parental choice. Introductory text on the home page of its website states:

> The AVN urges you to investigate before you vaccinate. We believe it is a parent's right to choose what's best for their child … some would say that this is one of the most basic rules of any civilised society. Yet governments all over the world have abridged or denied the right to free choice when it comes to vaccinations, vaccines and immunisations. The Australian Vaccination Network is working to help parents take back that right to free and informed choice by allowing them to see the less publicised side of this important issue before making a decision.[2]

Like many other such citizen groups, the AVN has a small core group of activists, of whom the most prominent is Meryl Dorey, and a much larger number of members. It publishes a magazine titled *Living Wisdom,* which includes material on a variety of issues from a natural-health perspective. The AVN is similar in stance and activities to a number of organisations in Australia and other countries.[3]

There are three parts to my treatment here. Part 1 gives an overview of features of public controversies involving scientific issues, putting the vaccination controversy in the context of other scientific controversies. Readers primarily concerned with the attack on the AVN may prefer to go directly to parts 2 and 3.

Part 2 deals with a formal complaint against the AVN. The use of evidence and logic in this complaint provides insight into the assumptions and thinking behind the attack on the AVN. Part 3 describes some of the methods used to attack the AVN and introduces a framework that gives guidance on how the AVN can respond.

My connection with the vaccination issue

For many people, vaccination is a personal issue, linked to their own experiences and decisions, but my interest in the issue is somewhat different. Having looked at both sides of the debate, I do not have strong views about vaccination. I have had many vaccinations during my life, never with any noticeable side effects. I have no children and have never made a decision about anyone else's vaccinations.

My interest in the issue derives principally from my studies of scientific controversies and my commitment to fair and open debate as the foundation for good decision-making. I have studied many controversies, including nuclear power, pesticides, fluoridation, nuclear winter and the origin of AIDS, among others.[4] My particular interest is in the use of power to suppress dissent. In many of these controversies, I have studied attacks on scientists.[5]

One of the debates I've studied in some depth is the origin of AIDS, looking specifically at the view that AIDS resulted from contaminated polio vaccines used in Africa in the late 1950s.[6] This is a debate related to vaccination, but it has limited relevance to contemporary vaccination debates.

My general view is that scientific debates should be conducted in an open and fair manner. All views deserve to be heard and examined, even views that are implausible or apparently wrong. Rather than being dangerous, I believe this process provides the best foundation for good decisions.[7]

What stimulated me to undertake this analysis was evidence about the attack on the AVN. At some future time, perhaps everyone will agree the AVN was entirely misguided, or alternatively that it promoted a worthwhile cause, or perhaps somewhere in between. That judgement is not my concern. My view is that the AVN deserves an opportunity to be heard.

To reiterate: my focus is on the attack on the AVN. I do not take a stance on the arguments made by the AVN, nor the positions it supports — they are not my concern. Nor do I necessarily endorse the actions taken by the AVN, either in relation to vaccination or in responding to attacks. Some of the AVN's actions I think are sensible; others, in my view, are unwise. But my intention here is not to present my views on how the AVN conducts itself, but rather to examine the attack on the AVN.

It might be asked, why don't I also examine the way some members of the AVN have attacked the critics? In a symmetrical account of the vaccination controversy, I should study both sides of the debate using the same tools of social analysis.[8] That is a reasonable point. The problem is that there is a major asymmetry in the attacks and counterattacks. The goal of the attackers — some of them at least — is to shut down the AVN and to deny its right or ability to make criticisms of vaccination, at least those criticisms deemed by the attackers to be false. The AVN, on the other hand, does not have the goal, much less the capacity, to shut down proponents of vaccination, which include key figures in the medical establishment. In short, the attackers want to go beyond debating the issue of vaccination and to destroy the capacity of some vaccination critics to be in the debate.

Though most of what I say here is from the point of view of vaccination critics under attack, it should not be difficult for readers who are sympathetic to vaccination to reverse the analysis and see implications for how to proceed. My wider goal is to encourage participants in scientific controversies to use methods that help individuals and communities make decisions compatible with their values, in an informed fashion. This is most likely to be achieved when campaigners use methods that respect the right of all parties to contribute in an open, fair-minded fashion.

Part 1: *Scientific controversies*

Controversies over scientific matters have occurred since the earliest days of science. Some of these take place largely within the scientific community, such as over gravitational waves, continental drift and bee communication.[9] Here, though, my focus is on scientific controversies with a public dimension, typically because they involve political, economic, social or ethical elements. Examples are controversies over abortion, AIDS, climate change, euthanasia, fluoridation, genetic engineering, nuclear power, pesticides and smoking.

It is sometimes said that a public controversy of this sort is actually two controversies in one, a scientific dispute and a social dispute.[10] But usually it is difficult or impossible to separate the scientific and social components. For example, in the climate change controversy, sceptics have challenged both the findings and the neutrality of the Intergovernmental Panel on Climate Change, which is supposed to provide an authoritative assessment of scientific research and serve as an input into political decision-making. Public controversies can be understood better as including both scientific and social dimensions, which interact with each other. The "scientific" dimension here includes technology, such as in debates over genetic engineering.

The role of evidence

A striking feature of scientific controversies is that new evidence seldom provides a resolution. This is true even in controversies occurring just between scientists. For example, evidence obtained from the first moon landings did not resolve scientific disagreements about the nature of the moon.[11] Some commentators believe that when the evidence is overwhelming, then those who refuse to accept it must be misguided in some way, with their judgement distorted by the influence of money, fame or personal obsession. Such factors do influence scientists, but there is something deeper involved. Scientists become highly

committed to particular positions and see the world from their own perspectives. From within these perspectives, scientists may be able to dismiss new evidence as invalid, interpret it in a way that does not threaten their position, or modify their theoretical frameworks to take it into account.

Partisan scientists on both sides are able to deflect or disregard challenging evidence. The controversy over the fluoridation of public water supplies to prevent tooth decay initially blossomed in the 1950s. It continues today, with much the same sort of positions taken by those for and against fluoridation. New scientific evidence, such as about how fluoride operates to reduce tooth decay, has made little difference.[12] For opponents, one of the core sticking points is that fluoridation is perceived as compulsory medication at an uncontrolled dose. Some would oppose fluoridation even if there were no risks.

A typical public controversy involves several different, interlinked issues. Leading partisans almost always take the same side on all the issues. Like the vaccination controversy, the fluoridation controversy involves disagreements about benefits, risks, the ethics of compulsion, and how decisions should be made. In principle, a scientist might say the benefits are negligible but so are the risks. However, when I interviewed leading figures supporting or opposing fluoridation in Australia, not a single one took such a position. Nearly every partisan either supported fluoridation on every issue — benefits, risks, ethics and decision-making — or opposed it on every issue. This coherence of viewpoints seems to be a result of the debate being highly polarised. Anyone who joins the public debate to comment on just one issue is soon drawn into a fully coherent position, because expressions of doubt or disagreement on any facet of the debate are targeted by opponents as a weakness. Those with more complex or intermediate positions seldom end up in prominent positions in the debate.

Interests

Controversies are complicated by the presence of interests. An interest is a stake in the outcome. Scientists involved in a controversy over atmospheric physics or terrestrial ecology have interests in the outcome because their careers are affected. Being correct can make the difference in obtaining research grants, getting promoted or winning a prize. For scientists, fame is often a more powerful motivator than money: reputation among peers is paramount. Having to admit to being wrong is not good for self-esteem or peer recognition.

Beyond the interests of individual scientists, various other interests can be involved: those of companies, governments and professions. In the pesticide controversy, chemical companies have a large financial stake in the view that pesticides are needed for the control of pests. In the controversy over nuclear power, governments have a large stake, because they own or regulate nuclear facilities. In the controversy over the health effects of depleted uranium, used in some munitions and tanks, militaries have a direct stake: their choice of weapons depends on whether they can use depleted uranium. When interests are powerful and deep-rooted, they are commonly called vested interests.

Powerful groups with strong interests may be aligned with or against the dominant scientific view. Consider the configuration in which such groups oppose the dominant scientific view. In the climate change controversy, the dominant scientific view is that global warming is occurring and is in part due to human actions. However, the most powerful groups concerned about the issue, the oil and coal industries, have a stake in a sceptical position. The controversy over the health effects of smoking has a similar sort of line-up: most scientists on one side and the most powerful group with a vested interest, the tobacco industry, on the other.

In other controversies, in contrast, scientific orthodoxy and powerful groups with vested interests are on the same side. Examples are the nuclear power, pesticide and fluoridation controversies. In the case of pesticides, the dominant scientific view supports the use of pesticides and the key group with a vested interest, pesticide manufacturers, is on the same side, obviously enough. When vested interests and scientific orthodoxy are aligned, this is a particularly powerful combination, making it exceptionally difficult for challengers to gain credibility.

It is fairly easy to understand interests based on money. Less obvious are interests based on professional reputation. In the fluoridation debate, the most prominent supporters of fluoridation are dental researchers, dentists and, collectively, dental associations. In short, the dental profession has strongly backed fluoridation. On the surface, this seems altruistic, because reducing tooth decay will reduce business for dentists. A closer examination reveals fluoridation has little effect on the demand for dental services: there would be plenty of work for dentists even if tooth decay disappeared, especially as patients expect to keep their teeth longer and have them looking nicer than in previous decades. The dental profession, by supporting fluoridation, develops a more scientific image. The research supporting fluoridation involves epidemiology, much more complex than cleaning and pulling teeth — the old image of dentists as technicians.

Finally, the dental profession, through its long advocacy for fluoridation, has acquired a huge stake in it. If dentists said, "Well, it's not actually such a good idea as we thought," the reputation of the profession would suffer. The potential damage to reputation would be especially great for leading researchers and advocates.

In the vaccination controversy, vested interests and scientific orthodoxy are closely aligned. Pharmaceutical companies have commercial interests in producing and selling vaccines. The medical profession has a strong interest, but of a different sort. Researchers and advocates have claimed vaccination to be a medical miracle, sometimes called a magic bullet, that is one of the most important contributions to human health in the past century. Vaccination is one of the scientific advances that distinguishes modern scientific medicine from earlier practitioners whose ministrations were often more harmful than beneficial. Therefore, questioning vaccination can be seen, by some advocates, as a threat to the credibility of modern medicine. In short, there are two main interests behind vaccination: the commercial interests of pharmaceutical companies and the reputational interests of the medical profession.

There is also a deeper factor: vaccination is a type of "medical fix" that addresses disease without having to tackle social-structural sources of ill health such as poverty, exploitation and inequality. Pharmaceutical companies and the medical profession are oriented to preventing and treating illness in individuals and have largely avoided confronting the social determinants of disease. In a sense, advocating vaccination and attacking its critics serves to divert attention away from the social causation of disease and to assert the primacy of treating individuals.

Solutions

In a highly polarised controversy, each side believes its position is the only acceptable one, and rejects compromise. In the struggle over nuclear power, the proponents want many more nuclear power plants whereas the opponents want none, and indeed want existing ones shut down. The compromise position of having just some nuclear plants — which is what has happened in practice — is not preferred by partisans on either side. Another intermediate position is to support a new generation of safer plants. Few proponents back this, because the technology is not well tested and would be more expensive. Few opponents find it acceptable, because they believe the new-generation plants would have many of the same problems as the current ones.

Intermediate positions are present in most controversies, but usually receive little attention because the partisans on either side find them unacceptable. In the fluoridation controversy, there are many alternatives, for example fluoride in table salt, fluoride toothpastes and fluoride treatments by dentists. Pro-fluoridationists don't find these acceptable: they argue fluoridation of public water supplies is superior because it is cheaper and gets fluoride to the teeth of those who need it most. (Most anti-fluoridationists would be satisfied with these alternatives.) A compromise position would be to reduce the concentration of fluoride to half its current level in public water supplies. Pro-fluoridationists oppose this and anti-fluoridationists would not be satisfied with such a compromise.

The cases of nuclear power and fluoridation illustrate the complexity of most controversies. On the surface, there are two distinct, incompatible alternatives. In practice, there are intermediate positions, compromises, and a host of subsidiary arguments. Most of this complexity is lost in the stark positions typically reported in the media. Leading partisans present their views in clear simple ways because they know that is the most effective way to communicate.

In the vaccination debate, there are two extreme positions: no vaccinations at the one extreme and numerous compulsory vaccinations at the other. However, very few partisans adopt these positions. Because there are so many potential vaccinations, the actual debate is closer to the middle ground, namely about which vaccinations should be standard and what methods should be used to encourage or compel people to be vaccinated. In this respect, the debate over vaccination is like the debate over pesticides, because there are lots of different pesticides, each of which can be applied in greater or lesser amounts. Fluoridation of a public water supply, on the other hand, is an all-or-nothing proposition.

A key point of contention in the vaccination debate is the role of choice. One option is to offer vaccinations on a voluntary basis, as with the 2009 swine flu vaccine or, on an annual basis, conventional flu vaccines. The opposite option is mandatory vaccination, with penalties for refusal. An in-between option is to make vaccinations semi-compulsory: everyone is expected to obtain the vaccinations, though there may be a possibility to refuse. There are variants of this intermediate option, depending on the type of incentives for vaccination or disincentives for resistance.

It might seem on the surface that the voluntary and semi-compulsory options are equivalent, because people can choose whether to vaccinate, but in practice they are quite different, because most people go along with the standard choice, which can be called the default option. When vaccinations are voluntary, not all that many people will bother to have one unless encouraged. Even with a massive publicity campaign, quite a few people may remain unvaccinated. On the other hand, if vaccinations are the default option, then only a few people will go to the trouble of avoiding them, especially if some effort is required. These two options can be called opt-in and opt-out. Vaccination proponents argue for opt-out systems because they believe it is the best way to ensure herd immunity is acquired, with the benefits going even to those who are not vaccinated.

Vaccination is similar to fluoridation in terms of choice. Where water supplies are not fluoridated, getting fluoride to your teeth is voluntary. It is an opt-in system, with choices to use fluoride toothpaste, mouthwashes or tablets. On the other hand, public water fluoridation is a sort of opt-out system: to avoid fluoridated water, you need to use bottled water, install a water filter or otherwise avoid drinking from the water supply.

Undone science

In polarised debates, each side interprets evidence from its own perspective. But there is another factor — sometimes evidence is not available.

How do scientists decide what is worth researching? The answer is complex. Scientists are influenced by what other scientists are working on, by their own personal research agendas and by their investment in specific research techniques, including their skills and capacities. Also quite important is funding for research: it may or may not be available. Finally, the likely response to findings may encourage or discourage research in certain areas.

Some areas have been thoroughly studied whereas others are neglected. In some cases, areas are neglected because scientists are not interested or don't think there is any prospect of obtaining worthwhile results. But sometimes areas are neglected because they are threatening to powerful groups.

One neglected topic is the effect of microwaves on organisms. There is a lot of research that could be done, for example epidemiology of human health effects for people living near power lines or who use mobile phones or other microwave devices, or laboratory analysis of effects on various animals. But several industries are not enthusiastic about this sort of research — such as electricity companies

and the manufacturers of mobile phones — because findings might jeopardise their operations or profits.

Because such companies do not welcome adverse findings, they are reluctant to support independent researchers in these areas. Consequently, many feasible topics have not been researched.

Analysts of science have coined the term "undone science" to refer to areas that could be researched but are not because of the influence of powerful groups, typically governments or large companies.[13] Undone science is found in numerous scientific controversies, especially when one side is supported by powerful groups and by most researchers, whereas the other side has little capacity to pursue its own research agenda. For example, many topics concerning organic farming fit in the category of undone science.

There is plenty of undone science concerning vaccination.[14] Pharmaceutical companies sponsor a huge amount of research about vaccines, but they are unlikely to fund some sorts of studies. For example, companies are unlikely to pay for big careful studies of adverse reactions to vaccines, because they would rather not highlight these reactions. They are unlikely to fund independent studies of links between vaccination and autoimmune diseases.

Pro-vaccination governments can contribute to patterns of neglected vaccination research. In Australia, government health departments either fail to collect or refuse to release data on the vaccination status of individuals who have diseases such as measles and pertussis. This information would be useful to critics of vaccination who want to see how effective vaccinations are in preventing disease.

Undone science is a significant issue in many controversies, but it is hard to explain and can even be hard to grasp. The present body of scientific knowledge seems natural, so it is difficult to imagine what scientific knowledge would look like if different groups had enough money to sponsor large studies. If critics of vaccination had as much money and influence as pharmaceutical companies, would there be large studies of public-health interventions aimed at reducing disease, or government measures to reduce inequality as a means of improving health? It is hard to say.

It is possible that if additional research advocated by vaccination critics were actually carried out, it would provide further endorsement for the safety and effectiveness of vaccines and their superiority to alternative approaches — or it might support contrary conclusions. The point is that pro-vaccination groups promote research in areas they believe are important and critics have to cope with whatever bits of evidence they can find.

Methods in scientific argumentation

How should scientific research be done? In the 1940s, sociologist Robert Merton enunciated four norms of science: universalism, communalism, disinterestedness and organised scepticism.[15] What these mean is that science should operate on the same principles in different societies, scientists

should freely share their findings, scientists should not be committed to particular positions, and the system of science should encourage critical examination of all viewpoints.

In the 1960s and 1970s, sociologists of science began questioning Merton's norms, saying they did not describe the way science actually operated. Ian Mitroff in his book *The Subjective Side of Science* argued that science often could be characterised just as well by four counter-norms. Take, for example, the norm of organised scepticism. The corresponding counter-norm is organised dogmatism. Mitroff said scientists, in many cases, are systematically dogmatic.[16]

This critique of norms was part of a wider reassessment of the operation of science. Up to the 1960s, historians usually portrayed science as a rational process, with superstition and dogma gradually succumbing to the persuasive power of observations and superior explanatory frameworks. Scientists believed they were discovering the truth about nature.

Philosopher Karl Popper said scientists should proceed by treating all current scientific beliefs as potentially wrong, and go about trying to prove them wrong, in other words to falsify them. According to Popper, if there is no way to prove a belief system wrong, then it isn't scientific. Many scientists subscribe to Popper's argument that science proceeds by falsifying incorrect ideas.

In 1962, Thomas Kuhn, an historian of science, published a short book titled *The Structure of Scientific*

Revolutions.[17] He looked at major episodes in the history of science such as the Copernican revolution, when the earth-centred universe, in which the sun went around the earth, was replaced by a universe in which the earth went around the sun. Kuhn argued that scientific advance can be usefully described as a process of paradigms, normal science and revolutions.

A paradigm is a framework for understanding the world. Kuhn refers to the Ptolemaic system, an earth-centred view of the universe, as a paradigm that was superseded by the Copernican paradigm. The paradigm of classical physics, in which objects behave according to Newton's laws, was superseded by the relativistic paradigm, describing objects at high speeds, and the quantum paradigm, describing the behaviour of very small objects.

Scientists working within a paradigm do everything — thinking, talking, making observations, designing equipment — according to a standard approach. This is called "normal science." When doing normal science, there are some observations and evidence that don't fit. These "anomalies" are commonly ignored or dismissed as irrelevant or mistaken. But sometimes a few scientists decide the anomalies need to be properly explained, and they propose an entirely new way of looking at the world — a new paradigm. The replacement of one paradigm by another is called a scientific revolution. The Copernican revolution is one example; another is the Darwinian revolution, in which the theory of evolution superseded the creationist model.

Because scientists working within a paradigm see the world within a standard set of ideas, they typically dismiss challenges to core assumptions as unfounded. Challengers, looking at phenomena from an entirely different perspective, think their own framework is sensible; for them, the flaws within the conventional paradigm are magnified. The perspectives differ concerning what counts as valid knowledge and good research practice. That means the process of scientific revolution is not entirely one of logic and evidence, because the two sides cannot fully agree about either the evidence or the logic.

Sociologists of scientific knowledge have pointed out all sorts of problems with Kuhn's ideas. For example, Kuhn said paradigms were incommensurable, meaning it was virtually impossible to communicate between them, but in practice many scientists can understand alternative views.[18] There is now a wealth of information and analysis about the way scientists actually do research.[19] The safest generalisation is that there are no over-arching principles to which research conforms. There is no rulebook, called the scientific method, that scientists follow. They do not necessarily use the approach of verification, namely finding evidence that supports current ideas, though there is plenty of this. Nor do they commonly use falsification, namely trying to disprove prevailing ideas, though they sometimes do this.

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One of the key ideas presented by Kuhn was that the process of scientific revolution was not entirely rational, that is based purely on evidence and logic. This is because a paradigm is a way of organising evidence and logic: each paradigm will seem, to its adherents, as internally consistent. The decision about whether to adopt a different paradigm can be influenced by social factors.

Kuhn drew back from the radical implications of his ideas, but others pursued them.[20] For example, Bob Young argued that the theory of evolution, as formulated by Darwin, was influenced in the direction of competition — rather than cooperation — by the ideas of Thomas Malthus.[21] In other words, prevailing ideas about the nature of society influenced the formulation of a scientific theory. Then, in turn, scientific ideas were used for political purposes in what was called social Darwinism, to justify ruthless competition, including policies against poor people, immigrants and people with disabilities.

Meanwhile, the idea of paradigms was taken up widely. People started talking about paradigms in all sorts of fields, from economics to psychology. The word "paradigm" has become shorthand for a collection of concepts, such as a worldview, framework or model. In each case, there are different, contrasting ways of looking at the world, and each different way is organised into a more-or-less coherent framework. This looser use of the idea of paradigm can be convenient for discussing scientific disputes.

John Colquhoun, a New Zealand dentist who became a leading figure in the international debate over fluoridation, likened the controversy to a clash of paradigms.[22] The pro-fluoridation position sees the benefits of fluoridation as very large and the risks as unproved or only cosmetic (stained teeth). With this way of seeing the issue, claims about risks are treated as anomalies — they do not fit the pro-fluoridation paradigm and so are thought to be matters that will eventually be shown to be groundless and therefore dismissed for the time being.

The anti-fluoridation paradigm sees the risks from fluoridation — such as skeletal fluorosis and intolerance reactions in a minority of the population — as significant. From this perspective, fluoridation should not be imposed on the community until it is conclusively proved to be completely safe, otherwise it is compulsory medication at an uncontrolled dose.

The fluoridation controversy has persisted for decades in part because the two paradigms are not easily reconciled. Each side assumes the other side has to prove its case. In other words, the onus of proof is placed on the opponents. Pro-fluoridationists put the onus on opponents to prove fluoridation's benefits do not exist, hazards do exist and there is some equally cheap and reliable way to

get the benefits of fluoride to the entire community. Anti-fluoridationists, on the other hand, put the onus of proof on the proponents to prove fluoridation's benefits are large, hazards do not exist and an uncontrolled dose of a chemical is safe for the entire population.

Putting the onus or burden of proof on the other side, if it can be achieved, is an enormous advantage. In criminal court cases, the stated assumption is that the defendant is innocent until proved guilty: the onus of proof is on the prosecution, otherwise the defendant is judged not guilty. In a scientific controversy, it is far better to be the defendant, namely the position that is accepted unless it is proved wrong. When there are competing paradigms, it is common for each side to see itself as the defendant, demanding the opponents prove it wrong. In practice, the side with greatest support from mainstream scientists is usually able to establish itself as the defendant — the side that is accepted as correct unless overwhelming evidence is brought to bear to show it is wrong.

The vaccination controversy fits the picture of competing paradigms, with many parallels to the fluoridation controversy. According to the pro-vaccination paradigm, vaccination is largely responsible for dramatic declines in infectious disease. Furthermore, continued implementation of vaccination regimes is needed to minimise the risk of a resurgence of disease. In this picture, the risks from vaccination are small: many alleged adverse reactions to vaccination are unproven. The few genuine adverse reactions are a small price to pay for the collective benefit of reduced disease: without vaccination, there would be far more disease and deaths.

According to the anti-vaccination paradigm — perhaps better described as the sceptical-of-vaccination paradigm — the benefits of vaccination are more questionable, with declines in the severity of infectious disease attributed to improvements in public hygiene and the standard of living. In this picture, risks are important: vaccination is seen as responsible for a significant number of adverse reactions. Furthermore, there is the possibility that vaccination is linked to autism and auto-immune diseases. Widespread vaccination is seen as responsible for serious risks to health without a commensurate benefit.

The idea of pro and anti-vaccination paradigms helps explain the persistence of the controversy. Each side, seeing the evidence and arguments from its own perspective, is unconvinced by the contrary perspective. For example, consider a child who has seizures shortly after a vaccination. From the pro-vaccination paradigm, this is an anomaly: it doesn't fit the standard picture. So the first instinct is to assume the seizures are not related to the vaccination: it may be only a coincidence they occurred about the same time. Another response is to question the claim that seizures occurred: if doctors did not witness them or record them, then it is down to the word of parents. The observation by the parents is "anecdotal evidence," and therefore suspect. Because, in the pro-vaccination paradigm, adverse reactions are assumed to be rare, there may not be a concerted effort to record and verify them.

From the anti-vaccination paradigm, a child who has seizures after vaccination is significant: it fits the alternative paradigm. It is immediately assumed the vaccination caused the seizures.

Sometimes the number of adverse reactions becomes too large to ignore. To critics, this is telling evidence of the risk of vaccinations. But proponents, who assume vaccination is worthwhile, typically attribute the problem to a statistical artefact or perhaps to a bad batch of vaccine. In other words, if there is a problem, it is not with vaccination *per se* but with some facet of its implementation. In this way, the vaccination paradigm is maintained.[23]

It would be possible to go through all the arguments and evidence to show how they are interpreted differently from the two paradigms. The idea of paradigm helps explain why new evidence seldom has much impact on the controversy: the new evidence is treated differently by the two sides, being either welcomed as vindication or rejected and dismissed as irrelevant or not significant.

When looking at an issue through the lens of a paradigm, one's own position seems logical, indeed unassailable, whereas the opponent's position seems weak or even nonsensical. In polarised public controversies, this difference is exaggerated through two processes: different values and polarisation of public debate.

The first is that the two competing positions are underpinned by different values. The pro-vaccination position is built on a notion of the collective good served by altruistic medical professionals. The collective good is to be achieved by having everyone conform to medical mandates. In practice, this means as many people as possible should be vaccinated for their individual benefit and so the population benefits from herd immunity. The anti-vaccination position — better labelled here the pro-choice position — is built on the ideas of individual difference and individual choice.

The difference between the two paradigms is also exaggerated by the polarisation of public debate, discussed earlier. To avoid providing concessions to the opposition, campaigners on each side coalesce on a standard package of coherent arguments.

Methods of debate

The most obvious methods used in scientific controversies are arguments: presenting evidence and logic to support a position. Sometimes values, such as ethical or political positions, are spelled out. This is typically how scientists debate issues, and many of the same rhetorical techniques are used in public forums. As well, many other techniques may be used, including holding public meetings, circulating leaflets, seeking media coverage, lobbying, holding rallies, organising boycotts, and civil disobedience. For convenience, methods of engagement can be divided into six main types.

- Argumentation. This includes presentation of information and arguments.
- Endorsements. This involves organisations taking formal stands.
- Personal attack. This includes questioning the credibility, motives, affiliations or behaviour of others.
- Conventional political action. This involves typical sorts of activities common in a liberal democracy, such as holding meetings, lobbying, door-to-door canvassing, and voting.

- Nonviolent action. This includes actions, not involving physical violence, that go beyond conventional political action. Examples are boycotts, vigils and sit-ins.

- Violence. This includes assaults, arrests, bombings and assassinations. Violence can be initiated by protesters (citizens) or by police or other agents.

These methods can be mixed together. For example, door-to-door canvassing typically involves distributing information.

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Argumentation — presenting information and arguments — is the mainstay of scientific debate. Controversies are waged within the pages of academic journals as well as in public forums. In journals the standard style follows a set of conventions, generally avoiding strong overt opinion or emotional expression. Within this style, views can be advocated, but usually in a restrained fashion.

Because scientists are familiar with this academic style, in public debates they often attempt to use the same approach, but it is seldom effective. What works well in a scientific journal or conference is usually far too complex and technical for newspapers, television or public meetings.

Few scientists venture out of their labs to contribute to public controversies, and indeed many look down on this sort of popular engagement. They commonly see any form of popularisation as inevitably degrading the quality of scientific argument. Many scientists are wary of journalists, fearing their work will be misrepresented. Due to these attitudes, scientists who do enter controversies are an unusual minority, willing to risk their reputations among peers.

Although scientific journals expect a style that appears objective, the operation of science contains partisan elements. Many scientists in their private conversations are strongly opinionated, sometimes highly biased, and they have opportunities to express this bias in interacting with colleagues, writing references for colleagues, refereeing submissions to journals, assessing grant applications, editing journals and sitting on panels to assess scientific units. So while scientific outputs, especially articles in journals, give the impression of objectivity, behind the scenes science is seething with power plays.[24]

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Endorsements by government and professional bodies can serve as tools in the struggle. In the United States, fluoridation was endorsed by the US Public Health Service, American Dental Association, American Medical Association, American Federation of Labor and Congress of Industrial Organizations and dozens of other organisations.[25] Endorsements have played a major role in the vaccination debate, especially formal stands taken by health departments and medical associations.

Endorsements, in many cases, have little scientific significance. Very few of the hundreds or thousands of members in a professional organisation or government department are likely to have studied the issue in depth. Typically, a few members who care about the issue push the organisation to take a stand or adhere to a policy, and most others learn about the arguments through one-sided support materials. Of course, stands taken by organisations often can be backed up. My point is that the endorsement itself, in the context of an on-going debate, is typically more symbolic than substantive. It serves as a tool in the debate: winning an endorsement is a way of gaining credibility.

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Scientists can come under ***personal attack*** from other scientists for a variety of reasons, including personality clashes, envy or competition for promotions or prizes — the same sorts of factors found in all sorts of occupations. One important factor, of key relevance here, is disagreement over beliefs. A scientist who subscribes to a very different

perspective is a threat to one's own belief system, and potentially a threat to funding or promotion. So it is predictable that some scientists will make derogatory comments about those with different views. In the climate change controversy, scientists on both sides have questioned the credibility and motives of those on the other side. However, most of this sort of questioning occurs outside the pages of scientific journals.

Within scientific articles, the expectation and almost universal practice is to address only the issues. It is quite legitimate to attack another scientist's work, for example showing its data are wrong or misinterpreted or its arguments are inadequate or misleading. However, it is not accepted practice to attack the scientist personally, for example by referring negatively to their ethnicity, educational attainments, employment, experience or integrity. The ideology of science is that arguments are addressed in terms of their merits, not in terms of the person making the arguments. Many, but far from all, journals use blind refereeing: the identity of the author of a paper submitted for publication is not revealed to the referee. In principle, a referee would examine the paper with the same scrutiny regardless of whether the author was a Nobel Prize winner or a high school student.

Outside of the pages of scientific journals, this rule is regularly violated. In public controversies, partisans commonly highlight their own achievements — such as degrees and awards — and denigrate the credentials or expertise of opponents. It is precisely this sort of rough-and-tumble that many scientists detest and causes them to avoid participation.

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Social action The social dimension of scientific controversies can be most readily understood as a form of politics or as a form of social struggle. The aim is typically to change a policy or practice. In the controversy over smoking, tobacco companies and their allies sought the freedom to sell and promote cigarettes and for people to be able to smoke where they pleased. Opponents of smoking sought restraints on smoking, by encouraging individuals to stop and by banning smoking in certain situations, for example on aeroplanes and in cinemas. Changing government policy is a common goal in many controversies — governments can tax cigarettes and regulate advertisements. There are other points of intervention: organisations can adopt their own rules concerning smoking and individuals can either accept or refuse smoking in their own homes. Finally, individuals themselves can stop smoking.

The methods used in public scientific controversies are much the same as those used in all sorts of contentious issues. They include public meetings, media releases, door-to-door canvassing, leaflets, posters, blogs, websites, media stories and letters, lobbying of politicians and other decision-makers, legal actions, elections, referenda, petitions, rallies, marches, strikes, boycotts and vigils.

Which of these methods are considered legitimate? The answer is it depends on the society. In repressive regimes, sending an email or signing a petition on a sensitive issue might be considered subversive. My focus here is on societies in which civil liberties — including freedom of speech and freedom of assembly — are regularly exercised. It is not so much whether they are legally protected, for example in a bill of rights, because legal guarantees are sometimes not enough to ensure freedoms in practice.

Consider, for example, freedom of speech. It sounds nice, but does it allow an activist to sell a political newspaper? It depends on where and when. Sometimes police clamp down on sellers, on the grounds that their activities are not permitted on private property — as in a shopping mall — or are disturbing public order.

Sometimes campaigners intentionally violate laws in order to pursue or advance their views. For example, opponents of nuclear power have occupied building sites for reactors. Opponents of nuclear war have hammered nosecones of nuclear missiles and then offered themselves up for arrest. Governments react differently to civil disobedience. Sometimes police use brutal methods and courts impose long sentences on protesters. Other times, these forms of protest are treated like more common methods of action such as rallies and marches.

What methods are really legitimate? There's no easy answer to this, because legitimacy is a product of struggle rather than something inherent in a method. Slavery used to be considered legitimate. Anti-slavery campaigners challenged the standard belief and, after many decades of struggle, today most people believe slavery is a gross abuse of human rights. Torture used to be more acceptable, until campaigners in the 1970s, such as Amnesty International, convinced most people torture is a terrible abuse. These campaigns continue today, because both slavery and torture continue. But slavery and torture today are usually carried out covertly, because popular opinion in many countries is so hostile to them.

Voting, in many parts of the world, is a routine process, but in some repressive regimes, a fair voting system is a serious threat to the system. Right-to-vote campaigners helped make voting acceptable and eventually standard practice. In many countries, workers have the right to strike; in others, striking is seen as subversive. Even in countries with liberal democratic traditions, governments may use laws and regulations to discourage or control strikes.

To assess the methods used in scientific controversies, it is useful to look at what methods are widely considered legitimate in a given time and place, with the understanding that views about legitimacy are subject to change. My focus is on Australia in 2010.

One movement that has pushed the boundaries of action is the environmental movement. Meetings, leaflets, rallies, lobbying, petitions — these are so commonplace as to be unremarked. There are some consumer boycotts. These are widely accepted as an acceptable form of protest.

Worker boycotts, namely refusals to work, are another matter. In the 1970s, the New South Wales Builders Labourers Federation initiated bans on certain projects in support of local citizens' groups, on environmental, heritage or other grounds. These so-called green bans were highly original and contested initially, but have now become a standard part of the repertoire of social action in Australia.[26]

More controversial than green bans are forms of direct action such as protesters locking themselves to machinery, sailing in front of ships or squatting in trees. The targets of such actions typically call on police to remove protesters, and then a struggle begins in the courts. Protesters are sometimes charged, convicted and fined; sometimes they are not charged or they are let off with little or no penalty.

Violence in support of social causes is another possibility. In Australia, there is no organised use of violence by environmentalists; on those rare occasions when individual activists have used violence, environmental organisations have condemned it.

At the boundary between violent and nonviolent action is sabotage, which can be considered violence against objects but not against people. In the US, environmentalists have used methods of sabotage — called ecotage — such as putting spikes into trees (to damage equipment if they are logged) or sand into petrol tanks of machinery.[27] There has been a big debate over the morality and strategic utility of sabotage. However, in Australia the debate has been one-sided, with hardly anyone supporting sabotage.

In summary, a wide range of methods can be used in waging struggles over controversial issues. Within scientific forums, the convention is that points of view are advanced or defended largely using evidence and logical argumentation. In the wider community, all sorts of methods can be used, ranging from public meetings and lobbying to strikes and sabotage.

What is considered legitimate in these struggles depends on norms established through previous practice. In scientific forums, it is rare for someone to be called a liar, whereas strong and abusive language is more common in public forums. Statements in scientific journals are typically couched very carefully, with qualifications, whereas comments on television are often briefer and punchier, without all the qualifications.

Summary

To put the attack on the AVN in context, I have surveyed key features of scientific controversies. Contrary to expectations, additional scientific evidence seldom has much impact on controversies, in part because partisans can reinterpret or dismiss contrary findings and in part because public controversies involve differences in values as well as disagreements about science.

Interests, especially vested interests, are important in many controversies. Powerful groups have the resources to present or support their viewpoint, help set research agendas and influence policy makers. When a side is supported by powerful groups with vested interests, it warrants extra scrutiny.

In controversies, the usual assumption is that scientific knowledge is a neutral body of information that can be used to inform decision-making. But scientific knowledge is never neutral. When vested interests are involved, some research topics will be favoured and others neglected. When research is not done because of political factors, the information base in controversies is biased towards one side.

It is common for adversaries to approach the issue using different assumptions and values. The contrary viewpoints can be called paradigms: they shape the way people see the issues. The idea of paradigms helps to explain the remarkable persistence of controversies in the face of new evidence.

The vaccination debate is typical of scientific controversies generally. The debate has continued despite new scientific findings; vested interests play a prominent role; there is comparatively little research undertaken from a perspective sceptical of vaccination; and the main two sides in the debate approach the issues using different assumptions and values.

Part 2: *A case against the AVN*

The Australian Vaccination Network has come under sustained criticism and attack by a number of opponents. In this part, I focus on arguments against the AVN's right to oppose vaccination. Part 3 looks at attacks on the AVN as an organisation. In practice, the arguments and the attacks are mixed together; I separate them for convenience.

Arguments against the AVN's activities are clearly displayed in a complaint by Ken McLeod made on 14 July 2009 to the Health Care Complaints Commission. The HCCC is an independent body funded by the New South Wales government with the brief of dealing with complaints against health service providers in the state. In making this complaint, McLeod argues the AVN is a health service provider and the AVN's activities are dangerous to the public. Overall, McLeod's complaint can be seen as a component of the attack on the AVN, discussed in part 3. But within the HCCC complaint itself, the evidence, arguments and language are much more typical of rational argumentation, the sort of thing conventionally found in scientific treatments. Therefore, it is useful to analyse McLeod's complaint as a way of probing the sort of thinking behind the criticisms of the AVN's position.

The complaint is a 23-page document. It begins with an overview of the AVN. The longest sections deal with examples of statements and advice from the AVN alleged to be dangerous. The complaint concludes with recommendations.

Doherty and crimes against humanity

McLeod's complaint opens with a photo of Peter Doherty, a medical researcher. Doherty spent most of his research career in the US and was hardly known in Australia outside of medical research circles until 1996, when he won the Nobel Prize in Physiology or Medicine. As one of relatively few Nobel Prize winners from Australia, he became a widely acclaimed public figure; he was named Australian of the Year in 1997. Doherty began commenting on a range of issues.

Alongside the photo of Doherty, the complaint shows a slide used by Doherty in a talk. The slide is titled "Crimes against humanity" and lists four alleged crimes:

- Holocaust denial
- HIV/AIDS denial
- Preventive medicine denial: AIDS/condom denial; childhood vaccination denial
- Anthropogenic climate change denial.

It is worthwhile examining each of these "denials" because they illustrate a mindset for looking at the vaccination issue.

The Holocaust was the Nazi programme of exterminating Jews and other groups including gays, Gypsies, people with disabilities, political opponents, and people of non-Aryan background. More than 11 million people were killed in all, including about 6 million Jews. The Holocaust is widely recognised as one of the greatest crimes in history. However, a few individuals have claimed the Holocaust did not occur, for example arguing that the number of Jews who died was much smaller than the usual figure of 6 million and that these deaths were not a result of Nazi policies. Only a few who challenge the conventional account of the Holocaust have gone into detail to analyse the extensive evidence for the Holocaust, including photos, documents and physical remains. These individuals commonly call themselves historical revisionists; the most prominent is British historian David Irving.[28] To others, anyone who does not accept the orthodox account of the Holocaust is called a Holocaust denier.

The Holocaust is rightly called a crime against humanity. Indeed, it was a key trigger for a range of post-World War II initiatives, including the UN genocide convention. But is it a crime against humanity to deny the Holocaust occurred? In Germany it is illegal to deny the Holocaust and a few individuals have been convicted under this law. But in most countries of the world — for example, Britain and the US — it is legal to question the Holocaust.

In Australia, the most prominent questioner of the occurrence of the Holocaust is Fredrick Toben. He visited Germany and, as a result of expressing his views, was convicted under German law of defaming the dead and served more than half a year in prison. In Australia, courts ordered him to remove from his website material vilifying Jews.

According to Doherty's slide, Holocaust deniers such as David Irving and Fredrick Tobin are guilty of crimes against humanity. But Doherty has confused two different things. The Holocaust is one thing — a crime against humanity. Holocaust deniers, on the other hand, do not kill anyone; instead, they say the Holocaust didn't happen, at least not according to the standard account. In most countries, that is not a crime at all, much less a crime against humanity. Even in Germany, where Holocaust denial is a crime, it is not considered a crime against humanity: it is treated as a form of defamation.

Doherty has confused expressing a viewpoint about the Holocaust with being responsible for it. This is a simple and obvious mistake but is worth emphasising because it seems to underpin the thinking of critics of the AVN.

Doherty's next item in his list of crimes against humanity is HIV/AIDS denial. The conventional scientific view is that HIV, the human immunodeficiency virus, is responsible for the disease AIDS (acquired immune deficiency syndrome). However, a number of established scientists — most prominently Peter Duesberg — have argued HIV may not be involved in AIDS, or AIDS is a label inappropriately applied to a variety of other diseases.[29] Quite a number of non-scientists support this position. Critics of the orthodox view on HIV and AIDS are commonly called HIV/AIDS sceptics. Doherty labels this viewpoint HIV/AIDS denial, thereby invoking an association with Holocaust denial, which is more widely condemned.

Supporters of the conventional view about AIDS advocate a range of measures to prevent transmission of the virus, such as using condoms and not reusing needles. From the point of view of sceptics, these measures are pointless, because HIV alone is not responsible for AIDS. If the sceptics are taken seriously, then measures to reduce the chance of HIV transmission might not be pursued, or not implemented vigorously enough. In South Africa, former president Thabo Mbeki seemed responsive to the arguments of the sceptics, with possible risk to anti-AIDS efforts. In response, thousands of scientists worldwide affirmed their belief in the conventional view.

Measures against AIDS have been controversial in many countries, in part because they involve information about and changes in sexual practices and different policies concerning injected drugs. For example, the US government has funded programmes advocating sexual abstinence rather than condom use.

The issue of whether HIV is responsible for AIDS has been treated as a scientific matter, with the majority of scientists in the field seeing sceptics as misguided and the sceptics seeing the majority as misguided. No one has ever suggested that rejecting the HIV-AIDS link should be a crime, much less a crime against humanity —except Doherty.

Next consider the final item on Doherty's list: anthropogenic climate change denial. The orthodox scientific view is that the world's temperature is rising and this, to a fairly high degree of certainty, is anthropogenic, in other words due to human activities such as burning coal, oil and natural gas, known as fossil fuels. This view is enshrined in the reports of the Intergovernmental Panel on Climate Change (IPCC), which summarises scientific research in the area.

Despite a high level of agreement by climate scientists, a minority of scientists rejects the standard view, arguing the evidence is not sufficient to show that the climate is warming or not sufficient to show human activity is responsible, or both. These climate sceptics have the backing of some fossil fuel corporations, because these corporations have a vested interest in the world continuing to use ever more fossil fuels. In some countries, including Australia and the US, climate scepticism has received extensive media coverage and a considerable proportion of the public endorses the sceptical position.

The IPCC concludes that failing to cut back on fossil fuel use and other activities contributing to global warming could lead, decades in the future, to disastrous consequences, including significant rises in global temperatures and a rise in the sea level, inundating many populated areas. Failing to act now means much worse consequences later, according to the standard view; furthermore, it is cheaper economically to act now. Therefore, it might be argued that the climate sceptics are providing a rationale for do-nothing, wait-and-see policies that are disastrous in the long term.

Although the potential consequences of global warming are huge, no one has suggested climate-change sceptics are guilty of a crime. They are seen as presenting a viewpoint in a scientific debate, backed by groups with vested interests and supported by a proportion of the general public. If this is a crime, then many are guilty. Doherty, though, who refers to climate change scepticism as climate change denial — again suggesting an analogy with Holocaust denial — lists this scepticism as a crime, indeed a crime so horrific as to be called a crime against humanity. His viewpoint seems to be that when the potential human consequences are serious, criticism of the standard view is criminal.

Finally, consider the remaining point on Doherty's slide: "Preventive medicine denial: AIDS/condom denial; childhood vaccination denial." The matter relevant to the AVN is "childhood vaccination denial." Doherty obviously likens the consequences of insufficient vaccination with the Holocaust, AIDS and future climate disaster. However, in no country is criticism of vaccination considered even an ordinary crime, much less a crime against humanity.

Doherty has taken the category of "crimes against humanity" out of its original context. It most commonly applies to mass killing, especially genocide. Doherty has applied it to completely different arenas — matters of scientific debate — where hardly anyone describes actions as crimes.

Secondly, Doherty has confused two things: serious consequences and debating the issues. Even with genocide, debates rage. The Holocaust is so widely accepted that questioning it is seen, in some countries, as an act of racism and provocation. But other genocides are less universally stigmatised. The 1915 genocide of the Armenians is still denied today by the Turkish government; indeed, within Turkey it is risky to speak about it, and other governments, wanting to maintain good relations with the Turkish government, are cautious about raising the matter.[30] The ongoing genocide in Darfur has been ignored by most governments, and there have been debates about whether it is really a genocide. The point here is that nearly all genocides are debated. The crime against humanity is genocide itself, whereas arguing about genocide is just that: joining a debate. Only in the case of the Holocaust has presenting a sceptical view been criminalised — but not as a crime against humanity, but as a form of racial vilification.

I have examined Doherty's slide in considerable detail because it reflects a way of thinking about vaccination that seems to underpin the attack on the AVN. The slide stigmatises critics of vaccination as criminals guilty of crimes against humanity.

McLeod's complaint to the HCCC, after presenting Doherty's slide and describing his eminence as a scientist, says "His views on immunology and vaccination should therefore be taken seriously" and then "It is therefore remarkable that no action has been taken against the most active and most effective childhood vaccination deniers, the Australian Vaccination Network." The complaint thus relies, as its apparent rationale, on Doherty's mistaken identification of debate with policy consequences and mistaken labelling of expressing an unorthodox viewpoint as a crime against humanity.

McLeod's next statement is curious: "This complaint is not intended to enter into the debate about the risks and benefits or otherwise of vaccination or any particular vaccine." McLeod seems to assume the issue is beyond debate. If vaccination is open to debate, there should be no problem with the AVN presenting a critical view.

The complaint next states, "This complaint is intended to prove that the Australian Vaccination Network engages in misleading and deceptive conduct to dissuade people from vaccinating themselves and their children, and that consequently the AVN is a danger to public health and safety." The concluding clause — "consequently the AVN is a danger" — again assumes the case for vaccination is overwhelming, indeed beyond debate.

After these preliminaries, the complaint describes the AVN and argues that the Health Care Complaints Act applies to the AVN. It then raises the issue of free speech.

Free speech

Section 5 of the complaint is titled "Is the AVN protected by a 'right of free speech?'" The unstated rationale for this section is that societies with a right to free speech should allow discussion of contentious public issues, including challenges to orthodoxy. The section starts with this stark statement: "Contrary to the perceptions of an Australian public raised on a diet of Hollywood movies, there is no right of free speech in the Australian Constitution." It goes on to mention restraints on free speech such as laws on defamation, copyright and racial vilification.

McLeod is correct in noting that Australia has no constitutional protection of free speech but incorrect in assuming free speech in practice relies exclusively or even strongly on constitutional protection. In Australia, free speech operates as a social norm established through struggle. It has been defended by trade unionists, civil liberties campaigners, lawyers and many others, through campaigns against censorship and most importantly by simply practising free speech. As a result, speech is probably just as free, overall, as in countries with constitutional protection.[31]

In the US, much is made of the right of free speech as protected by the First Amendment to the Constitution, and there are some dramatic examples of legal defence of free speech rights. On the other hand, there are numerous examples of sustained assault on free speech, either through laws, the way they are implemented or through lack of enforcement.[32] Many employees lose their jobs for speaking out, even in their non-work roles; legal actions are used to scare outspoken citizens; activists are targeted with reprisals; citizens are prosecuted for wearing badges; in several US states, so-called food disparagement laws have been passed that make it easier for food producers to sue critics for defamation.

In nearly every country, there is little free speech within workplaces. Courts interpret free speech protections as not applying on the job, though arguably this is a crucially important place for being able to speak out.[33]

In the US, Canada and other countries with constitutional guarantees of free speech, there can be a perception that free speech depends on legal protection, when actually campaigning and public expectations are equally or more important. Constitutional protections are a consequence of earlier campaigning and free speech in practice continues to depend on a public that can be aroused by restrictions.[34]

McLeod's statement that "there is no right of free speech in the Australian Constitution" is misleading because it assumes free speech depends on constitutional protection. He then claims that, "So, in Australia, one is entitled to free speech provided that one does not harm an individual or society in general." This also is misleading. There are plenty of types of speech, fully accepted in Australian society, that harm individuals or society. For example, one is entitled to say someone is fat, corrupt or a murderer — defamatory statements that can be quite harmful — if the statements can be shown to be true. Teachers are allowed to make statements about the poor performance of their pupils, even though these statements might harm the pupil's career prospects.[35] In the financial pages of newspapers, there are numerous reports on corporate affairs, some of which are damaging to particular corporations and their employees.

In the wider public arena, it is accepted that scientific theories and public policies can be debated. Consider a few examples. The debate on climate change has been going on for decades and became a major public issue in the early 2000s. It is safe to say some policies will be beneficial and others will be harmful. Yet no one says free speech does not apply to the climate change debate.

The health effects of smoking have been debated scientifically and in policy terms since the 1950s. Today, nearly all scientists and policy makers agree smoking is harmful. There have been some controls on the "free speech" of tobacco companies — in some countries, they can no longer advertise on television or billboards. However, smoking supporters are still allowed to produce leaflets and to comment on blogs and radio. Note that explicit legislation was required to prevent cigarette ads in the mass media. Without such legislation, the expectation was that such ads were legal and allowed. The lesson from the smoking-and-health issue is that free speech applies until it is restricted through legislation.

Consider again this statement of McLeod's: "So, in Australia, one is entitled to free speech provided that one does not harm an individual or society in general." A more accurate statement would be "So, in Australia, one is entitled to free speech unless it is restricted by law or custom." There is no law against free speech on controversies over science or public policy, except for targeted legislation in a few special cases like smoking. There are no laws against discussion of vaccination.

The complaint's section on free speech states "The AVN is clearly harming individuals and society and is not protected by any right of free speech." The first part of this sentence — "clearly harming individuals and society" — is debateable but in any case does not provide a justification for "not protected by any right of free speech."

In summary, McLeod argues that the AVN does not have the right to speak out about vaccination if this harms individuals or society. His argument is flawed because he equates the practice of free speech with constitutional protection: in Australia, free speech is a practice established and maintained by social struggle. McLeod does not provide a single example of any other controversial scientific issue in which critical comment on an issue is criminalised. It is easy to rebut his argument simply by pointing to other debates, like climate change, in which critical viewpoints are allowed or even encouraged.

The rationale for censoring the AVN

McLeod's complaint next claims that some of the AVN's statements are "clearly wrong, misleading, deceptive, biased, and a danger to public health." There seems to be an unnecessary step in the logic here. The complaint argues there is no right of free speech if there is any harm to individuals or society. So it is possible that every statement by the AVN could be correct and not misleading, yet pointing to problems with vaccination could still endanger public health.

The complaint says "Nowhere in all my research into the AVN did I find any statement from the AVN supporting vaccination in any way." This seems to be a new expectation: the AVN must have a "balanced" view of vaccination — with statements for and against — otherwise it is accused of bias.

This sort of expectation is never applied to partisans in other debates. Are opponents of nuclear power expected to include statements supporting nuclear power in some

way? And are proponents expected to include statements critical of nuclear power? To expect this is unrealistic, especially given that the dynamics of polarised public controversies drive out voices raising both pluses and minuses of the topic under debate. McLeod does not say whether he expects proponents of vaccination to mention criticisms.

Examples of dangerous statements

The bulk of McLeod's complaint is made up of a number of examples of allegedly false and dangerous statements. I will discuss a few of these to illustrate the pattern of argumentation.[36]

The first example is based on this statement on the AVN's website concerning the vaccine for MMR (measles, mumps and rubella): "Some countries such as Japan have stopped using the combination vaccine because of the increased risk." McLeod does not challenge the claim that "Some countries such as Japan have stopped using the combination vaccine"; his attention is on the phrase "because of the increased risk," which he disputes in the case of Japan.

He says, "In April 1993, Japan stopped using the MMR vaccine … following unsubstantiated reports that the anti-mumps component might be causing meningitis." So obviously there were reports about an increased risk. McLeod says they were "unsubstantiated." He goes on to refer to research, in particular by Hideo Honda, showing "the MMR vaccine cannot have caused autism in the many children with autism spectrum disorders in Japan who were born and grew up in the era when MMR was not available." McLeod then says "the perceived 'increased risk' was found to be baseless" — namely found by Honda to be incorrect — and hence the AVN's statement is "selective and deceptive, and completely out of date."

The complaint is silent concerning the way the statement might be reconfigured to be acceptable. Presumably it would be okay to say, "Some countries such as Japan have stopped using the combination vaccine" and perhaps even "Some countries such as Japan have stopped using the combination vaccine because of an initial perception of increased risk." The complaint does not explain why the Japanese authorities have not resumed using the combination vaccine, given there is supposedly no foundation for a concern about increased risk.

In this instance, the AVN and the complaint thus seem to differ about a small phrase, "because of the increased risk." McLeod offers an argument that there was actually no increased risk. But this seems to be a matter of scientific dispute. McLeod does not provide a comprehensive analysis. He quotes just one researcher — Honda — whose work the reader is intended to accept without dispute.[37]

To refer to "increased risk" in this situation is to refer to a perception of increased risk, because scientific knowledge is never final: new observations, experiments and theories may lead to new understandings. The complaint lacks a detailed analysis of decision-making processes within the Japanese medical establishment and government in order to establish beyond dispute that the decision to stop using the combination vaccine was *not* due to a perception of increased risk.

> ***The case against the AVN is flawed because it does not recognise the value of public debate or the role of differing values.***

The complaint's clinching statement concerning this example of a "dangerous statement" is "So the AVN's statement here is demonstrably untrue." As discussed above, this claim is dubious, because detailed evidence about the thinking of Japanese authorities is lacking.

The claim that the AVN has made a "demonstrably untrue" statement sounds damning on the surface. It is based on an assumption that there is an overarching perspective from which statements can be judged. But the debate over vaccination involves competing perspectives, with fundamental differences — it is a sort of paradigm dispute.

The claim about a statement being "demonstrably untrue" reflects a stand from a pro-vaccination point of view. The complaint can be interpreted as adopting the assumption that vaccination is safe until definitively proved otherwise. The discussion of Honda's research shows increased risk may not be a sufficient explanation for the Japanese decision. However, the AVN's view is that vaccination is risky until definitively proved safe. From its perspective, the statement about the Japanese case is correct until conclusively proved incorrect. McLeod has not provided such proof. So his claim that the AVN has made a demonstrably untrue statement can be interpreted as simply a claim imposing one paradigm's assumptions on a contrary paradigm. In other words, in a paradigm dispute, a claim about being demonstrably untrue may say very little beyond "I don't agree with your paradigm."

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The next statement addressed in the complaint is also about the MMR vaccine. The complaint says on 15 June 2009, Meryl Dorey of the AVN asked for donations for an AVN advertisement containing the following statements about a child named Bailey Banks:

> Court again concedes vaccines cause autism
>
> … the [US] vaccine court has ruled vaccines caused Bailey's autism and ordered compensation for his family. Banks is the second case where the government could not deny the overwhelming evidence showing vaccines caused a child's autism.

McLeod then states "the AVN's interpretation of the judgement is not correct" because the judgement was "the probability in his case alone was '50% plus a feather' that the vaccine caused some side effects." He also says the US government "has not conceded that there is a link at all." Finally, he quotes the court judgement as stating "the Court is inclined to view Bailey's condition as accurately as the medical records will allow; that is, to find that Bailey more likely than not suffers from PDD,[38] and not from autism."

What is at stake here is the interpretation of a court judgement about effects of the MMR vaccine. From the AVN's viewpoint, the court decision was that MMR vaccine caused autism in this case[39]; from McLeod's viewpoint, the court decision was that the MMR vaccine caused PDD.[40]

Part of the difference can be explained by differing paradigms, or starting points. From the AVN's perspective, the burden of proof lies with vaccine proponents to show that MMR does not cause autism; for them, the evidence was overwhelming in this case and the court decision reflected this. From McLeod's perspective, the burden of proof is on critics of vaccination to show MMR causes autism; in Bailey's case the evidence was ambiguous, not overwhelming, and the court might have been overgenerous in even recognising a vaccine side effect. Furthermore, the court judgement was that Bailey had PDD, not autism.

In short, the AVN interpreted the court's finding from its framework, whereas McLeod points out this interpretation seems to go beyond the statements in the court judgement. He then concludes "the AVN's statements here are demonstrably untrue" — the same conclusion as the previous instance, again reflecting an assumption that there is a single framework that can be used to assess statements on both sides of the vaccination debate.

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A later example used in the complaint concerns something said by Meryl Dorey on television: "You didn't die from it [whooping cough] 30 years ago and you're not going to die from it today." The complaint says this is "clearly wrong" because some people in Australia do die from whooping cough, otherwise known as pertussis. McLeod provides a mortality table showing 14 deaths from pertussis in Australia in the period 1976–1985 — about 30 years ago — and 17 deaths in the period 1996–2004, the closest period to Dorey's reference to "today."

Dorey's statement "you're not going to die from it" can be interpreted as a shorthand for "you're highly unlikely to die from it." This sort of expression is quite often used on television, where careful qualifications and explanations are scarce because they are not perceived by producers as "good television." Most television interviews involve recording ten or more times as much film as ever screened; television editors make decisions about what to use, seldom consulting the person filmed. So it is unrealistic to expect literal scientific accuracy in a television interview.

McLeod goes on to say that, globally, the death toll from pertussis among under-15s is between 295,000 and 390,000 and therefore for Dorey to say "you're not going to die from it" is "dishonest or incompetent, or both." However, Dorey was speaking to an Australian audience in the context of the vaccination debate, so these global figures are not relevant. Furthermore, there is a paradigm difference involved in interpreting the global pertussis death toll. Supporters of vaccination see these deaths as due to lack of vaccinations, but critics of vaccination see them as largely caused by poor living conditions, including unsafe water supplies, poor diet and unsanitary practices found in many developing countries. The complaint, in using global pertussis deaths to criticise Dorey's statement, bases its criticism on a pro-vaccination assumption and does not acknowledge there is a different possible interpretation of the evidence, an interpretation that is standard in treatments critical of vaccination. In other words, McLeod, working with a pro-vaccination paradigm, accuses Dorey, working with a different set of assumptions, of being "dishonest or incompetent." He does not recognise or acknowledge paradigm differences, and thus seeks to turn a matter of scientific and public debate into a confrontation between the correct viewpoint (pro-vaccination) versus error (anti-vaccination).

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McLeod continues with numerous other case studies of alleged mistakes and deceptions in statements made by the AVN or Dorey. These are most commonly concluded with the claim that "the AVN's statements are demonstrably untrue."

Section 9 of the complaint is titled "What are the effects of the AVN anti-vaccination campaign?" This section begins by saying the AVN is active in getting its message out. It then says

> The AVN is based in northern NSW. 33% of children in that region are not fully vaccinated. This is not only a risk to these children but also to other unvaccinated children who are not protected by a "herd immunity."[41]

This paragraph seems to suggest the AVN is responsible for 33% of children in northern NSW being unvaccinated. No evidence is provided that 33% is greater than the level anywhere else in Australia, nor that the AVN is more influential in northern NSW than anywhere else.

The complaint next states:

> For parents concerned for the well-being of their children, and not being exposed to the epidemics that our older generations were, the message is believed and acted upon, and consequently we are seeing the reappearance of diseases we thought were defeated and people are dying.

McLeod here attributes the AVN with success: its "message is believed and acted upon." However, no evidence is presented to support this claim. Nor does he give any evidence for the reappearance of diseases. Indeed, by the strict demands of his own complaint, McLeod's statement about the reappearance of diseases could be considered "demonstrably untrue" because only one disease, smallpox, has been eradicated, and it has not reappeared.

In summary, McLeod makes statements about the effectiveness of the AVN's efforts without providing any supporting information.

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Section 10 of the complaint starts with a summary. McLeod says, "Nowhere in all my research into the AVN did I find any statement from the AVN supporting vaccination in any way." He says errors made by the AVN, if they were innocent, would sometimes be supportive of vaccination and sometimes be critical, but all the errors he found were on the critical side, so he is "drawn to the inevitable conclusion that the mis-statements are deliberate." This conclusion reflects McLeod's expectation that the AVN provide a balanced treatment of vaccination. This is a one-sided expectation: he does not

suggest that medical authorities provide information critical as well as supportive of vaccination, nor does he himself offer much in the way of critical information.

The AVN's position is much more easily understood as a partisan position in a scientific controversy. No one is surprised when opponents of nuclear power do not balance their anti-nuclear information with pro-nuclear information, nor that opponents of genetic engineering focus on its problems and give little or no attention to its benefits.

It is important to remember that, within Australia, the climate of professional opinion is overwhelmingly pro-vaccination. All medical authorities and most doctors support vaccination and seldom mention any disadvantages. In this context, the AVN presents a contrary perspective: it is best seen as presenting a dissenting voice against a dominant viewpoint. There seems little risk that readers of the AVN's materials will be unfamiliar with pro-vaccination arguments.

That, however, is not McLeod's perspective. He argues the AVN's statements are "demonstrably false" and "deliberate" as a basis for the HCCC acting against the AVN. He says Meryl Dorey and the AVN are health practitioners in terms of state health regulations, in breach of the regulation that "A health practitioner must not attempt to persuade clients from seeking or continuing with treatment by a registered medical practitioner" and in breach of the regulation that "A health practitioner must not make claims, either directly or in advertising or promotional material, about the efficacy of treatment or services provided if those claims cannot be substantiated."

Conclusion

I have analysed Ken McLeod's complaint to the HCCC as a window into the logical basis for attacking the AVN. The complaint is a lengthy and carefully written document intended to convince an ostensibly independent agency. However, McLeod did not sit down to write a justification of why it is legitimate to try to shut down the AVN, but instead adjusted his arguments to the requirements of the HCCC and legislation. To fit with the requirements of the HCCC's ambit, McLeod had to argue that Meryl Dorey and the AVN are health practitioners. Despite the distorting effects of the HCCC complaint format, McLeod's complaint reveals a lot about the thinking used to justify an attack on the AVN.

Note this is a case against an organisation — it is not the same as the case for vaccination or against anti-vaccination. This is clear in McLeod's complaint: he does not make the case for vaccination so much as assume it.

McLeod's complaint reveals a number of beliefs and assumptions.

- He assumes science is a matter of facts alone; he does not allude to the concept of competing paradigms.
- He rejects the principle of free speech in Australia, reducing it to a matter of constitutional protection. More specifically, he seems to believe saying anything factually wrong is not legitimate — at least in the vaccination debate.
- He apparently rejects the idea of public debate, at least on vaccination.

Each of these three assumptions can be challenged. Here is an alternative set of assumptions or perspectives.

- Scientific controversies can be usefully understood in terms of a clash between paradigms or worldviews, which involve differences in perspectives on both scientific claims and values. Values can be ethical, political, economic or social.
- In Australia, free speech operates in practice and is the outcome of struggles.
- Vaccination is one of a number of issues that has been and should be openly debated in a free society.

McLeod targets the AVN as a deceptive health practitioner. But he gives no indication of concern about other groups that could be conceived of as health practitioners within his broad definition, such as campaigners on fluoridation, genetic engineering, climate change, pesticides and nuclear power. Campaigners on each side of these disputes regularly accuse the other of using deceptive statements to promote a dangerous measure with consequences for health.

Each of these issues is best understood as a scientific controversy involving matters of public policy in which contending parties approach the issue with different sets of assumptions about benefits, risks, ethics, economics and politics. That's also, I believe, the appropriate way to look at disputes over vaccination.

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In essence, the case against the AVN is that any alternative to the dominant pro-vaccination position is unacceptable because it is a danger to the public. This case is flawed because it does not recognise the value of public debate or the role of differing values.

It is important to understand the logic behind the anti-AVN case, because it is likely to be the motivation or justification for the attack on the AVN. As will be seen in the next section, the attack involves a number of methods and different individuals, not all of whom may subscribe to McLeod's thinking. However, none of them has produced such a careful justification for attacking the AVN. It is plausible to believe McLeod's complaint is the most thorough exposition of the anti-AVN case; the justifications behind others' actions might, if anything, be less well developed.

Part 3: *The AVN under attack*

Since 2009, the AVN has come under severe and sustained attack by vaccination advocates. To give a sense of their campaign, I describe three crucial modes of attack — unsupported claims, formal complaints and harassment — giving illustrations of each. I do not attempt to analyse all the methods of attack or to itemise all instances.

Unsupported claims

On the Stop the Australian Vaccination Network (StopAVN) Facebook page, there is this basic information:

> Name: Stop the Australian Vaccination Network
>
> Category: Organizations - Advocacy Organizations
>
> Description: The Australian Vaccination Network propagates misinformation, telling parents they should not vaccinate their children against such killer diseases as measles, mumps, rubella, whooping cough and polio.
>
> They believe that vaccines are part of a global conspiracy to implant mind control chips into every man, woman and child and that the "illuminati" plan a mass cull of humans.
>
> They use the line that "vaccines cause injury" as a cover for their conspiracy theory.
>
> They lie to their members and the general public and after the death of a 4 week old child from whooping cough their members allegedly sent a barrage of hate mail to the child's grieving parents.
>
> The dangerous rhetoric and lies of the AVN must be stopped. They must be held responsible for their campaign of misinformation.[42]

The interesting part here is the claim that the AVN (referred to as "they") believes vaccines are part of an international conspiracy. It is possible that some individual members of the AVN believe this, but there is no evidence that the AVN as an organisation subscribes to this view. Meryl Dorey, the most prominent figure in the AVN, denies having any such beliefs. So this can be said to be an unsupported claim, indeed a false claim.

Some of the StopAVN's Facebook claims about the AVN — specifically about the "global conspiracy to implant mind control chips" — were quoted in a news story in the *Sydney Morning Herald*.[43]

Formal complaints

In part 2, I analysed Ken McLeod's complaint to the HCCC in order to throw light on the assumptions and values underlying the attack on the AVN. But this complaint, and others like it, can also be seen as means of attack.

In the 1980s, two US academics, Penelope Canan and George Pring, noticed a pattern. Thousands of US citizens were being sued for actions such as:

- writing a letter about pollution to a government environmental agency
- making a formal complaint about police brutality
- collecting signatures for a petition
- reporting law violations to health authorities
- testifying at a hearing about a real estate development.

In such legal actions, the most common basis for suing is defamation; others include conspiracy and interference with business. Canan and Pring dubbed these sorts of legal actions Strategic Lawsuits Against Public Participation, or SLAPPs.[44] The acronym SLAPP has been widely adopted.

Many SLAPPs have no chance of success in court, especially ones in which the defendant could claim protection under the First Amendment to the US Constitution, which includes a right to petition the government. But even when SLAPPs have no legal justification or chance of success, they can be quite effective in intimidating those who are sued. In many cases defendants acquiesce or reduce their activities. The acronym SLAPP is apt: these sorts of legal action discourage people from participating on public issues.

SLAPPs also occur in Australia, for example when property developers sue citizens who speak out against their plans.[45] In Australia, there is no legal protection for petitioning the government so, in the courtroom, SLAPP defendants usually rely on more conventional legal defences. Another component of resistance to SLAPPs is campaigning, namely taking the issue to a wider public. The Tasmanian timber company Gunns sued 20 environmental organisations and individuals in what many thought was a blatant attempt to suppress dissent against Gunns' projects. The Wilderness Society took the lead in opposing the Gunns lawsuit, and organised publicity through Tasmania and elsewhere in Australia.

Greg Ogle, an activist from South Australia, is not a lawyer. But he has immense experience with SLAPPs, initially with two prominent cases in South Australia and later with the Gunns case. He wrote a book titled *Gagged* describing these cases and arguing it is essential to see them as political as well as legal.[46]

A SLAPP operates to move a social or political debate into the legal arena, thereby tying up the defendant in expensive and time-intensive legal jousting and distracting the defendant from campaigning. The challenge for targets of SLAPPs is to return the issue to the public arena and, if possible, to make the legal action counterproductive.

McLeod's complaint to the HCCC is not a legal action, so it cannot be described as a SLAPP, but it has a similar dynamic. It could be called a SCAPP, a Strategic Complaint Against Public Participation. A SCAPP, like a SLAPP, shifts a public debate into a different arena that ties up the target of the complaint in prolonged procedures, requiring a large time commitment with the risk of an adverse finding.

Others, besides McLeod, have complained to the HCCC about the AVN. Furthermore, complaints about the AVN have been made to the Office of Liquor, Gaming and Racing, the Department of Fair Trading, the Australian Securities and Investments Commission and other government bodies. This is evidence of a concerted campaign against the AVN using official complaints. The acronym SCAPP thus seems warranted.

An adverse formal outcome is not essential to the effectiveness of a SCAPP as an attacking tool. The complaints have required Dorey to spend large amounts of time and effort, and have produced anxiety. Furthermore, prior to

the outcome of the HCCC's investigation, some of the AVN's opponents, in writing to others and in postings on the web, stated the AVN was the subject of a complaint to the HCCC. The tactic here is to make a complaint about the AVN to an official body and then use the existence of the complaint to imply the AVN is under suspicion.

The HCCC decided to investigate two complaints against the AVN, McLeod's and one other. It recommended that the AVN add a disclaimer to its website and, when the AVN failed to do this, issued a public warning about the AVN. The HCCC's decisions to investigate and issue a warning were a tremendous bonus for opponents of the AVN.

The HCCC's investigation and warning could be examined in some depth. Here, though, I only mention some grounds for questioning the HCCC's actions.

- The AVN is not a health care provider in the normal sense: it is a citizen group campaigning on a social issue. The HCCC's decision to investigate reflects a misunderstanding of the nature of public debate on controversial issues.
- The HCCC showed bias in its investigation. It refused to provide to the AVN a copy of one of the complaints made against it. This is a denial of natural justice; in other words, it was unfair. The HCCC's investigation reports show little evidence of seriously addressing the detailed responses from the AVN.
- The HCCC has no special claim to be an authority on vaccination, much less to adjudicate on long-standing matters of public debate. It appears to have simply taken the line of supporters of vaccination.
- The HCCC's recommendation was symbolic, not substantive. The HCCC recommended that the AVN put a specified disclaimer on its website. In practice, disclaimers like this have little impact on most visitors to websites, especially a large site like the AVN's; many are likely to bypass or ignore disclaimers. The HCCC's recommendation thus would make little difference to people's choices concerning vaccination.

The HCCC served as a de facto tool for opponents of the AVN. The opponents' SCAPPs on their own caused considerable work and worry for the AVN. The HCCC's warning, despite its shortcomings, was used by the opponents to discredit the AVN.

Harassment

Some members of the AVN have received personal threats. For example, Meryl Dorey, on 8 December 2009, received an anonymous Facebook message: "we're coming for you babykiller."

On 29 July 2009, Daniel Raffaele made this post on a discussion board on the Stop the AVN website:

> Primary Target — Australian Vaccination Network (AVN) — Meryl Dorey
>
> Level of Engagement: Total
>
> Objective: Shut down

In June 2009, this tweet was sent to Dorey: "did you know that you should die in a fire for all the lives you and your organisation has [*sic*] put at risk?"

On 31 May 2010, three tweeters sent the following message to Dorey: "You do realize that you're a [*sic*] unethical and completely dishonorable liar, right? Please do the world a favor and die" [US spellings in the original].

I have seen copies of each of these messages. I have also received reports of threatening phone calls to members of the AVN.

It is hard to judge the seriousness of these sorts of messages. Some might laugh them off as flamboyant grandstanding, rather like boys trying to show how tough they are. But others would find it difficult to dismiss them so casually, imagining aggressive language might be the prelude to a physical attack. Undoubtedly, some of these messages can be perceived as threatening and cause distress.

Opponents of the AVN took over a website titled Vaccination Awareness and Information Service (VAIS). One set of pages on the site is a "Hall of Shame," consisting of a list of businesses that have advertised in the AVN's magazine *Living Wisdom*. Here is the introduction to one of the VAIS hall-of-shame pages.

> Below is a list of businesses that are professional members, or supporters, of the Australian Vaccination Network, an organisation disseminating dangerous anti-vaccination messages into our communities based on outrageous conspiracy theories.
>
> The scientific and medical community has indisputedly [*sic*] shown that the risk/benefit is overwhelmingly in favour of vaccination.
>
> This Hall of Shame is provided as a community service to parents who need to be aware that when dealing with these organisations they are supporting the continued conspiracy theory nonsense and misleading information which can lead to epidemics of preventable disease.[47]

The Hall of Shame illustrates two elements of the attack on the AVN. It contains allegations that the AVN subscribes to "outrageous conspiracy theories." More importantly, it is a type of threat. To have one's business details listed on the web in this context can be read as an invitation to subject those listed to harassment, such as threatening phone calls. That is exactly what seems to have happened in some cases. Furthermore, some business owners might find being listed on the web, in a "hall of shame," is a financial threat to their business, if potential customers come across the listing.

Responding to attack

The AVN has come under severe attack by supporters of vaccination whose actions suggest they do not accept the right of an organisation like the AVN to exist. What can be done to counter these attacks? Here, I describe a framework for understanding tactics by perpetrators of actions that may be perceived as unjust.

If someone acts in a way others see as unfair, there is the possibility that the actions might backfire on the perpetrator, namely be counterproductive. To use a simple example, if a stranger walks up to you and, without provocation, forcefully slaps you in the face, witnesses might see this as unjustified, disturbing or even criminal. The stranger, to minimise these adverse reactions, can use a number of tactics.

- Cover-up: act when there are no witnesses
- Devaluation: say you are a worthless, lying scum, implying you deserve to be slapped
- Reinterpretation: say it wasn't a slap but actually a caress, or it wasn't forceful at all, or it was an accident or someone else was responsible
- Official channels: go to some agency or expert who, after weeks of delay, will say it wasn't all that significant
- Intimidation: threaten witnesses that if they say anything, they too might be assaulted.

This scenario may seem far-fetched, but it is exactly what goes on with workplace bullying. Bullies often act against targets when no one else is around (cover-up), spread disparaging rumours about the targets (devaluation) and explain away their actions by lying, minimising, blaming or framing (reinterpretation). Sometimes targets make complaints to managers or through formal grievance procedures. These official channels give the appearance of dealing with the problem but, all too often, the appearance is deceptive: nothing much is done or the bully receives only a minor admonishment. Meanwhile, because the formal procedures take so long, the bullying continues. Finally, bullies often intimidate others; when the bully is the boss, other employees may fear retaliation and, to avoid this, ostracise the target and even join in the bullying themselves.

This model of the tactics used by perpetrators of actions potentially seen as unjust can be applied to a wide range of topics, including censorship, sexual harassment, unfair dismissals, police beatings, massacres, torture, war and genocide.[48] The model is most relevant when the perpetrator is more powerful than the target.

Consider how the model can be applied to the attack on the AVN. The attack can potentially be seen as unfair, not just by AVN supporters but also by others who believe in the importance of free speech and hearing both sides of controversial issues. The attack could be likened to censorship, something often thought to be wrong.[49] Therefore it is predictable that the attackers will use one or more of the five methods to inhibit outrage. The attackers run the risk that their attack could backfire, namely be counterproductive.

Cover-up

The attack is hardly secret — obviously AVN members know all about it. But the attackers have not publicised their goal and methods very widely. Their web comments are accessible, but not prominent among the vast outpourings of claim and counter-claim on the web.

The complaints to the HCCC and other agencies are not public documents. The attackers have not tried to hide the existence of complaints, but have referred to them as a black mark against the AVN.

Overall, the attackers have been remarkably open about their aims and methods. However, information about the scale and pattern of the attacks has been restricted primarily to a few key members of the AVN — until Meryl Dorey decided to write about the attacks in an article in *Living Wisdom*.[50]

A few of the attackers' methods are more hidden, especially personal harassment, including death threats. These would be seen by most people as reprehensible, so it is not surprising perpetrators do not reveal their identity.

Devaluation

The attackers have used two angles in their attempts to lower the credibility of the AVN generally and Dorey specifically. The first is to portray the AVN as dangerous, using labels such as baby killers or associating the AVN with Holocaust denial. The second is to portray Dorey as loony, with lies about her believing in the Illuminati and the like, so by association the AVN is perceived as a pack of nutters. The combination of these two angles is the vision of the AVN as dangerous lunatics. To those seeing things this way, there is nothing wrong with attacking the AVN; indeed, it becomes a sort of sport.

Reading the discussions on the StopAVN Facebook site reveals a remarkable level of antagonism towards the AVN and Dorey in particular. Some contributors caution against demonising Dorey too much; others say she deserves everything she gets. Overall, the degree to which the vaccination debate has been personalised by AVN opponents is striking, and is symbolised by a new website named "Stop Meryl Dorey."[51]

Reinterpretation

For attackers, to use the tactic of reinterpretation means using a range of techniques — lying, minimising, blaming and framing — to change people's understanding of the attack, namely to see it as less concerning. Those who have attacked the AVN have not used these techniques to a great extent. Some of them have been open and honest about their desire to shut down the AVN. Rather than minimising the impact of their attacks, they have gloated about the difficulties and distress they have caused.

The attackers seem to be an amorphous, unorganised group. If a single body, such as the Australian Skeptics, is coordinating the attacks, then it could blame the individual attackers. But blaming as a tactic hasn't played a large role.

The main reinterpretation technique has been framing, which means seeing the attacks from a perspective that makes them seem justified. This is most apparent in McLeod's HCCC complaint, when he argues there is no free speech in Australia and the AVN has made statements that are demonstrably false. The framing is that false statements about matters of public health are illegitimate.

Overall, the attackers have been remarkably open about their purpose and agenda. Their only significant use of reinterpretation is in presenting the view that attacking the AVN is legitimate because the AVN, by making false statements on a public health matter, has no right to free speech.

Official channels

When a powerful individual or group does something that seems unfair to many, with the potential to generate outrage, one way to reduce the adverse reaction is to refer the matter to a body or process that apparently provides justice. Official channels include grievance procedures, ombudsmen, expert panels, anti-corruption commissions and courts. These and other such processes sometimes work properly but often, when the perpetrator is more powerful, give only an appearance of justice. They are nearly always slow, highly procedural and dependent on experts such as lawyers. Taking a matter through an official channel allows outrage to die down. The matter is taken out of the public domain and put into a specialist venue.

The opponents of the AVN have used official channels — the HCCC and other agencies — but not to minimise outrage but instead as means of attack. Using agencies can give the attack more credibility, assuming they don't dismiss the case out of hand. The HCCC turned out to be the most useful official channel for the attackers. The HCCC's public warning about the AVN is an example of an official endorsement that has served as a potent tool for the AVN's attackers.

Intimidation

The attackers have used a variety of methods of intimidation, as described above, including posting of names on the web in a way that seems to invite personal harassment.

Intimidation is a method of attack itself. The point here is that it also can scare people enough to deter them from taking action against the attack.

In summary, the attackers have only used a few methods to minimise outrage from their actions. Most prominent are devaluation and intimidation. The attackers have not done much to hide their attack, except they are not very open about their affiliations. Nor do they interpret the attack in benign ways: they are open about wanting to shut down the AVN. They have used official channels as tools for attack, not to minimise outrage.

Based on this examination, my assessment is the attackers are vulnerable to counter-tactics. What counter-tactics? I've described how powerful perpetrators of perceived injustice can use five types of tactics to minimise outrage. So to increase outrage, the other side can use five corresponding types of counter-tactics:

- expose what happened
- validate the target
- interpret the actions as unjust
- mobilise support; avoid or discredit official channels

- resist intimidation.

These can readily be applied to the AVN.

Expose what happened

To generate outrage over the attacks, people need to know about them. This means collecting evidence, formulating a persuasive account, and getting the information to audiences likely to be receptive.

In some cases, targets are reluctant to do this. They are so distressed that they would rather keep quiet and hope the issue dies down. Furthermore, exposing an attack can be distressing or humiliating in itself — think of women who prefer not to report rape. Sometimes exposure opens one up to further attack. So this counter-tactic is not to be undertaken lightly. It is, though, the foundation of resistance.

The AVN initially did not try to expose the attacks. Dorey circulated emails to others within the AVN. It was only with an article in *Living Wisdom* that she spelled out, to a larger audience, what happened.

Potentially, a large number of people would be disturbed by the attacks, even if they do not support the AVN's position on vaccination. The question is how to get relevant information to them. Possibilities include newspaper articles, blogs, emails to lists of professionals, and postings on the web. The methods of distribution are easy to enumerate. The difficult part is collecting the information and putting it together into a persuasive account.

Exposing attacks is most effective with eloquent prose and powerful visuals. In 1991, the beating of Rodney King by Los Angeles police was vividly revealed through an amateur video broadcast on television. In 2004, the torture and abuse of prisoners at Abu Ghraib prison in Iraq by US guards was revealed through digital photos.

There are not many photo opportunities in the attack on the AVN, but other means can be used to illustrate what has happened, for example diagrams, chronologies and quotations.

Validate the target

Attackers typically try to denigrate and discredit the target, because when people think an organisation is worthless or despicable then what is done to it doesn't matter so much. To counter devaluing tactics, the aim should be to show the organisation has value.

There are several ways to validate targets. One is to demonstrate good works. Another is to behave responsibly. Yet another is to appear sober and sensible. If protesters at a rally look scruffy and shout abuse, they are easier to discredit; if they are formally dressed and march quietly carrying candles, attempts to discredit them will be more difficult.

For the AVN, a key method of validation is to provide personal information about some of its members, who for the most part are mature, responsible adults who look and behave conventionally. Photos and background information about members — and their reasons for belonging — would help to counter discrediting tactics. (Later, under the tactic of resisting attack, I'll discuss the risks in this.)

Another element is behaviour. If AVN members shout, use terms of abuse or have odd mannerisms, they are easier to discredit. Behaving in a polite, rational manner can be effective in gaining credibility and making attacks seem unfair. Of course it is tempting, in the face of abuse, to respond angrily. But this is unwise. Targets, because they are the ones in the spotlight, usually need to behave far better than their attackers to have a chance of making the attacks backfire.

Interpret the actions as unjust

Perpetrators often explain their actions away, by lying about what has happened, minimising the consequences of their actions, blaming others, or framing their actions as benign. To counter these various methods of reinterpretation, the target needs to emphasise the unfairness of the actions.

The attackers of the AVN have mainly used one reinterpretation technique, that they are justified in attacking the AVN because it is providing false information that causes a hazard to human health. This is a form of framing: it is a way of looking at the attack as acceptable, indeed beneficial to society.

An alternative frame is that vaccination is a contentious social issue and it is quite legitimate to present viewpoints contrary to medical orthodoxy. This is widely accepted as standard practice on all sorts of other issues, from stem cells to road safety. It would be widely seen as unfair to attempt to destroy an organisation with a point of view on such issues — so it is unfair to attempt to destroy the AVN.

Note I'm talking here about the unfairness of the attack on the AVN, not about criticisms of the AVN's position on vaccination. It is accepted practice to criticise an opponent's viewpoint, for example to say their viewpoint on stem cells or road safety is based on bad logic, faulty information and distorted values, and hence should be rejected. That is an attack on a viewpoint, which is considered standard practice. However, attacking someone's right to present a viewpoint can be seen as censorship.

To counter the attacks, the AVN needs to present a contrary frame. The frame of free speech and open debate is such a contrary frame: it positions the attackers as engaged in censorship or suppression of dissent.

Mobilise support; avoid or discredit official channels

Opponents of the AVN have used official channels, namely complaints to government agencies, not to minimise outrage but as means of attack. Nevertheless, the role of the official channels is much the same: the attack seems more legitimate because it uses agencies that are thought to ensure fairness, and dealing with the complaints requires a lot of time dealing with highly detailed matters.

Could the attackers be said to be more powerful than the AVN? Not really, except in the sense that the

attackers can rely on support from pro-vaccination attitudes in government and the medical profession. Only if the attackers have some credibility will agencies take their complaints seriously. That seems to have occurred with the HCCC but not to the same extent with complaints to other agencies.

According to the model of tactics, the AVN, in order to counter the effects of the official-channel attack, needs to mobilise support and to avoid or discredit official channels. "Mobilise support" means to get more people supporting the AVN in its struggle against the attackers. Specifically, it means getting more people to become core members of the AVN, for example on the committee, getting more people to join the AVN, and gaining more support for the AVN among teachers, medical professionals, politicians and a range of others. That sounds like a big task, and it is. My point here is that the direction should be towards winning over more people to the position that the AVN has a point of view that deserves to be heard — even if some of those people do not endorse the AVN's viewpoint.

The other aspect of this counter-tactic is to "avoid and discredit official channels." The AVN can hardly avoid official channels — it has to respond to investigations by the HCCC and other bodies. But it can avoid putting excessive effort into responding.

It would be tempting for the AVN to use official channels itself, for example to sue some of the attackers for their obviously defamatory comments or to go to court to challenge the HCCC's jurisdiction over the AVN. This would be a mistake — in terms of building support — because it would enmesh the AVN in protracted, expensive, complicated and lawyer-dependent procedures, thereby excluding most AVN members from contributing. Furthermore, suing would position the AVN as the attacker, when actually it is the one under attack. In my opinion, initiating legal action would be a serious mistake.

In responding to complaints, the risk is putting too much effort into formal processes and not enough into campaigning on the AVN's core concerns. Hours spent in responding to the HCCC, for example, are largely wasted in terms of getting information to interested members of the public. On the other hand, the HCCC's investigation could not be just ignored — a response was necessary. Was there any way of reconciling these competing priorities?

One option is to use information from the HCCC interactions to help improve the AVN's material. This could be by responding to issues raised by the HCCC on the AVN's website, or even by posting a version of the AVN's responses to the HCCC. The key here is to not let responding to complaints become entirely an operation internal to the AVN. By putting some of the interactions with the HCCC, or the information arising from those interactions, in the public domain, responding to complaints is more strongly linked to the wider goals of the AVN.

Resist intimidation

Instead of acquiescing to threats and attacks, the key to increasing outrage is to resist. Resisting means continuing to do the things the AVN has always done — making information available about its viewpoint.

This sounds simple enough, but in practice can sometimes be unwise. Individuals need to look out for their own personal, family and business concerns. Not everyone wants to open themselves to death threats or risks to businesses.

For the AVN to resist intimidation means *some* people will continue their activities in the face of threats and attacks — those who make a conscious choice to do so. An additional step in resisting is to expose attacks, for example to document harassment; exposing it can generate more support.

Summary

The attack on the AVN has the potential to generate outrage and actually increase support for the AVN, in other words to backfire on the attackers. To reduce this possibility, the attackers can use several tactics: cover-up, devaluation, reinterpretation, official channels and intimidation. To counter these tactics, the AVN and its supporters can use corresponding counter-tactics: exposure, validation, interpretation, mobilisation of support, and resistance.

In practice, the attackers mainly have used devaluation, official channels and intimidation. They have been pretty open in making their attacks, though not publicising them very widely. They have presented their attacks as justified, not doing much to minimise the effects or blame others for them.

The AVN can do several things to counter the attacks. Some of the key ones are:

- document and describe the attacks for wider audiences
- behave in a sensible, rational way
- explain the attacks as a denial of free speech
- concentrate on mobilising support; not spend too much time responding to complaints; not use official channels to counter-attack
- continue activities in the face of threats.

Conclusion

The claims and counter-claims about vaccination are usefully understood as aspects of a public scientific controversy. Like many other scientific controversies, there are disputes over technical issues, notably benefits and risks, and disagreements about ethics and decision-making.

In the vaccination controversy in Australia, current policies are overwhelmingly supported by doctors, health department officials, and politicians, but some members of the public support a different perspective. This is a line-up of partisans similar to a number of other scientific controversies, such as fluoridation.

For convenience, one side can be called pro-vaccination and the other vaccination sceptics, but neither term is entirely accurate. Those on the pro-vaccination side do not necessarily support every possible vaccine and

sometimes differ about the value of particular vaccines and policies. Those on the other side present themselves as favouring choice by individuals or parents. They are sceptical about vaccination, but are not necessarily opposed to all vaccines at all times.

The vaccination debate, like other such debates, involves differing assumptions and perspectives. It can be called a clash of paradigms, namely of two worldviews about the role of vaccination in health. Within each paradigm, facts and values are harmonious, making the other paradigm seem irrational and potentially disturbing.

The vaccination debate in Australia has proceeded like many other scientific controversies, with claim and counter-claim and with attempts to persuade government bodies to endorse particular policies and attempts to persuade members of the public. However, there is one exceptional part of this debate, which prompted me to write this account: an attempt to entirely silence one of the organisational players in the debate, the Australian Vaccination Network.

It is common in scientific controversies — especially those involving vested interests — for sides with more power to act against scientists, doctors and other experts on the other side. Professionals with credibility as experts in the field give authority to a position. When one side is supported by relatively few such professionals, undermining them can make it seem as though experts are virtually unanimous in their allegiance. I and others have documented a variety of techniques to suppress dissident experts, including censorship, withdrawal of grants, and dismissal.[52] In the vaccination debate, the attack on Dr Andrew Wakefield is the most prominent example.[53]

Usually, citizen campaigners are left alone. They are seldom seen as much of a threat, because they lack expert credibility, and usually are not so vulnerable by virtue of their employment. For example, some opponents of fluoridation have made exaggerated claims about the hazards of fluoridation and subscribed to conspiracy theories, but, to my knowledge, these opponents have never been the target of an organised attack. The usual approach is to ignore or laugh at their extreme statements and proceed to promote the pro-fluoridation message.

There are occasional examples of physical attacks on citizen campaigners, for example in the pesticide, nuclear power and forestry controversies; these are usually in the context of direct-action campaigning, or where a person's job makes them vulnerable. In my decades of studying scientific controversies, never had I come across, in a country like Australia, a concerted effort to destroy a citizen-based organisation whose main activity was providing information — until learning about the attack on the AVN.

To understand this attack, it is useful to analyse the official rationale given in the complaint by Ken McLeod to the Health Care Complaints Commission. In it, he says the AVN has no right to free speech and, through a series of examples, claims the AVN has made statements that are "demonstrably untrue." His view is the AVN should not be allowed to make demonstrably false statements if, potentially, they adversely affect human health. This line of argument provides a rationale for shutting down the AVN, at least if it persists in making statements that are false in terms of the dominant pro-vaccination position.

This argument has a certain plausibility, but to my knowledge it has never been used in relation to other scientific controversies. In debates about pesticides, nuclear power, nuclear winter, climate change and genetic engineering, among others, one or both sides could claim the other side has made statements that are demonstrably untrue (from their perspective) and adversely affect human health. The usual practice is to accept that partisans can make statements, to attack the statements (or present an alternative viewpoint) and sometimes to attack the other side — but not to reject their right to make statements.

McLeod assumes the vaccination issue is a matter of science. He does not mention that supporters and critics of vaccination have differing values and different views on decision-making.

Free speech is meaningless unless it involves the freedom to make statements that others think are false.

Free speech is meaningless unless it involves the freedom to make statements that others think are false. The argument for free speech is that open discussion is the best system for reaching the truth. Viewpoints can be strengthened by being challenged.

Another important factor in scientific controversies is the role of vested interests. In the vaccination debate, the groups with the most obvious vested interests are pharmaceutical companies, due to profit from the sale of vaccines, and the medical profession, which has a deep investment in vaccination as a symbol of professional commitment to people's health. There are other interests involved. Some critics of vaccination have stakes in natural health businesses, but these are small compared to the material and professional investments of pharmaceutical companies and the medical profession. Finally, partisans typically have a personal, psychological commitment to the positions they endorse. This is a type of interest, though different from a *vested* interest, which typically involves organisational-level stakes in money, position and power.

In this context, I examined the attack on the AVN. It has gone far beyond the conventions of public debate, especially with harassment of AVN members and small businesses advertising in the AVN's magazine *Living Wisdom*. Especially noteworthy has been the use of multiple complaints to official bodies, an original way of harassing an organisation that I call Strategic Complaints Against Public Participation (SCAPPs), by analogy to the widely known Strategic Lawsuits Against Public Participation (SLAPPs).

Finally, I examined methods used by the attackers to minimise potential outrage from their actions. Based on studies of many other issues, the most common sorts of methods used by powerful perpetrators to reduce outrage are cover-up of their actions, devaluation of the target, reinterpretation of the events, official channels to give an

It is easy to lose sight of an important fact: both sides in this struggle have something in common: a passion to reduce disease and improve the health of the population.

appearance of justice, and intimidation. The attackers on the AVN have used only some of these techniques. They have been fairly open about most of their actions. They have used devaluation extensively. Their main use of reinterpretation is to frame the attack as legitimate action against a danger to public health. They have used official channels — various government agencies — as a principal tool of attack, thereby giving their harassment more legitimacy. Finally, they have used intimidation.

This analysis of the attackers' tactics provides guidance for responses by the AVN and its supporters. These go along the lines of exposing the attack, behaving fairly and honourably, interpreting the attack as a denial of free speech, mobilising support and not putting excessive reliance on official channels, and standing up to intimidation.

My focus here is on how the AVN can respond to attack. The same framework can potentially be used by supporters of vaccination should they become the targets of attack. Currently in Australia, supporters of vaccination have far more power than critics, especially through government policies and medical profession endorsement. It may seem hypothetical, but it is possible to imagine the roles being reversed, in which case this analysis could be used to suggest strategies for promoting vaccination in the face of attack.

It bears repeating that my goal in this analysis is not to support or criticise vaccination but to encourage a fair and open debate in which any interested person can participate and in which facts, values and viewpoints are up for discussion.

Postscript

I can confidently predict that the vaccination controversy will continue in Australia and other countries, most likely for decades. That is the lesson from numerous other controversies and from an analysis of the dynamics of these sorts of disputes.

In this wider picture, it does not matter greatly whether, in the short term, the AVN survives or is destroyed and discredited, because views critical of vaccination will continue to be expressed in Australia and some parents will continue to seek out these views. It is possible that the vaccination paradigm will become stronger in Australia compared to elsewhere. That is hard to say. But whether Australian pro-vaccination forces strengthen or not, the controversy will continue.

My aim here has been to provide some perspectives to aid understanding of the controversy and in particular the attack on the AVN. To conclude, I offer some speculative comments on what could happen if the tightly embraced warriors in the struggle were to step back and consider alternative pathways to wider goals.

It is easy to lose sight of an important fact: both sides in this struggle have something in common: a passion to reduce disease and improve the health of the population. The two sides disagree vehemently about how to do this, but there is a common goal. Could this be the basis for a different approach to the issues?

One possibility is joint support for measures against infectious disease that don't involve vaccination, for example measures to help disadvantaged sectors of the population, who are typically most susceptible to disease. It is possible to imagine a roundtable, with participants from both supporters and critics of vaccination, about promoting such measures. Of course this is a fantasy!

Another possibility is for pro-vaccination doctors to recast their message and try to co-opt the critics. This would involve a public acknowledgement that a small percentage of children are at heightened risk from vaccination and support for measures to reduce this risk, for example noting allergic sensitivity and reactions to initial vaccines or to vaccinations of parents and siblings. This option might include new research on vaccination, carrying out some of the undone science requested by critics. This approach would involve openly accepting some shortcomings in the vaccination paradigm, with the aim of reassuring parents and gaining wider acceptance for vaccination among the majority. This is the strategy of showing strength by admitting weakness. It relies on allowing people to judge matters for themselves, giving them ample evidence to make judgements, and trusting them to think of the common good.

From a pro-vaccination perspective, this strategy is risky: it might lead to greater evidence or sentiment critical of vaccination. On the other hand, it might promote greater public confidence in the vaccination regime. Best of all, by bringing some critics within the system, it might result in sounder policies.

Steps in this direction are unlikely, to be sure. They can most effectively be taken by figures within the medical establishment. The AVN is locked into a struggle for survival, with its opponents intent on bringing down an organisation rather than taking the pro-vaccination message to wider publics.

Opponents of the AVN could, in principle, recast their campaign to present evidence in support of vaccination, challenging the AVN's message rather than the AVN as an organisation. This would be a shift to open debate, which would put more trust in the intelligence and good sense of members of the public than trying to silence the expression of what anti-AVN partisans see as dangerous claims. The result would be a free and open debate on issues of human health and social welfare — exactly what I would like to occur.

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39. Meryl Dorey, in her 7 September 2009 response to McLeod's complaint, quoted the Yale School of Medicine website as saying "PDD-NOS [Pervasive Developmental Disorder – Not Otherwise Specified] is often incorrectly referred to as simply 'PDD'. The term PDD refers to the class of conditions to which autism belongs" (Pervasive Developmental Disorder - Not Otherwise Specified (PDD-NOS), Autism Program at Yale, http://medicine.yale.edu/childstudy/autism/information/pddnos.aspx, accessed 13 September 2010).

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