The Controversy Manual

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The Controversy Manual

Abstract
BACK COVER: Climate change, psychiatric drugs, genetically modified organisms, nuclear power, fluoridation, stem cell research - these are just a few of the hundreds of issues involving science and technology that are vigorously debated. If you care about an issue, how can you be more effective in arguing for your viewpoint and campaigning in support of it? The Controversy Manual offers practical advice for campaigners as well as plenty of information for people who want to better understand what's happening and to be able to discuss the issues with friends. The Controversy Manual provides information for understanding controversies, arguing against opponents, getting your message out, and defending against attack. Whether experts are on your side or mostly on the side of opponents, you'll find advice for being more effective. While not taking sides on individual controversies, the emphasis is on fostering fair and open debate and opposing those who use power and manipulation to get their way. The author Brian Martin is professor of social sciences at the University of Wollongong, Australia. He has been involved in and studied scientific and technological controversies since the 1970s, and is the author of numerous publications addressing controversy dynamics.

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Climate change, psychiatric drugs, genetically modified organisms, nuclear power, fluoridation, stem cell research — these are just a few of the hundreds of issues involving science and technology that are vigorously debated. If you care about an issue, how can you be more effective in arguing for your viewpoint and campaigning in support of it? The Controversy Manual offers practical advice for campaigners as well as plenty of information for people who want to better understand what's happening and to be able to discuss the issues with friends.

The Controversy Manual provides information for understanding controversies, arguing against opponents, getting your message out, and defending against attack. Whether experts are on your side or mostly on the side of opponents, you'll find advice for being more effective. While not taking sides on individual controversies, the emphasis is on fostering fair and open debate and opposing those who use power and manipulation to get their way.

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Brian Martin

The controversy manual
CONTENTS

1. Introduction 15
2. Understanding controversies 21
3. Arguing 153
4. Communicating 261
5. Working together 301
6. Taking action 335
7. Defending 377
8. Being principled 419

Appendices 443

Index 460
to get their messages across.

In scientific controversies, many campaigners seem to feel free to use whatever resources are available, while the concern for giving credit to creators is often overlooked. In some controversies, the images on the website of a commercial or professional organisation I wrote asking permission to use the image. Where an image was on a photographer’s or artist’s website, I then searched for the photographer or artist’s name in the website or search the web for the images on the site of a commercial or professional organisation I wrote asking permission to use the image.
1. Introduction 15

2. Understanding controversies 21

• 2.1 What is a scientific controversy? 21

Science and technology 22

What are people arguing about? 23

2.2 Coherent viewpoints 26

Paradigms 29

• 2.2.1 What is a scientific controversy? 21

Technical assumptions 50

• 2.6 Bias in research •

• 2.5 Hidden research •

• 2.4 Undone science •

Studies 33

• 2.3 Evidence •

Evidence 31

Selective use of evidence 22

• 2.7 Selective use of evidence •

Selective use of uncertainties 33

Acknowledgements 14

Contents
Resolving controversies

Why controversies continue
Local and global dimensions
Active and inductive periods
2.13 How controversies proceed
Enhanced methodology
2.12 Technology
2.11 Interests
74 Career situation
85 Political naïve
18 Arrogance and the myth of talent
70 2.8 Truth
86 Shifting the onus of proof
65 2.7 The onus of proof
16 Summary: table on how to foster bias
60 Mood of a paper
58 Returning to atheistic arguments
56 Selective use of results
54 Conflicts of interest
49

The controversy manual
2.14 Why people get involved
2.15 Commitment
2.16 The media
2.17 Understanding commentaries
Advocacy
Play-by-play
Wrong belief
Symmetrical
Ideological
Key issues
When works?
What to look for
Reading
Discussing
Writing
3. Arguing
3.1 Arguing: Factors to consider
3.2 Learning about an issue
The standard agenda
Links to values
116
121
122
130
131
132
135
137
140
141
142
144
148
153
156
156
157
157
158
159
162
162
166
170
170
172
172
176
176
180
181
189
197
199
212
212
212
212
220
220
The controversy manual

The experimental approach
Putting it all together

Robustness
Ease of explanation

What speaks?

Know the context

What's missing?

What's wrong?

What's misleading?

What assumptions are made?
Are there double standards?

When assumptions are involved?

When are judgments involved?

When is unhonshoneted?

Some background on deconstruction

3.5 Countering deconstruction

3.4 Deconstruction

Responding to an article

Know the context

3.3 Responding

3.2 Framing

Pathologies of argument

Conspiracy theories

195

190

189

188

185

184

182

181

180

179

178

177

176

175

174

173

172

171

170

179

169

168

167

166

165

164

163

162

161

160

159

158

157
Debunking

3.6 Claiming scientific status
3.7 Dealing with experts
When experts are on the other side
When experts are on your side
3.8 Endorsements
Obtain counter-endorsements
Deconstruct endorsements
Discredit endorsements
Discredit authority in general
Promote citizen participation

3.9 Inoculation?

3.10 Values

3.11 Emotions

3.12 Lying
Aspects of lying

Confirmation bias
Lying by omission
Lying in controversies: the role of paradigms

3.13 Lying

Values

3.14 Emotions

3.15 Lying
4. Communicating

4.1 Scientific papers

4.2 Advertisements

4.3 Talks

4.4 Mass media coverage

4.5 Online

4.6 The opponents' communication

Dealing with deception

Cynical operators and true believers
The controversy manual

6.5 Strikes, bans and boycotts
6.6 Sabotage
6.7 Organising
6.8 Personal contacts

The relationship
Winning the argument
Openness
The approach
The relationship
6.8 Personal contacts
6.7 Organising
6.6 Sabotage
6.5 Strikes, bans and boycotts

7. Defending
7.1 Attacks
7.2 Attacks on scientists
7.3 Responding to attack
7.4 Outrage management

Expose the action
Validate the target
Interpret the events as an injustice

10. Valide the case
89
396
79
386
72
379
En
7
16
Denaling
372
6.9 The long haul
369
367
365
363

Resist intimidation and rewards
Support
Avoid or disrupt official channels. Instead, mobilise
Im brightest the events an inference

Avoid the events as an influence
Expose the action

Acknowledgements

I wrote this book in a slow-but-steady fashion using the approach of Robert Boice and Tara Gray, which made it much easier than it might otherwise have been. Over several years I presented extracts of text to members of the high-output writing group in the Faculty of Arts at the University of Wollongong, and received helpful textual comments from Paula Arvela, Zoë Barker, Anu Bissoonauth-Bedford, Trent Brown, Scott Burrows, Narelle Campbell, Kathy Flynn, Xiaoping Gao, Frank Huang, Anneleis Humphries, Cecilia Leong-Salobir, Nicola Marks, Michael Matteson, Anne Melano, Ben Morris, Julia Najjar, Terumi Narushima, Hung Nguyen, Swati Parashar, Florencia Peña, Jenn Phillips, Richard Pojednic, J. J. Rawlings, Min Tao, Sue Turnbull, Rowena Ward and Tshering Yangden.

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1 Robert Boice, Advice for New Faculty Members: Nihil Nimus (Boston: Allyn & Bacon, 2000); Tara Gray, Publish & Flourish: Become a Prolific Scholar (New Mexico: Teaching Academy, New Mexico State University, 2005).
The Controversy Manual is designed for participants in scientific controversies — climate change, nuclear power, genetic engineering, vaccination, or whatever. The book is intended to be practical, offering ideas for engaging in debate. Others, including citizens, journalists and students, may also find it useful for understanding what goes on in scientific controversies. The manual covers some principles worth considering when engaging in a controversy. Chapter 2 tells how to defend against attacks, for example through effective action. Chapter 3 addresses the set up to promote a viewpoint. Chapter 4 is about communication, including support of a position, or in challenging the opponent's viewpoint. Chapter 5 deals with groups, especially ones supporting a viewpoint. Chapter 6 is about communication, including communication about a viewpoint. Chapter 7 is about campaigning, and is less aimed at helping understand controversies, and is less about defending some typical positions of controversies. It is designed as an introduction to campaigning in controversies, and is less about debating. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning. Chapter 2 is about defending a viewpoint, so you can read from the beginning
The controversy manual

studying different sorts of controversies. There are some
important patterns worth knowing about.

The examples are meant to illustrate points, not to
give a comprehensive account of the arguments, pro or
con, concerning any particular issue. Every statement
concerning a controversy can be contested, and many of
them are. So even naming a controversy can be contentious.

To be sure, there may be no easy or unequivocal account of
important patterns worth knowing about. The examples are meant to illustrate points, not to

study different sorts of controversies. There are some
members of the public to participate in decision making. I believe scientific controversies should be carried out in an open and fair fashion. This means they should not be determined by the influence of powerful groups or by unscrupulous means. Therefore, I emphasise how to counter powerful groups and respond to abuse and suppression of dissent and how to build support for a campaign. There is information about the role of groups with vested interests. It is more likely to help those who play fair. There is information on how to build support for a campaign, using a variety of methods, from letters to rallies.

However, the information here isn't entirely neutral.
Climate change

What it is

The temperatures of the earth's atmosphere and oceans are increasing. Most climate scientists say this is primarily due to various human activities, especially the increased production of carbon dioxide by burning coal, oil and natural gas. Carbon dioxide is one of a number of "greenhouse gases" that cause the greenhouse effect that helps the earth retain heat. Climate change is also called global warming.

Arguments for urgent action to prevent climate change

- Global warming is occurring at an unprecedented rate.
- A unique form of scientific review, the Intergovernmental Panel on Climate Change, attests to the reality and significance of global warming.
- Almost certainly due to human activities, global warming is occurring at an unprecedented rate.
- Global warming is occurring at an unprecedented rate.
Climate change

• If greenhouse gas emissions are not curbed, the earth's climate will warm significantly over the next century, with catastrophic irreversible effects on human populations and the environment.

• Arguments against urgent action to prevent climate change

  • The evidence for global warming is flawed and inadequate: the earth's climate has often varied in the past.
  • Even if global warming is occurring, human activities play only a small role in it.
  • Curbing carbon dioxide emissions would be harmful to the world economy.
  • Although impacts are already being observed, most of the adverse consequences will affect future generations and people in poorer countries.
  • Curbing climate-warming greenhouse gases emissions are not curbed, the earth's climate will warm significantly over the next century, with catastrophic irreversible effects on human populations and the environment.

Climate change
Nearly all climate scientists and other relevant experts say climate change is occurring, mainly due to human activities. A small number of scientists argue to the contrary.

Companies that sell fossil fuels — coal, oil and natural gas — have a huge stake in continued consumption. This vested interest means some countries and local communities are cutting back on energy efficiency and renewable energy sources, such as solar and wind power, can be used to satisfy energy needs.

Energy efficiency and renewable energy sources, such as solar and wind power, can be used to satisfy energy needs. Reducing greenhouse gas emissions can also be achieved through lifestyle changes such as eating less meat and planning homes to encourage walking, cycling and use of public transport.

Some countries and local communities are cutting back on greenhouse gas emissions. Internationally, emissions continue at a level that will cause catastrophic global warming by the end of the century, according to the IPCC.

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A small number of scientists argue to the contrary. Nearly all climate scientist and other relevant experts say climate change is occurring, mainly due to human activities.
Understanding controversies

Each controversy has its own special features: colourful personalities, characteristic arguments, startling developments and much else. Yet despite the differences between controversies, there are quite a few standards, common features. Each controversy has its own special features: colourful personalities, characteristic arguments, startling developments and much else. Yet, despite the differences between controversies, there are quite a few standards, common features.

2.1 What is a scientific controversy?

A scientific controversy is a debate, dispute or disagreement about something to do with science. To count as a controversy, the debate needs to occur over an extended period or involve a lot of people. For example, if two labs argue for years about which formula to use, it makes sense to call this a controversy, especially if two major scientific labs argue for a day about which formula to use, no scientist will pay much attention. But if a major scientific controversy, the debate needs to occur over an extended period or involve a lot of people. For example, if two scientists argue for a day about which formula to use, no scientist will pay much attention, but if two major scientific labs argue for years about which formula to use, it makes sense to call this a controversy.

The focus here is on controversies that involve both scientists and non-scientists, and that involve matters outside scientific journals and labs. Examples are genetic engineering and climate change. Often government policy is involved. These can be called public controversies: they influence and shape change. Examples are genetic engineering, stem cell research, and animal rights.
The controversy manual occurs in the public domain and they involve members of the public as well as scientists. These sorts of controversies involve disputes over scientific knowledge and policy, ethics, and other matters. Some social scientists who study these sorts of controversies divide them into two types: a controversy over scientific knowledge and a controversy over social knowledge and disputes over policy. These sorts of controversies involve disputes over the public as well as scientists.

Science and technology

Science and technology can be difficult to distinguish between science and technology. Assuming this includes controversies over scientific knowledge and scientific controversies, I usually just refer to scientific controversies, as scientific controversies are concerned with scientific knowledge and scientific controversies are concerned with scientific knowledge. So, a distinction can be made between science and technology.

In any case, distinguishing between science and technology can be difficult. Scientific knowledge is mixed together with other matters.
Understanding controversies

needed for many contemporary technological developments. For example, creating new pesticides or antibiotics often depends on scientific advances. There is still a role for practical skills and for trial and error, but the role of scientific understanding is often overlooked or is unacceptably high.

In many controversies, the debate seems mainly to be about benefits versus risks, such as the economic and environmental costs of new technology versus the health and social benefits of new technology. The debate seems mainly to be about something.

What are people arguing about?

Who is involved in a controversy and what is being disputed? The issues sometimes seem obvious, but it's worth looking more closely to see what is involved. Other controversies involve different issues. The abortion debate is often posed as a matter of protecting the human life of the unborn child (supporting abortion) versus another person's right to make decisions about her body and life (opposing abortion). The debate is often posed as a matter of protecting the unborn child (supporting abortion) versus another person's right to make decisions about her body and life (opposing abortion).

Other controversies involve different issues. The debate is often posed as a matter of protecting the human life of the unborn child (supporting abortion) versus another person's right to make decisions about her body and life (opposing abortion). The debate is often posed as a matter of protecting the human life of the unborn child (supporting abortion) versus another person's right to make decisions about her body and life (opposing abortion).
The main debate might seem straightforward, but in every controversy, there are several issues involved. Consider, for example, the nuclear power debate, often posed as a matter of benefits (electricity from nuclear power) versus risks (from reactor accidents and long-lived radioactive waste) and costs. Actually, each side raises a host of issues, and other issues that aren’t important because they assume that there are important issues— the so-called real issues, or are they?

What are the real issues? This question is misleading. Happening reasons for being involved, together with a common goal, form a coalition. Coalition members share interests (nuclear power proponents, civil liberties), whereas others are primarily driven by political accidents (environmental and health issues, such as reactor accidents). Some opponents of nuclear power are mainly concerned with human rights and indigenous land; vulnerability to terrorism; reduction in civil liberties; and cost; others are concerned with the environment and renewable energy sources. Nuclear power opponents warn about reactor accidents, proliferation of nuclear weapons, long-lived radioactive waste, high cost, energy alternatives, and low energy efficiency. Nuclear power proponents highlight the power needed to satisfy expanding demand; low cost; low greenhouse gas emissions; large energy reserves; and reduction in hazards and pollution from coal-based electricity.

Because so many issues are potentially relevant, you can't assume that everyone involved has identical concerns. Some opponents of nuclear power are mainly concerned about environmental and health issues (such as reactor accidents) whereas others are primarily driven by political concerns.

Because so many issues are potentially relevant, you can't assume that everyone involved has identical concerns. Some opponents of nuclear power are mainly concerned about environmental and health issues (such as reactor accidents) whereas others are primarily driven by political concerns. Campaigners in a controversy often form a coalition held together with a common goal, but with different or overlapping interests.
The issues in a controversy are whatever things people think are important. In many controversies, authority figures — scientists, politicians or media commentators — will say what they think are the real issues, and then dismiss other concerns as irrelevant. Scientists often define the issues as scientific, for example looking at evidence of hazards and dismissing concerns about fairness. Therefore it's important to be aware of all possible issues.

<table>
<thead>
<tr>
<th>Checklist of Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits, for example social welfare, health, jobs, profits</td>
</tr>
<tr>
<td>Risks and harms, for example dangers to health and the environment</td>
</tr>
<tr>
<td>Human rights. There may be implications for privacy, freedom of speech and sanctity of life.</td>
</tr>
<tr>
<td>Alternatives. Are there other ways to achieve the same goal?</td>
</tr>
<tr>
<td>Economic. Are the costs of decision-making, how will decisions be made, and who will pay, fair?</td>
</tr>
<tr>
<td>Another group suffers the harm or risk. How will the benefits go to one group while another group suffers the harm or risk.</td>
</tr>
</tbody>
</table>

In many controversies, authority figures — scientists — tell us what they think are important issues in a controversy, and whatever things are of lesser importance are dismissed as non-issues.
Many scientific authorities assume or say the debate is about facts and evidence, and try to sweep values under the carpet. What they're really doing is making judgments about values but not acknowledging them. In these cases, highlighting the values is worthwhile.

For example, in debates about fluoridation, proponents say that their case is so clear: the benefits of fluoridation are huge and the risks are small or non-existent — and therefore opposition is irrational. But there is an assumption about values contained in this argument: collective benefits outweigh individual freedom. When opponents say fluoridation is compulsory medication with an uncontrolled dose, they are opposed to the compulsion and to the violation of medical ethics involved in an uncontrolled daily dose. How will participants line up on these issues?

Table 1. Common stances by fluoridation proponents and opponents

<table>
<thead>
<tr>
<th>Issue</th>
<th>Proponents</th>
<th>Opponents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Recommended</td>
<td>No fluoride added to public water supplies</td>
</tr>
<tr>
<td>Benefits</td>
<td>Huge</td>
<td>Questionable: not as large as claimed</td>
</tr>
<tr>
<td>Risks</td>
<td>Minimal or nonexistent</td>
<td>Significant</td>
</tr>
<tr>
<td>Ethics</td>
<td>Public water supplies comply with the recommended levels in public water supplies</td>
<td>Public water supplies do not comply with the recommended levels in public water supplies</td>
</tr>
<tr>
<td>Decision-making</td>
<td>Decisions should be made by governments in consultation with experts</td>
<td>Decisions should be made by communities after hearing both sides</td>
</tr>
</tbody>
</table>

Suppose you join the debate and say the benefits are fairly small but so are the risks. Proponents won’t like your concession to opponents. Opponents won’t want you saying the risks are small. Or suppose you say that fluoridation levels should be reduced, to lower the risks.2 In 2011, the US Department of Health and Human Services recommended lowering the level of fluoride in public water supplies from the range 0.7 to 1.2 parts per million to a flat figure of 0.7 ppm: Centers for Disease Control and Prevention, “Community water fluoridation: questions and answers,” http://www.cdc.gov/fluoridation/fact_sheets/cwf_qa.htm

2

Understanding controversies
The controversy manual

The controversy manual

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Paradigms

The positions in a controversy sometimes become so standardised that they can be said to be paradigms. It is understood how new evidence is treated in controversies, and these positions are difficult to challenge. This is because the terms are so entrenched and the concept of paradigm is so well developed.

Consider the idea of the earth-centred universe, with the sun and planets revolving around the earth. This was the standard view for hundreds of years. It was called the Ptolemaic model, after the ancient astronomer Ptolemy. One problem with the Ptolemaic model was that the idea of epicycles, circular orbits around circular orbits, was required. These circular orbits were not observed, and Ptolemy did not know why they were needed. The sun and planets revolving around the earth was a standard set of assumptions, methods and goals. They don't necessarily fit the data, but they are useful in explaining the observations.

Thomas Kuhn, an historian of science, called this sort of research "normal science." Within the prevailing ideas, Kuhn called this "normal science." This sort of research is under taken with a standard set of assumptions, methods and goals. They don't necessarily fit the data, but they are useful in explaining the observations. New evidence is treated in controversies, and these positions are difficult to challenge. This is because the terms are so entrenched and the concept of paradigm is so well developed.
The controversy manual universe, eliminating the need for many of the epicycles. However, some were still required, because Copernicus didn’t know about elliptical orbits.

The Ptolemaic model was a paradigm: a way of thinking about the universe and analysing all observations. The things that didn’t fit we patched up with epicycles. The Copernican model was a different paradigm. Kuhn’s idea of normal science — the research carried on without challenging standard assumptions and rules for resolving their differences. What is convincing in essence, the two sides cannot agree on the same set of examples, counterexamples, axioms and claims. These developed set of assumptions, examples and claims. These were to dislodge the basic assumptions. This applies to science, the study of controversies. In many polarised controversies, the two sides are entrenched in standard debating positions, and nothing convincing is deemed enough. In many polarised controversies, the two sides are entrenched in standard debating positions, and nothing convincing is deemed enough.

However, some were still required, because Copernicus eliminated the need for many of the epicycles.

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Understanding controversies

publicly controversial topics, in which social issues are more prominent. Scientists are not the only ones involved in the debate or affected by the research: many others, from citizens to companies, are implicated and arguably should have their voices heard. In addition, the level of uncertainty about evidence is far greater than with research programmes within the scientific community, the stakes are high, and in many cases, there is an urgency to take action. Research in this sort of context has been called "post-normal science." Silvio O. Funtowicz and Jerome R. Ravetz introduced this concept. For a convenient summary see S. Funtowicz and J. Ravetz. For a convenient summary see S. Funtowicz and J. Ravetz. For a convenient summary see S. Funtowicz and J. Ravetz.

2.3 Evidence

One of the striking features of scientific controversies is that new scientific evidence seldom makes much difference. This can be explained by using the idea of paradigms. If participants were open-minded seekers after the truth, then you might imagine that they would look to scientific findings to help adjudicate the controversy. But often the two sides continue on much the same, as if no new studies had been done. If participants were open-minded seekers after the truth, then you might imagine that they would look to scientific findings to help adjudicate the controversy. But often the two sides continue on much the same, as if no new studies had been done. If participants were open-minded seekers after the truth, then you might imagine that they would look to scientific findings to help adjudicate the controversy. But often the two sides continue on much the same, as if no new studies had been done.

4 Silvio O. Funtowicz and Jerome R. Ravetz introduced this concept. For a convenient summary see S. Funtowicz and J. Ravetz. For a convenient summary see S. Funtowicz and J. Ravetz. For a convenient summary see S. Funtowicz and J. Ravetz.

2.3 Evidence
There are three main reasons why new evidence seldom makes much difference.

• First, partisans look at the issues from their own perspectives — their paradigms — and only evidence that fits their perspective is taken up. Evidence that doesn’t is treated as an “anomaly” and ignored or explained away.

• Second, evidence is only part of what keeps a controversy going. There are also differences in values that are seldom challenged by evidence.

• Third, numerous techniques can be used to question unwelcome evidence. See box.

How to deal with a threatening research study

• Ignore it.
• Question the quality of the research.
• Note that the findings don’t apply to all situations.
• Say the researchers or research methods were biased.
• Say the research is funded by a group with a vested interest.
• Say the researchers have a conflict of interest.
• Ignore it.

Evidence does influence some people. Indeed, evidence is a powerful tool in controversies, because partisans can use it to challenge opponents and win more points. Evidence is used to show the weaknesses in other parties’ positions, to explain their reasons for believing in something different, or to win points in debates. Evidence can be a powerful tool in controversies, because partisans can use it to challenge opponents and win more points.
Understanding controversies

Supporters. But evidence doesn't speak for itself. Just because some new research findings are published doesn't mean they will make any difference. What does make a difference is how partisans use the evidence in their campaigning.

Implications

- New evidence seldom makes a big difference in controversies. So don't think that some new study — even one that is definitive — will settle the matter and convince everyone.
- All evidence can be challenged. No evidence is definitive. It's impossible to know whether evidence is correct or relevant. There are too many examples of bias and distortion, especially when vested interests are involved, to rely on any findings.
- When new evidence is available, expect each side to use it in its favor, to win or to lose.
- Studies over the past fortnight showing forecasts of global warming were correct or underestimated.

Statistics

In many scientific controversies, claims about numbers play a big role. For example, the number of people killed due to a nuclear accident or the risk of an adverse reaction play a big role. Yet there are too many examples of bias and distortion, especially when vested interests are involved, to rely on any findings.

News report

"The most prominent political climate sceptics see no reason to change their minds, despite the welter of studies over the past fortnight showing forecasts of global warming were correct or underestimated."

The controversy hasn't been done and there may be 10 or 100
more to digress as anecdotal. Critics of vaccines say children have numerous vaccines. Hence, such seizures
case of rigors for the seizure, especially when you've
had a vaccination the previous day or week may not be the
same seizures at any given time. For various reasons, having
seizures in young children will have concerned doctors. Just by chance, some children will have
concerns. Just by coincidence, same children will have
concerns. Just by coincidence, same children will have
cases of vaccination-related adverse reactions. However the
numbers are presented makes a difference to how they are viewed and what that is considered.

Supporters of vaccination say adverse reactions are
and less important.

The problem is that data often haven't been collected
and that issue to the issue of using statistical models
drawn not relevant to the issue, for example by looking at
inadvertently or intentionally, for example by looking at
another is when advocates get the numbers wrong.
Yet another is when the figures can't be accurately evaluated.
Another is when the figures can't be accurately evaluated.
Another is when the figures can't be accurately evaluated.
Sometimes due to undone science — see the next section.

One problem is that data often haven't been collected
whereas proponents give smaller figures.
For potential benefits, smaller and environmental impacts,
risky technologies, opponents usually give larger figures.
Risks to children, adverse events usually occur.

The way numbers are presented makes a difference to
respect, as all numbers are sacred.
A special type of evidence, sometimes referred to as
supporters and denounce opponents. Statistical evidence is
controversial. Used to attempt to win arguments, recent
evaluations of adverse numbers, thus can become tools in a
to a drive. Statistics, which are used to summarize and

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The Controversy Manual
Statistics about adverse reactions are debated, often rightfully so. It is not difficult to back up a viewpoint by using statistics, much more than people might suppose.

In the case of new technologies, such as genetic engineering or nanotechnology, drawing conclusions from statistical tests might be premature, because the risks are mostly hypothetical, there is not enough testing, and the results are essentially less than the promised. Hence, it is not surprising that many people, including controversy campaigners, do not understand statistics, and another problem is that many people, including peace activists, have long stated or suggested that everyone would die. Some have said that nuclear arsenals represent "overkill," enough destructive power to kill everyone in the world many times over. However, it is difficult to track these claims back to a careful calculation. Statistics about adverse reactions are debated, often rightfully so. It is not difficult to back up a viewpoint by using statistics, much more than people might suppose.

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In the debate about the effects of nuclear war, peace activists have long stated or suggested that everyone would die. Some have said that nuclear arsenals represent "overkill," enough destructive power to kill everyone in the world many times over. However, it is difficult to track these claims back to a careful calculation. Statistics about adverse reactions are debated, often rightfully so. It is not difficult to back up a viewpoint by using statistics, much more than people might suppose.
But extrapolating this way is misleading, because a 2-megaton bomb does not kill 100 times as many people as a 20-kiloton bomb. It would be like assuming that a spider with a venom 100 times as great would kill 100 times as many people. However, most people have no idea about the effects of nuclear weapons and especially if they are opposed to nuclear war. They do not know how many people would be killed by a 2-Megaton bomb, which is many more than 100 times as many people. Therefore, the number of people killed by a 2-Megaton bomb is not 100 times as many people. However, most people believe that a 2-Megaton bomb does not kill 100 times as many people. This is misleading because the effects of nuclear weapons are not linear.
detect and counter misuse by opponents. The foundation of better understanding is to recognize that statistics are not facts, but are created by humans for specific purposes, and they can be misunderstood, misrepresented, manipulated and mangled. But rather than cynically rejecting figures altogether, it is sensible to understand that some statistics are far better than others. The better ones have been carefully collected using methods to minimize bias, and are presented in a non-partisan manner.

The controversy manual significantly to respiratory disease. Routine emissions from nuclear power plants cause far less disease, according to standard calculations about the effect of radioactivity on human health. Critics of nuclear power have raised several concerns, including the risk of catastrophic accidents. Proponents respond that the risk of a reactor meltdown with its calculation that the risk of a reactor meltdown was extremely low — in other words, nuclear power was extremely safe. Critics of nuclear power said that the Rasmussen report had overestimated the risk of a reactor meltdown. Critics of nuclear power plans and the problem of long-lived radioactive waste have raised several concerns. According to standard calculations about the effect of radioactive emissions from nuclear power plants, cause far less disease, significantly to respiratory disease. Burning waste. Burning of coal does not cause these radioactive emissions, and other protective features. In 1975, the Rasmussen report appeared. In the case of the Fukushima Daiichi reactors in March 2011. To prevent future Fukushima Daiichi reactors from meltdowns and result in the release of massive quantities of radioactivity, as in the case of the Rasmussen report. One of the most effective techniques of the anti-nuclear campaigners was to highlight earlier accidents. This was a classic case of evidence not having much effect on the position of the key partisans. The same thing happened in the case of evidence not having much effect on the position of the key partisans.
The proponents had always accepted that there would be accidents, whether a meltdown of a reactor or a near miss. For example, there was an accident in 1975 at the nuclear power plant at Browns Ferry, Alabama, in which several safety systems simultaneously failed. There was no meltdown, but it was a near miss. According to critics, the proponents preferred not to mention nuclear power accidents, such as the one at Browns Ferry. Instead, they said that no member of the public had died from the operation of nuclear power plants.

The efforts of the opponents made nuclear safety a key issue in debates. Media were much more sensitized to the risks. Hollywood jumped on the bandwagon with a film about a possible reactor meltdown. Titled *The China Syndrome* and released in 1979, the drama featured Jack Lemmon as a nuclear engineer and Jane Fonda as a journalist. Shortly after this, life imitated art: a nuclear reactor at Three Mile Island, Pennsylvania, suffered a partial meltdown. The Three Mile Island accident shifted the debate about nuclear power — but why? It was new evidence, not just a hypothetical possibility. The efforts of the opponents made nuclear safety a key issue in debates. Media were much more sensitized to the risks. Hollywood jumped on the bandwagon with a film about a possible reactor meltdown. Titled *The China Syndrome* and released in 1979, the drama featured Jack Lemmon as a nuclear engineer and Jane Fonda as a journalist. Shortly after this, life imitated art: a nuclear reactor at Three Mile Island suffered a partial meltdown. The Three Mile Island accident shifted the debate about nuclear power — but why? It was new evidence, not just a hypothetical possibility.
The controversy manual

be some nuclear accidents. If this was the worst case scenario, then it wasn't that bad, certainly compared to the tragic toll of deaths and disease from coal-fired electricity.

This pro-nuclear take on Three Mile Island was logical enough, even taking into account that it ignored possible cancers and subsequent deaths from the releases of radioactive gases during the accident. In 1986, there was a much more serious nuclear accident due to groundwater leaks earlier in the debate. The nuclear debate in that time was much lower key, but the pro-nuclear position had been weakened by the constant attention to nuclear accidents in the debate, with opponents continually raising it. Because nuclear meltdowns were in people's awareness and before long it became clear that a power plant in Chernobyl in the Ukraine had had a massive explosion (a steam explosion, not a nuclear explosion), opponents had been warning about this sort of accident. In 1975, the Browns Ferry accident was much lower key, so the accident received little media attention. The point here is that new evidence had an impact in part due to groundwork laid earlier in the debate. This was the case with nuclear meltdowns, both in the local community and in the media's awareness — and the media's awareness of the near miss at Three Mile Island had a greater impact than the accident at Chernobyl in the Ukraine.

Nuclear proponents weren't about to give up. They blamed the accident on operator error, said it wouldn't have occurred in western plants that have better safety systems, and said the death toll was relatively small.

In 1979, the Three Mile Island accident was a near miss. If this was the worst case scenario, then it wasn't that bad, certainly compared to the tragic toll of deaths and disease from coal-fired electricity.
Understanding controversies

They interpreted the accident in the way most favourable to nuclear power, again illustrating that no evidence is definitive. However, anti-nuclear activists were better able to make use of the Chernobyl accident as new evidence, because they had been raising concerns about nuclear accidents for a long time, and both the media and the general public were sensitised to the issue. What really happened at Chernobyl? What really is the death toll? (Advocates of nuclear power say as low as a few dozen; opponents say as many as 100,000 or more). What really are the long-term environmental consequences? Although new scientific evidence seldom helps to resolve controversies, evidence is one of the most highly contested aspects of controversies. Several potential facets of battles over evidence are covered in the next four sections.

Understanding controversies

When really happened at Chernobyl? What really is evidence is definitive? They interpreted the accident in the way most favourable to nuclear power, again illustrating that no evidence is definitive.
Scientists do not research every possible topic. There are so many possible things to investigate that choices must be made. Some topics are ignored because they are too costly, too difficult or simply uninteresting. Other topics are not researched because no one provides funding and support to study them. Problems — but only some sorts of drugs, those that can be patented, pharmacuetical companies select research to fund. Governments and corporations sponsor research that serves their interests. In the 1950s, the US government massively funded research into nuclear power, a different way to provide energy. In contrast, research into solar power remained undeveloped compared to what could have been done.

Governments and corporations sponsor research into certain areas of science, such as the health benefits of unpatentable substances, such as vitamins and minerals. Pharmaceutical companies are not interested in research that leads to no patents: they do not want to invest in research that may not lead to a profitable new product. Pharmaceutical companies, along with governments, have been unable to fully randomised controlled trials of the pharmaceuticals they produce. Critics of fluoridation say there is no evidence of benefit, but they need only point out the problems with some sorts of drugs, those that can be patented. Governments and corporations select research to fund. Governments and corporations sponsor research that serves their interests. In the 1950s, the US government massively funded research into nuclear power. In contrast, research into solar power remained undeveloped compared to what could have been done.
cycling and public transport. Government nuclear agencies are not going to sponsor research into energy efficiency. Funding is only part of the equation. Even scientists who do not depend on external funding, such as some who do desktop research in universities, are affected by the priorities set by the major funders of research. Scientists seek to publish their work, and journals are more receptive to submissions on topics seen as significant. Topics are more likely to receive massive funding and become part of the scientific agenda when governments and industry endorse them and provide significant funding. More resources are allocated to research in these areas, and scientists who work in these fields are more likely to publish their work, and have their research funded. Even scientists who do not depend on external funding are not going to sponsor research into energy efficiency. Cycling and public transport, government nuclear agencies...
The controversy manual

research in these areas is done at all; sometimes research is
done but not published (often due to corporate or govern-
ment controls, but sometimes resistance by editors and
referees). Standard assumptions and protocols concerning how
research work should be carried out sometimes lead to
areas of undone science. For example, conventional field
studies of the effects of pesticides on honey bees look at
only one or two chemicals at a time, comparing colonies
receiving no pesticides to those receiving specific
doses of the individual pesticides in question. Conven-
tional entomologists are generally comfortable study-
groups of individual colonies receiving no pesticides to
those receiving specific doses of the individual pests. Thus,
knowledge remains incomplete, even though their inves-
tigations, imagine a giant building in which all possible
sections of a few centimetres or metres. Deep within the
building are vast areas as yet unknown and unexplored.

10 Daniel Lee Kleinman and Sainath Suryanarayanan, “Dying
bees and the social production of ignorance,” Science,
492–517; Sainath Suryanarayanan and Daniel Lee Kleinman.
“Disappearing bees and regulatory neglect,” Issues in Science
and Technology, Vol. 27, No. 4, Summer 2011, pp. 33–36.
Understanding controversies

Perhaps unimagined. These are areas that have not been studied because no one yet has any ideas of how to go about it, or technology does not exist to do it. Undone science, though, is much closer to the existing doors and windows. If we look in a window, we find that incursions have been made to the right-hand side but much less knowledge has been extracted nearby to the left. That's the undone science: research that could have been carried out but hasn't. Knowledge has been extracted from the building but is still sitting inside while other knowledge has already been extracted from the building. The concept of undone science is a reminder to also argue about knowledge that still sits there in the building, even though it could have been extracted.

Uneven patterns of scientific development are common in scientific controversies. In many cases, one side has backing from powerful groups able to sponsor research that suits their purpose, whereas the other side has support from only a few scientists, often with little funding. For example, critics of vaccination want more documentation of adverse reactions to vaccines, but this is not a priority for proponents. Critics of genetically modified foods want more research into possible adverse health impacts. Critics of adverse reactions to vaccines, though, is not a priority for proponents. Critics of vaccination want more documentation of adverse reactions to vaccines, but this is not a priority for proponents. Critics of genetically modified foods want more research into possible adverse health impacts. Critics of adverse reactions to vaccines, though, is not a priority for proponents.

When someone says, "The evidence overwhelmingly supports our position," it is worth looking closely at the evidence. Perhaps there are areas that have not been studied because no one yet has any ideas of how to go about it, or technology does not exist to do it. Undone science, though, is much closer to the existing doors and windows. If we look in a window, we find that incursions have been made to the right-hand side but much less knowledge has been extracted nearby to the left. That's the undone science: research that could have been carried out but hasn't. Knowledge has been extracted from the building but is still sitting inside while other knowledge has already been extracted from the building. The concept of undone science is a reminder to also argue about knowledge that still sits there in the building, even though it could have been extracted.
The controversy manual undone science. Maybe there’s little or no funding for non-orthodox research. Maybe contrary evidence hasn’t been pursued due to antagonism from bosses or referees. Maybe scientists dismiss observations by non-scientists as anecdotal and not worth studying. The phenomenon of undone science is another reason why evidence is seldom a definitive way to resolve a controversy. When evidence is undone science is another reason why evidence is seldom a definitive way to resolve a controversy. When evidence is undone science is another reason why evidence is seldom a definitive way to resolve a controversy. When evidence is undone science is another reason why evidence is seldom a definitive way to resolve a controversy. When evidence is undone science is another reason why evidence is seldom a definitive way to resolve a controversy. When evidence is undone science is another reason why evidence is seldom a definitive way to resolve a controversy.
practice it is not readily accessible or widely known. If the findings support one side in a debate, then partisans on that side need to track down and publicise these results. This is easier when the results are available online. Print-only publication without obvious keywords is a path to obscurity.

Campaigners can obtain obscure but relevant findings in various ways, including by:

- searching through archives (physical and electronic)
- subscribing to newsletters and investigative journalism
- accessing information within organisations
- interviewing scientists and research administrators
- using freedom-of-information legislation to obtain documents
- cultivating informants within organisations
- writing to or phoning scientists asking for copies of papers, including unpublished ones, not readily available on the Internet
- writing to or phoning scientists asking for copies of their papers, including unpublished ones, not readily available on the Internet
- subscribing to newsletters and other publications
- searching through archives (physical and electronic)

When a piece of research becomes known, the next level of struggle is over its meaning and significance.

2.6 Bias in research

In 1972, in the second year of my PhD, I started doing transport aircraft or SSTs. These proposals faced intense opposition. The controversy related to the controversy over supersonic transport aircraft. In the second year of my PhD, I started doing research related to the controversy over supersonic transport aircraft or SSTs. These proposed jets fly faster...
than the speed of sound — that's why they are called supersonic — at a very high altitude, sometimes in the stratosphere, a layer of the atmosphere starting about 10 km above the earth's surface. 

There was a raging controversy over SSTs, especially over the sonic boom, a thunderclap of sound at ground level when the jets fly supersonically. In 1970 and 1971, a new concern was raised: exhausts from SSTs might cause a reduction in stratospheric ozone. This ozone is important because it screens incoming solar radiation, reducing the amount of ultraviolet light that reaches the ground. Ultraviolet light is a factor in skin cancer as well as having effects on plants.

Some of the exhaust gases from SSTs are nitrogen oxides, formed in jet engines by the burning of nitrogen in the atmosphere. The research I was involved with was concerned with where these nitrogen oxides moved in the atmosphere. The research I was involved with the exhaust gases from SSTs were nitrogen oxides formed in jet engines by the burning of nitrogen in atmospheric chemistry. "Nitrogen oxides" refer to nitrogen dioxide (NO₂) and nitrogen oxide (NO) and various other nitrogen-containing gases.

One of the most influential studies of the effects of SST exhaust on ozone was by Harold Johnston, a chemist at the University of California, Berkeley. In a paper with the title "Stratospheric ozone and how long they stayed here," in Science, he presented calculations showing significant reductions in stratospheric ozone resulting from SST exhausts. Johnston showed that the exhausts from SSTs could cause significant reductions in stratospheric ozone, which is important because it screens incoming solar radiation, reducing the amount of ultraviolet light that reaches the ground. This ozone is important because it screens incoming solar radiation, reducing the amount of ultraviolet light that reaches the ground. Johnston showed that the exhausts from SSTs could cause significant reductions in stratospheric ozone, which is important because it screens incoming solar radiation, reducing the amount of ultraviolet light that reaches the ground. Johnston showed that the exhausts from SSTs could cause significant reductions in stratospheric ozone, which is important because it screens incoming solar radiation, reducing the amount of ultraviolet light that reaches the ground.
stratospheric ozone. 13 Harold Johnston, “Reduction of stratospheric ozone by

But not everyone agreed. Two years later, a paper was published in the similarly prestigious journal
Nature authored by meteorological researcher Peter Goldsmith and colleagues. 14 They examined ozone levels before and after atmospheric nuclear weapons tests — which, like SSTs, deposit nitrogen oxides in the stratosphere — and found that ozone levels were not affected by injection of nitrogen oxides equivalent in amount to those emitted by a fleet of SSTs. Their findings were published in the similarly prestigious journal Nature, published in the same year as Johnston’s paper. The researchers did, back in the 1970s, I did just this, using delving into the scientific studies and examining what the researchers did. Here I will describe a different approach: examining links between Goldsmith and SST promoters. Another is to express the difference in controversy, especially in controversial areas. These sorts of divergences in scientific results are common, especially in controversial areas. The conclusion of SSTs is to lose your hands and say, “the evidence is strong.” But not everyone agreed. Two years later, a paper published in the similarly prestigious journal Nature, published in the same year as Johnston’s paper.

13 Harold Johnston, “Reduction of stratospheric ozone by
The controversy manual

The papers by Johnston and by Goldsmith et al. as test cases.15 The same approach is still relevant today.

Technical assumptions

In doing research, scientists have to make assumptions about all sorts of things. This depends a lot on the field. In some fields, like chemistry, it might be about reaction rates whereas in others, like epidemiology, it might be about the characteristics of different populations. The key thing is whether the assumptions are made explicit or not. Scientists might be explicit about assumptions in their research, whereas in other fields, they might not. In doing research, scientists have to make assumptions about the world and how it works.

Johnston, in his model of how nitrogen oxides affected stratospheric ozone, made assumptions about the models. Some of his models — the ones showing the greatest effect from the exhaust — involved the nitrogen oxides being spread out from the bottom to high up in the stratosphere. A critic could argue that Johnston’s models exaggerated the greenhouse effect of nitrogen oxides produced by nuclear explosions. In a

nuclear explosion, it is possible for condensation — rain, basically — to occur and to absorb some of the nitrogen oxides on its way down. One of Goldsmith et al.'s technical assumptions was that there was no rain, and decided whether different assumptions would lead to different findings — and how important this is.

My assessment is that both Johnston and Goldsmith et al. made technical assumptions that "pushed" their arguments towards their preferred conclusions. In Johnston's case the push was towards showing a larger environmental impact of SST; in Goldsmith et al.'s case the push was towards showing a smaller impact.

Technical assumptions are found in most, if not all, scientific studies. Some examples are:

- studies of the effectiveness of cancer treatments.
- epidemiological studies of the effect of fluoridation on tooth decay.
- calculations of the risk of a nuclear reactor accident.
- climate change models.

Suppose you are engaged in a scientific controversy and the other side touts some studies. You can obtain the studies, examine them closely, identify technical assumptions and decide whether different assumptions would lead to different findings — and how important this is. To do this requires a level of technical understanding, but you don't have to be a PhD in the field to undertake the analysis. You can obtain the studies, examine them closely, identify technical assumptions and decide whether different assumptions would lead to different findings — and how important this is.

Technical assumptions are found in most, if not all, scientific controversies.

The Latin expression "et al." means "and others". When an article has more than two authors, "et al." is commonly used after the name of the first author to refer to the other authors.
Selective use of evidence — and then applied — was a technical assumption — and then applied — were spread across the troposphere in different ways. Johnston in his model assumed the nitrogen oxides heavily involved were mostly be in layers as high.

Selective use of evidence

Scientists, in developing their arguments, often draw on evidence from a range of sources. Darwin, in making his case for evolution, used evidence gathered from a range of species. Of course, he could not use all possible evidence: case for evolution, used evidence gathered from a range of species. Of course, he could not use all possible evidence.

Scientists in developing their arguments, often draw on evidence from a range of sources. Darwin, in making his case for evolution, used evidence gathered from a range of species. Of course, he could not use all possible evidence. Johnston used information from a report, the Study of Critical Environmental Problems (SCCP), published the year before his own study. Johnston used information from a report, the Study of Critical Environmental Problems (SCCP), published the year before his own study. Johnston used information from a report, the Study of Critical Environmental Problems (SCCP), published the year before his own study. Johnston used information from a report, the Study of Critical Environmental Problems (SCCP), published the year before his own study. Johnston used information from a report, the Study of Critical Environmental Problems (SCCP), published the year before his own study.

and illness.

that would be too much. So he had to select which evidence he used and which he ignored.

Selective use of evidence

the final for advice along the way. It's extremely valuable to be able to ask some experts in such an analysis. But it does require time and effort.
Understanding controversies

Goldsmith et al. to determine whether atmospheric nuclear tests affected levels of stratospheric ozone, had to select ozone records. They made some arbitrary assumptions about the ozone records they would examine, which limited their final results. The most obvious option is to select evidence that supports the argument and ignore or dismiss evidence that undermines it. It is also possible to present data that seems relevant but not otherwise relevant, or produce results from data collected by other scientists. By selecting some relevant and ignoring other results, there is a possibility of biasing the data in a study, it is useful to analyse the use of evidence in a study, if necessary. To analyse the use of evidence in a study, it is useful to find out about all possible evidence that could be used.

Selective use of uncertainties

Any piece of data is uncertain to some degree. Suppose you use a ruler to measure the length of a lizard. You might come up with a length of 273 millimetres. One way to reduce this uncertainty is to use a more accurate ruler. Any piece of data is uncertain to some degree. Suppose you use a ruler to measure the length of a lizard. You might come up with a length of 273 millimetres. One way to reduce this uncertainty is to use a more accurate ruler. The length of a lizard might be 273 millimetres, but it could also be 274 millimetres, or 271 millimetres. Any piece of data is uncertain to some degree. Selective use of uncertainties is a fair or a biased selection.

Goldsmith et al. also presented long-term ozone records from two stations. This appeared to support their argument, though the records from these particular stations had little relevance. Most scientific research involves using data, either collected by the researchers themselves or chosen from other sources. By selecting some data and ignoring other data, there is a possibility of biasing the results.

To analyse the use of evidence in a study, it is useful to find out about all possible evidence that could be used—a very big task—and then see whether the evidence used supports the argument and ignores or dismisses evidence that undermines it. It is also possible to present data that seems relevant but is actually irrelevant. To analyse the use of evidence in a study, it is useful to find out about all possible evidence that could be used.
The controversy manual

The precision of the ruler. Another is whether
the lizard is fully stretched out. You might judge that your
measurement is accurate to within 1 millimetre, so you
could record the length as 273±1 millimetres.

To obtain a more accurate assessment of the length.

Johnson treated uncertainties in the distribution of
nitrogen oxides in the stratosphere, but not concerning
the amount of nitrogen oxides. He emphasised
small uncertainties that did not affect his result but
gave less attention to larger ones.

Judging whether something counts as a cancer.

Uncertainties are involved in every aspect of scien-
tific research. There are uncertainties in reaction rates,
temperatures, numbers of cancers and just about any-
thing else you can name. Some uncertainties occur when
taking a measurement, like the length of the lizard. Others occur
because different researchers have come up with different
findings or because interpretation is involved, as in
judgements of whether differences in reaction rates,
interpretation is involved, as in
judgements of whether a cancer.

Estimate of the length and the standard deviation is a
mean and standard deviation. The mean is your best
estimate of the length and the standard deviation is a
measure of the uncertainty in the mean.
Understanding controversies

Ozone as equal amounts of nitrogen oxides from nuclear weapons tests. Like Johnston, Goldsmith et al. emphasised uncertainties that had little effect on their results and de-emphasised ones likely to have a large effect.

Uncertainties are a crucial part of scientific research: when observations are involved, there is always the possibility that the results could be different. To give an honest account of the findings, every important uncertainty should be spelled out.

However, there are pressures on scientists to de-emphasise uncertainties. If the uncertainties are too large, the results may not seem significant. Emphasising that a result is subject to numerous qualifications can make a scientific paper seem wishy-washy and hence harder to publish. A definite, confident result is usually more memorable.

In many studies, uncertainties are expressed statistically, for example as standard deviations or p values. These seem to be a precise way of presenting the precision of results. The question then becomes, are all of the most important uncertainties presented?

The implication is that when analysing a scientific paper, it is worthwhile paying close attention to possible sources of uncertainty and whether these are fully spelled out.

Important uncertainties presented?

A definite, confident result is usually more publishable. A definite, confident result is usually more publishable. A definite, confident result is usually more publishable. A definite, confident result is usually more publishable. A definite, confident result is usually more publishable.

However, these are pressures on scientists to de-emphasise uncertainties and to emphasise conclusions over important uncertainties. Every important uncertainty should be spelled out.
Selective use of results

Suppose a botanist counts the number of anteaters in six coastal zones and comes up with these figures: 16, 42, 25, 3, 150, 61. These figures are listed within a paper on the subject. The abstract of the paper might say, "Anteater numbers were found to be as low as 3 in coastal zones," or it might say, "Anteater numbers were found to be as high as 150 in coastal zones." By selecting certain results rather than others, a very different message can be sent to readers.

For emphasis in summaries in his paper, Johnston chose the largest result from his calculation: 20 percent. "A factor of 2 ..." A factor of 2 is a reduction of 50 percent. Of nitrogen could reduce the ozone shield by about 10 percent. "The projected increase in stratospheric oxides caused by the increase in SSTs would be spread through the stratosphere from SSTs." Johnston used four models for how nitrogen oxides would be spread through the stratosphere from SSTs. The abstract to his paper reads, "The projected increase in stratospheric oxides caused by the increase in SSTs would be spread through the stratosphere from SSTs." Johnston used four models for how nitrogen oxides would be spread through the stratosphere from SSTs. For each model, he then assumed that more nitrogen oxides would be spread through the stratosphere from SSTs.

"Critics tend to claim uncertainty while defenders tend to claim adequate knowledge." (p. 439)
Goldsmith et al. looked for, but didn’t find, reductions in stratospheric ozone from nuclear explosions and then pointed out that these explosions had put as much nitrogen oxide into the stratosphere as a fleet of SSTs. A major qualification is that nitrogen oxides from SSTs would be in different places in the stratosphere than nitrogen oxides from nuclear explosions. But Johnston and Goldsmith et al., in referring to their own results, made their findings appear much more striking and unilateral than they really were. They pushed their conclusions by the way they phrased their abstracts.

Both Johnston and Goldsmith et al., in referring to their own results in their abstracts and summaries, made their findings appear much more striking and unilateral than they really were. They pushed their conclusions by the way they phrased their abstracts.
The controversy manual

The controversy manual

By ignoring or casually dismissing alternative arguments, many readers won't notice.

The takeaway message is that in analysing a scientific paper, it is vital to study the findings embedded in the body of the text, and compare them to the results highlighted in the abstract and in summary sections. Sometimes the abstract gives an exaggerated or unqualified representation of the full range of findings. In a few cases, the abstract is actually contrary to the findings. By ignoring or casually dismissing alternative arguments, scientists can push their own arguments.

Alternative arguments are highly ignored.

Alternative arguments are downplayed.

Alternative arguments are briefly mentioned.

Alternative arguments are given full and respectful treatment.

Alternative arguments are given full and respectful treatment.

Some possibilities are:
Presents different points of view. How are they referenced? A scientific paper usually presents a point of view; there is an introductory section or a few paragraphs introducing the research.

Referring to alternative arguments

Interpreters of the data may apply a bit of spin. Although it is sometimes said, "The data never lie," the data can be used to support various points of view. The data can be interpreted in different ways, and the interpretation can influence the conclusions. For example, in a study of the effects of diet on weight loss, the data might support different conclusions depending on how the data are analyzed.

To avoid controversy, it is important to present the data in a way that is fair and unbiased. This can be done by providing a clear and complete description of the methods used, and by providing the data in a way that is accessible to a wide audience. It is also important to be transparent about any limitations or uncertainties in the data, and to provide a thorough discussion of the results.

Johnston in two cases put information inconvenient to his argument in the reference notes at the end of his paper.
Understanding controversies

One case involved figures on emissions from SSTs. Johnston used the larger figures, that made his results larger, and stuck the qualification about the figures into a note. The other case involved a calculation by two scientists, Park and London, with a different result. Johnston wrote later that Park and London had made a mistake but he didn't want to embarrass them about it in print.

Goldsmith et al. referred to alternative findings with dismissive language. They referred to Johnston's work as "speculation" while referring to their own conclusions as "inescapable." They also referred to a different study, by Johnston, Whitten and Birks (JWB), that came up with a different finding (JWB's work.).

The tenor of Goldsmith et al.'s treatment of ozone records denigrated the quality and significance of the earlier work of Goldsmith et al.'s. Involvement of ozone destruction data that showed the later work to be superior, without showing the later work's data to support, Goldsmith and others referred to different ozone destruction conclusions as "inescapable." They referred to their own work as "speculation" while referring to their own conclusions as "inescapable." They referred to Johnston's conclusions as "speculation." Goldsmith et al. referred to alternative findings without emphasizing them.

It's worthwhile to pay close attention to the way authors refer to alternative arguments. If you know the field, you should be familiar with research with contrary findings. Check to see whether it is cited at all. If it isn't, this is a likely indicator of bias. If it is discussed but dismissed in cursory or misleading ways, that's a different approach — still biased.

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The controversy manual

Mood of a paper

The way a scientific paper is written and presented establishes a mood or atmosphere that can influence the way readers think about the issue. This is most commonly done through language.

Although overtly emotive language is not common, there are always choices between different terms, which will have different connotations. Tables, diagrams, and visual features can also contribute to the mood of a paper.

Table 2. Examples of language used by Johnston and Goldsmith et al.

<table>
<thead>
<tr>
<th>Johnston</th>
<th>Goldsmith et al.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ozone shield&quot;</td>
<td>&quot;ozone layer&quot;</td>
</tr>
<tr>
<td>&quot;amounts of NO&quot;</td>
<td>&quot;burden of NO&quot;</td>
</tr>
<tr>
<td>&quot;threat to stratospheric O3&quot;</td>
<td>&quot;interaction...&quot;</td>
</tr>
<tr>
<td>&quot;attenuate&quot;</td>
<td>&quot;increase the ultraviolet radiation...&quot;</td>
</tr>
</tbody>
</table>
| "attenuate the harsh radiation... to permeate the lower atmosphere" | "increase the ultraviolet radiation reaching the planetary surface"
| "interact with..."             | "permitting the harsh radiation..."     |

Johnston's language creates images of a precarious environment, in which stratospheric ozone (O3) is a shield against dangerous ultraviolet light. However, this shield is threatened by nitrogen oxides (NOx) emitted by SSTs; these nitrogen oxides "attenuate" and "attenuate the harsh radiation... to permeate the lower atmosphere".

Goldsmith et al.'s language is more neutral. Nitrogen oxide (NOx) is a "burden of NO" that "interact with..." and "increase the ultraviolet radiation reaching the planetary surface".

It is worthwhile to pay attention to the language used in a scientific paper.

The way a scientific paper is written and presented can also contribute to the mood of a paper.
Language is also important in the way alternative arguments are referred to and in the way other researchers are described. In some debates, choice of language reflects an underlying agenda, or reflects the way arguments are referred to and in the way other researchers are described. In some debates, choice of language is also important in the way alternative arguments are referred to and in the way other researchers are described.
The controversy manual
research, publicising of findings and treatment of dissenters.18

Table 3. How to foster bias in scientific research

<table>
<thead>
<tr>
<th>Category</th>
<th>Approach</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undone science</td>
<td>Discourage research in areas in which results might be unwelcome</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do not fund research in the area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pressure researchers not to do studies in the area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refuse ethics approval for unwelcome studies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refuse access to resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attack scientists doing dissenting studies (see „suppression” below)</td>
<td></td>
</tr>
<tr>
<td>Censorship</td>
<td>Stop selected research from being published or reported</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reject submissions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prevent employees from submitting work for publication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refuse to publish rebuttals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refuse permission to give talks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pressure employees from research in the area</td>
<td></td>
</tr>
</tbody>
</table>

18 Special thanks to Melissa Raven and Adrienne Samuels for valuable suggestions concerning this table. For an informative discussion of biases in drug trials, and several other methods in discussion of biases in drug trials, and several other methods in Table 3. How to foster bias in scientific research, see Ben Goldacre, Bad Pharma: How Drug Companies Mislead Doctors and Harm Patients (London: Fourth Estate, 2012).
<table>
<thead>
<tr>
<th>Sponsorship</th>
<th>Deception</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide gifts and other favors to scientists to divert their attention.</td>
<td>• Design studies so they come to predetermined conclusions.</td>
</tr>
<tr>
<td>• Select and support sympathetic scientists.</td>
<td>• Use subjects not representative of the sample said to being studied.</td>
</tr>
<tr>
<td>• Hire sympathetic scientists and produce and publish their studies.</td>
<td>• Use a reactive placebo.</td>
</tr>
<tr>
<td></td>
<td>• Use inappropriate comparison drugs or dosages (too low to be effective; too high, so likely to cause significant side-effects).</td>
</tr>
<tr>
<td></td>
<td>• Study the wrong subjects.</td>
</tr>
<tr>
<td></td>
<td>• Prime subjects to express a particular view.</td>
</tr>
<tr>
<td></td>
<td>• Evaluate irrelevant variables (e.g., ingestion of GMOs as the cause of an immediate rise in blood pressure).</td>
</tr>
<tr>
<td></td>
<td>• Omit data.</td>
</tr>
<tr>
<td></td>
<td>• Omit information on error ranges.</td>
</tr>
<tr>
<td></td>
<td>• Draw conclusions that don’t follow from the results.</td>
</tr>
<tr>
<td></td>
<td>• Give misleading abstracts/summaries (that don’t reflect a study’s results).</td>
</tr>
<tr>
<td></td>
<td>• Withhold trial protocol details.</td>
</tr>
<tr>
<td></td>
<td>• Hide conflicts of interest.</td>
</tr>
<tr>
<td></td>
<td>• Sponsor journal supplements.</td>
</tr>
<tr>
<td></td>
<td>• Hire/fund hostile or dissenting scientists, to divert, muzzle or co-opt them.</td>
</tr>
<tr>
<td></td>
<td>• Provide gifts and other favors to sympathetic scientists.</td>
</tr>
<tr>
<td></td>
<td>• Sponsor journal supplements.</td>
</tr>
</tbody>
</table>

**Understanding controversies**
<table>
<thead>
<tr>
<th>Impression Management</th>
<th>Hinder or Suppress Dissent</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recruit journalists through gifts and exclusives</td>
<td>• Refuse to hire dissenters</td>
</tr>
<tr>
<td>• Trumpet favourable findings</td>
<td>• Deny research grants</td>
</tr>
<tr>
<td>• Ignore contrary findings</td>
<td>• Deny ethics approval</td>
</tr>
<tr>
<td>• Dismiss contrary findings</td>
<td>• Prevent access to data and resources</td>
</tr>
<tr>
<td>• Tout apparently independent experts with undisclosed conflicts of interest</td>
<td>• Make derogatory comments</td>
</tr>
<tr>
<td>• Spread favourable findings</td>
<td>• Publish criticisms in the mass or social media</td>
</tr>
<tr>
<td>• Promote favourable findings; dismiss unfavourable findings</td>
<td>• Make formal complaints (e.g., to a dissenter's boss)</td>
</tr>
<tr>
<td>• Set up fake citizen’s groups</td>
<td>• Threaten, harass, reprimand and dismiss dissenters</td>
</tr>
<tr>
<td>• Recruit apparently independent experts who have undisclosed conflicts of interest</td>
<td>• Infiltrate groups and disclose damaging inside information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contamination inside information</th>
<th>Disseminate Dissenters and Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sponsor journals that appear scholarly but are corporate fronts</td>
<td>• Threaten, harass, reprimand and dismiss dissenter's boss</td>
</tr>
<tr>
<td>• Sponsor conferences/symposia</td>
<td>• Prevent access to data and resources</td>
</tr>
<tr>
<td>• Ghostwrite articles</td>
<td>• Make derogatory comments</td>
</tr>
<tr>
<td>• Send submissions to sympathetic reviewers</td>
<td>• Publish criticisms in the mass or social media</td>
</tr>
<tr>
<td>• Stack ethics committees and Institutional Review Boards</td>
<td>• Make formal complaints (e.g., to a dissenter's boss)</td>
</tr>
<tr>
<td>• Infiltrate professional organisations</td>
<td>• Threaten, harass, reprimand and dismiss dissenters</td>
</tr>
<tr>
<td>• Promote favourable findings; dismiss unfavourable findings</td>
<td>• Infiltrate groups and disclose damaging inside information</td>
</tr>
<tr>
<td>• Tout apparently independent experts with undisclosed conflicts of interest</td>
<td>• Set up fake citizens' groups</td>
</tr>
</tbody>
</table>

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64 The Controversy Manual
2.7 The onus of proof

If the onus of proof is on you, it means you have to prove your case, otherwise you're assumed to be wrong. In a court of law, the onus of proof is traditionally put on the prosecution, which has to prove the defendant is guilty. If there is any doubt, the defendant is supposed to be found "not guilty" along the lines of the saying "Better ten guilty people go free than one innocent person be convicted." Note that "not guilty" is different from "innocent." For the defendant, not guilty means they are innocent, but for the prosecution, not guilty means they have failed to prove the defendant is guilty. If the prosecution fails to prove the defendant is guilty, the defendant is found "not guilty."
Goldsmith et al. assumed all they had to do was show that the threat to stratospheric ozone from SSTs was unlikely to be significant. Implicitly, they put the onus of proof on others—such as Johnston—to show their threat was real. Goldsmith et al.'s assumption helps explain their technical assumptions. Their argument and other methods of pushing their assumptions implied they placed the onus of proof on the critics. They were unlikely to be significant. Implicitly, they put the onus of proof on the critics. Shows their technical assumptions were not significant. Goldsmith et al. assumed all they had to do was show their threat was real.
Understanding controversies

Way of determining which side is succeeding

Shifting the onus of proof to the other side can be a goal in

an investigation of tobacco warned that smoking was harmful and critics had to prove it was harmless. But as the epidemiological evidence accumulated, smoking was accepted and critics had to prove it was harmful.

Back in the 1950s, tobacco companies had an advantage: smoking was acceptable and critics had to prove it was harmful. But as the epidemiological evidence accumulated, smoking was accepted and critics had to prove it was harmful.

Climate sceptics point to flaws and uncertainties in the standard viewpoint. They put the onus of proof on mainstream researchers to conclusively refute their criticisms, otherwise they conclude the orthodoxy should not be accepted. Otherwise they conclude the orthodoxy.

Climate sceptics put the onus of proof on those who think the IPCC is too conservative. That applies also to scientists such as James Hansen who think the IPCC is too conservative, those who think global warming is occurring but not as quickly as the IPCC, and to scientists who think global warming is likely to be more severe than anticipated by the IPCC. That applies also to scientists such as James Hansen who think the IPCC is too conservative.

The onus of proof also helps explain the persistence of the dispute. The onus of proof shifts over time, which helps explain the persistence of the dispute. The onus of proof shifts over time, which helps explain the persistence of the dispute.

Each of the two sides assigns the onus of the proof to the other side, which helps explain the persistence of the dispute. The onus of proof shifts over time, which helps explain the persistence of the dispute.

Shifting the onus of proof to the other side can be a goal in a controversy. Tracking the onus of proof over time is a way of determining which side is succeeding.

Understanding controversies
The controversy manual

The evidence became stronger—and critics mobilised—the tide gradually turned. For decades, the companies continued to argue that there was no proof that smoking caused lung cancer, and they were correct that there was no proof at the level of an individual smoker. But the epidemiological evidence became the basis for a new orthodoxy. Defenders of orthodoxy challenged scientific credibility. The onus of proof often is assigned to fall on those who challenge scientific orthodoxy. The change in the onus of proof was a signal that the companies had mostly lost the struggle for scientific credibility. They turned to a completely different argument: that people have a right to smoke, because it is a legal activity. The evolution of arguments about smoking shows how the onus of proof can change and how it can involve both scientific and non-scientific elements—health hazards and human rights in the case of smoking.

Shifting the onus of proof

The onus of proof often is assumed to fall on those who challenge scientific orthodoxy. Defenders of orthodoxy can simply ignore or dismiss challengers unless they come up with something definitive, especially something with political or popular appeal. If you are on the side of orthodoxy, you can put up a disavowal: they had no proof smoking was safe, which was much harder to do. But the epidemiological evidence became the basis for a new orthodoxy, and the companies' defences became the smoker. Buried the epidemiological evidence became the document. But there was no proof at the level of an individual smoker caused lung cancer, and they were correct. The companies continued to argue that there was no proof that smoking caused lung cancer—and critics mobilised—and the onus of proof changed.
Understanding controversies

You might say that critics should have to prove their case because:

• The weight of evidence is on our side.
• Most scientists support our position.
• Extraordinary claims (by the other side) require extraordinary evidence.
• It is too risky to change unless the contrary case is beyond doubt.

Now think about this from a different angle: the perspective of the critics. Wily challengers will try to put the burden of proof on the orthodoxy, using techniques such as framing and deconstruction. Perhaps the most potent technique is simply to assume the orthodoxy is wrong and then require the orthodoxy to prove their case to an extremely high level of certainty. This is the thinking behind conspiracy theories: if there are flaws in the standard explanation, there must be a conspiracy. The underlying assumption here is that if they can't prove their case, your position must be correct. This is the thinking behind conspiracy theories: if there are flaws in the standard explanation, then your position must be correct. Therefore, therefore, therefore, therefore, therefore.

Never accept the onus of proof willingly.

If appropriate, give reasons why the onus of proof should rest with the other side.

19 See sections 3.2 and 3.4.

20 See section 3.5 for a discussion of conspiracy theories.
The controversy manual

If you are stuck with the onus of proof, consider changing to a different set of arguments or issues where you can put the onus on the other side.

2.8 Truth

Many people think the key to issues involving science is to find the truth. If people would only agree on what's true, then those who adhere to wrong ideas could be dismissed. Unfortunately, this is not a fruitful way to understand or engage with controversial scientific issues.

Philosophers have debated the meaning of truth for many centuries. A common understanding is that truth is a statement that corresponds to external reality and can be verified. This is much use when scientists disagree. However, this isn't much use when scientific judgments are involved, which they normally are.

When someone starts talking about knowing the truth, it is useful to think of this as a tactic. Claiming to have access to the truth is a way of trying to get your way in a dispute. It is also potentially because the truth supposedly overrules other considerations such as ethics and politics.

To counter claims to truth, it can be useful to raise the ideas of Karl Popper, a prominent philosopher of science. Popper's ideas have been subject to much criticism, but in a dispute, it can be potent. If you can get your opponent to agree that accepting that 'truth is what science can verify' is useful, you can then argue that things judged to be scientific are true, which is what you want to achieve.

Many people think the key is to find the truth. If people would only agree on what's true, then those who adhere to wrong ideas could be dismissed.
Understanding controversies

Popper said scientific theories can never be proved, because it is always possible that new evidence will show them to be false. This means all knowledge is provisional. Popper advocated an approach called falsificationism, saying that scientists should attempt to falsify (disprove) theories. Some scientists’ work lives in unrelenting doubts. At every position on a continuum, scientists take intellectual positions and give some priority to controversies, undermining logicians and the very notion of what constitutes knowledge. Corporations sometimes pay employees to present their version of events, e.g., Friends of the Earth might fund a campaign to influence public opinion. Some scientists, working in universities or research laboratories, arguments, and give

When someone claims to have access to the truth, one good response is to say that all scientific knowledge is provisional: potentially it could be falsified or superseded in the future. Nearly all scientists will agree, at least in principle, that knowledge is provisional. The question then becomes, “How solid is the support for this viewpoint?”

2.9 Who is involved?

In a typical controversy, individuals can be involved at various levels. At the centre are highly active partisans. Some scientists, working in universities or research laboratories, put every available free moment into campaigning. These are the core campaigners.

In some controversies, there are paid workers committed to working on issues. For example, Friends of the Earth might fund a campaigner position on nanotechnology. Corporations sometimes pay employees to present their version of events, e.g., Friends of the Earth might fund a campaigner position on nanotechnology. Corporations sometimes pay employees to present their version of events, e.g., Friends of the Earth might fund a campaigner position on nanotechnology. Corporations sometimes pay employees to present their version of events, e.g., Friends of the Earth might fund a campaigner position on nanotechnology. Corporations sometimes pay employees to present their version of events, e.g., Friends of the Earth might fund a campaigner position on nanotechnology.

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Next are occasional campaigners. They might be members of action groups who join campaigns organised by core campaigners. They might be scientists who give talks or comment to media when the opportunity arises. They might be corporate employees who are assigned to campaigning tasks when an issue flares up. They might be individuals — not members of any groups — who regularly write letters and join online debates.

Core campaigners usually drive the action on an issue. They have the greatest influence over choices of what to do, though sometimes they are expected to work within parameters set by employers, whether Greenpeace or Exxon. Occasional campaigners also help set directions for campaigns, but on a less regular basis.

At a less active level are sympathisers. These are usually members of the public who know something about the issue and definitely support one side. Sympathisers provide a reservoir of support that influences wider opinion and can be drawn upon. Sympathisers are important in controversies because they provide a voice for the issue and can support one side. Sympathisers are also important in controversies because they provide a voice for the issue and can support one side.
Some sympathisers are in crucial positions and might influence school syllabuses, advertising campaigns or stands taken by churches, corporations and other organisations. On controversial mining or forestry operations, a large group of organisations is also involved, often through the influence of school syllabuses, advertising campaigns or other means.

Groups involved in controversies can be divided into several categories. Some specialise in a single issue, such as the National Vaccine Information Service, which focuses entirely on problems with vaccines. Others mobilise on several issues, such as climate change, nuclear power and rainforest logging. Many organisations are divided internally on issues; some members support one campaign, while others oppose another.

Groups can also be involved in controversies in other ways. For example, Greenpeace is an organisation dedicated to campaigning, usually on several issues at once, some of which will be controversies, such as nuclear power and rainforest logging. Many organisations are divided internally on issues; some members support one campaign, while others oppose another.

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The controversy manual

configurations, the relationships between campaigners, participants and sympathisers can become complex. However, in these and other controversies, other groups have relevant expertise. Here are some possibilities:

- Climate change: atmospheric scientists
- GMOs: biotechnologists
- Fluoridation: dentists and engineers
- Nuclear power: nuclear scientists and engineers
- Euthanasia: doctors
- Foundation: engineers
- GMOs: biotechnologists

Groups and captured groups.

For more on groups, see chapter 5. Section 5.7 deals with front groups and captured groups.

2.10 Scientists

In most scientific controversies, scientists are key players. A few scientists are campaigners. Many others are participants or sympathisers. Some are not personally involved, but their research findings are used in debates. Because of their important role in controversies, it is useful to understand how scientists think and behave. I'm focusing here on what are called natural scientists, such as physicists, geologists, chemists and biologists, namely scientists who study nature rather than study humans. (Those who study people's behaviour are called social scientists.)

Different sorts of scientists are relevant to different controversies, and for the purposes here I expand the term "scientist" to include technically trained professionals such as doctors and dentists. Consider the types of experts such as doctors and dentists.

2.10 Scientists

In most scientific controversies, scientists are key players.
There are also some groups whose expertise is relevant to a range of controversies.

- Biologists
- Doctors
- Nurses
- Computer models
- Fluoridation: doctors
- Fluoridation: nurses
- Nuclear power: biologists
- Climate change: computer models

Nearly all professional scientists — those who work along the issue involved — specialise in these sorts of debates. These sorts of specialists often need to learn up with others knowledge and skills. This is why informed contributions to debates, these sorts of arguments and information to explore and test hypotheses, to make informed contributions to debates, these sorts of specialists often need to learn up with others knowledge and skills.
By the time scientists get involved in a controversy, as researchers or participants, most of them have spent at least a decade in study and research, and often several decades. They have spent this time developing the ability to see the world through a set of standard lenses that provide an understanding of the world in a way that is consistent with what the vast majority of scientists believe to be true. The perspectives that scientists develop during their training are often more than just opinions. They are seen as objective, not involving any value judgements.

Junior researchers discover that science is more than just a set of facts and theories. They learn that establishing facts and testing theories involves ambiguity, uncertainty, and questioning. However, this questioning is often limited: it is seldom applied to standard ideas. Many scientists ignore or dismiss research findings that conflict with standard ideas, such as findings in parapsychology (the study of psychic phenomena such as precognition and psychokinesis) or homeopathy (treating diseases using small doses of substances that cause disease using small doses of substances that cause opposite effects).

Many scientists learn to dismiss research findings that conflict with standard ideas, as it is the norm in science to challenge and question ideas that are established as true. This is how the scientific method works: by challenging and questioning existing ideas, scientists can discover new truths and expand our understanding of the world. The process of challenging and questioning is central to the scientific method, and is essential for the advancement of knowledge.
Some are actively hostile to findings in such areas. The important point is that very few scientists bother to look at the research themselves. For example, there is a large body of parapsychological research, some of it with exceptionally strict protocols, but few scientists have ever read a single paper in the field. They can reject preconceived notions because it conflicts with what they have learned are physical laws and processes. Others simply assume the findings must be wrong.

Most scientists believe there are truths about the world and that scientific research is the only way to discover reliable knowledge about them. Scientists may believe they are the only ones able to discover truths about the world. An extreme belief in the power of the methods of natural science is called scientism. This sounds straightforward and fairly tame, but can lead to an attitude of superiority or even arrogance. Few scientists have ever read a single paper in the field of parapsychology, but they are convinced that the entire body of findings is flawed.
The controversy manual

that the laws of physics have exceptions or shortcomings is rejected. In the case of mobile phones, harm could be due to resonances rather than heating, but biological resonances are not part of the repertoire of physicists. They are more likely to think in terms of physical processes, whereas in the case of mobile phones, harm could be

The controversy manual

often treated with undue reverence, as if their views are
members of the academy's winners of awards, numerous publications, holders of high-level positions, prominent scientists — those who are authors of

From this style are suspect nuclear weapons (a political issue), the disposal of nuclear waste, and the production of nuclear scientists, who address the issue of nuclear power. The ones most amenable to their technical expertise — often look initially for primaire or technical dimensions — are more likely to focus on the risk of nuclear accidents or the quality and significance of the data and findings, not the author of the paper or the learned journal it is supposed to be judged by. Within science, the standard rhetoric is that claims are judged on their merit, and when someone submits a paper to a scientific journal, it is supposed to be judged by the quality of the data and findings, not the author of the paper or the learned journal it is supposed to be judged by. Within science, the standard rhetoric is that claims are judged on their merit, and when someone submits a paper to a scientific journal, it is supposed to be judged by the quality of the data and findings, not the author of the paper or the learned journal it is supposed to be judged by.
Understanding controversies

79

Automatically worth more than those with lesser attainments. Junior scientists may be reluctant to challenge a prominent figure, due to the status difference or because of a potential risk to their careers.

Within the scientific community, there are numerous bitter disputes over theory and observation, priority for scientific discoveries, and obtaining funding and jobs. Some top scientists are widely respected whereas others are received and challenged, just as in any occupation. Therefore, the status of a scientist in conventional terms, such as rank in an organisation, does not automatically translate into respect by peers. However, formal scientific status can be used in public controversies, because few journalists or members of the public know whether a particular scientist is respected or disdained by peers.

Different scientists may be more or less interested in a particular issue. Some scientists may be more knowledgeable about the technical aspects of the issue, whereas others may be more concerned with the broader implications. It is important to consider the expertise and experience of each scientist, as well as their motivations and biases.

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The controversy manual

DNA does not give special expertise on the political, ethical, legal or public health dimensions of GMOs. Only a tiny minority of scientists join public debates in an ongoing fashion. What do other scientists think about them? In general, scientists seek the respect of peers, principally through doing high-quality research and a successful publication record, and through good work as colleagues, for example in teaching and management. Public recognition through other means is potentially suspect. Obtaining media coverage for scientific work is acceptable, but coverage for views on controversial issues is less so. Writing popular books and articles is a low-status activity — indeed, it may even be seen as a negative.

Astronomer Carl Sagan authored a very large number of scientific papers. However, he was better known as a media personality, especially through television. He was also vocal about the seriousness of nuclear war — and a campaigner against nuclear weapons. Among scientists, his public roles overshadowed and even discredited his scientific contributions. Among peers, his public activism was widely criticized.24


Only a minority of scientists join public debates. The political, legal and ethical/legal dimensions of GMOs do not give special expertise on the political, legal or public health dimensions of GMOs.
Understanding controversies

It is important to recognize that scientists campaign and give the impression that their views are more widely held than they actually are.

Arrogance and the myth of talent

Experienced scientists are highly skilled. They are able to understand, analyse and manipulate complicated data, formulas, and procedures in ways that seem extraordinary to outsiders. To someone who says, “I was never any good at maths,” the ability to grasp advanced mathematics and statistics may seem to indicate superintelligence. The skill required to perform at a world-class level in mathematics or chess, for example, requires spending at least 10,000 hours practising a skill. This is much more than the average person spends even on very simple activities.

Research shows that anyone who can perform at an extremely high level — in mathematics, chess, or athletics — has spent a very long time practising their skills. To perform at a world-class level usually requires spending at least 10,000 hours practising a skill. This amount of time is equivalent to 3 or 4 hours per day for a decade, or less per day over a longer period. Furthermore, this amount of time must be deliberate practice, which means intense concentration on the task. Without this sort of practice, no skill will improve.

Intelligence, according to psychologists, is not innate. It is a skill that can be acquired through practice. Many people believe that intelligence is fixed, but this is not the case. Intelligence can be increased through practice and education. The ability to solve problems just requires practice.

Understanding controversies

The implication of research on expert performance is that natural talent plays a relatively small role. Great achievers have to work extremely hard over a long period, and there are no known exceptions. This goes against popular beliefs in what can be called the myth of talent — a myth that many scientists believe in and try to cultivate.

According to the myth of talent, scientific greats like Newton, Darwin and Einstein had exceptional innate capacities above and beyond ordinary mortals, because they are good at something that is exceptionally difficult. Some scientists think they are special because they have a sense of superiority that can come across as arrogance. Some scientists think they are special, because they are good at something that is exceptionally difficult: they have a natural aptitude granted only to a few. The result is, among some scientists, a sense of superiority that can come across as arrogance, and an arrogance that can lead to a feeling of superiority, to be able to enter into the temple of science.

According to the myth of talent, scientific greats have to work extremely hard over a long period, and there are no known exceptions. The implication of research on expert performance is that natural talent plays a relatively small role.
Understanding controversies

This belief afflicts scientists in some disciplines more than others. Physicists, especially theoretical physicists, are among the worst. Many physicists think they are superior to scientists in lesser fields because physics is the queen of the disciplines, dealing with the ultimate building blocks of the universe. They believe that their skills in their specific areas are far above researchers in other fields, especially in areas considered inferior.

Research on expert performance shows that skills are highly specific. Experts have highly developed skills in specific areas, but outside a narrow domain, they are little or no better than anyone else. Grandmasters in chess can remember chess positions with amazing ease, and grasp the strategic situation at a glance. However, if chess pieces are placed randomly on the board, grandmasters are no more skilled than anyone else. Chess experts do not have a better memory than anyone else, but they have learned characteristic positions that they can recognize at a glance. In other words, their skills are specific to playing chess, and not more general.

This belief can go a step further. When scientists think they are good at science because they have high intelligence, they may assume researchers in other areas are not very good because they have lesser mental abilities. They may assume researchers in other areas are not very good because they are not as intelligent, and they may assume researchers in other areas are not very good because they have higher intelligence. The same applies to scientists. Their skills in their area of research are exceptional, but outside those areas, they are no better than average. They do not outperform others in areas of research. Their skills in their area of research are exceptional, but outside those areas, they are no better than average. They do not outperform others in areas of research. Their skills in their area of research are exceptional, but outside those areas, they are no better than average. They do not outperform others in areas of research. 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have exceptional natural talent, but rather they have acquired exceptional domain-specific skills.

This is the explanation why champion chess players cannot become instant champions at the game of go, why acclaimed violinists are more like beginners when playing the oboe, and why world-class basketball players cannot win elite tennis tournaments. By the same token, scientists are skilled in their narrow domains but are novices in other disciplines. This is highly relevant in scientific controversies, in which scientists often claim generalised expertise on the basis of narrow accomplishments. Those on the other side need to recognise that the advanced skills of most scientists are highly specific to their research areas. Therefore, when they engage in a public debate, nearly all of them are discussing issues well beyond the area in which they have demonstrated expert performance. A geneticist might know a great deal about the DNA of pigeons, but this has limited relevance to most of the GMO debate. What happens in practice is that narrow expertise is treated, by scientists themselves and sometimes by their opponents, as a proxy for more general expertise. In these cases, the myth of talent is reinforced by scientists' assumption that those who know less must know less in general. This is highly relevant in scientific controversies, in which scientists are skilled in their narrow domains but are novices in other disciplines.
Understanding controversies

...everyone seeks the truth about nature and professionals in other fields, scientists are likely to be less politically sophisticated than... Nevertheless, there are several reasons why... "Politics" referring to the exercise of power in society... It is worth noting that some scientists become highly knowledgeable about all facets of a controversy... If is worth noting that some scientists become highly knowledgeable about all facets of a controversy... Scientists spend most of their time studying nature and...
The controversy manual reports their findings honestly. (Exceptions, when exposed, are severely castigated as having perpetrated scientific fraud.) Therefore, scientists in the course of their work tend to think in terms of facts, truth and explicit rules. This is useful for doing scientific research but can be a hindrance for grasping social and political dynamics.

In everyday life, and in politics, facts are not nearly as solid. Governments, corporations and media organizations can try to create facts, through lying, cover-up, framing and various other processes. Facts about the social world are therefore more easily distorted and contested.

Scientists, in their research work, are not regularly reminded of the possibility that others might be using their power to alter reality. Even setting aside the manipulation of information, in social and political life the idea of truth is more malleable than in science. Scientists often assume that in science, there is something useful for a purpose, that is better than any other current option. Truth, for them, is an ultimate truth about nature, or at least a provisional one. In politics and in everyday life, there is no ultimate truth about how people see things, in different ways and for different purposes. There is no single truth that everyone will accept.

In science, the manipulation of information is something to strive towards, even if it is malleable. In science, scientists often assume there is an ultimate truth. In politics, the idea of truth is more malleable than in science. Scientists often assume there is even science aside the manipulation of information.

In everyday life, and in politics, the idea of truth is more malleable than in science. Scientists often assume there is even science aside the manipulation of information. The controversy manual suggests that scientists might be using their power to alter reality.
When scientists enter the realm of social behaviour, they are prone to look for rules, and the easiest ones to observe are formal rules such as constitutions, laws, written procedures, official statements, and the like. They spend most of their time working to understand these rules. They spend much of their time working to understand the rules of nature. They may be harder for them when they learn that the rules of everyday life are often more difficult to understand than are the rules of nature. When they learn that the rules of everyday life are sometimes deceptive, they may be harder for them to understand that everyday rules may be deceptive or that people may be involved in political systems, which do not necessarily operate according to election rules, separation of powers, and rational planning, and which are often involved in political systems, which do not necessarily operate according to election rules. People who become involved in political systems, which do not necessarily operate according to election rules, are more likely to be deceived or hidden behind their rules. People who become involved in political systems, which do not necessarily operate according to election rules, are more likely to be deceived or hidden behind their rules. People who become involved in political systems, which do not necessarily operate according to election rules, are more likely to be deceived or hidden behind their rules. People who become involved in political systems, which do not necessarily operate according to election rules, are more likely to be deceived or hidden behind their rules.
The controversy manual

If they do good science, they are making a valuable contribution to the world. The result is that they are ideal tools for powerful groups, especially governments and large corporations, able to sponsor research. Pharmaceutical companies, for example, can find enough researchers to carry out studies of drugs. These researchers may think that their professional responsibility lies in doing good quality research and nothing more. Therefore, very few of them object when companies select only favourable findings for publication. Some academic scientists even allow themselves to be listed as authors of papers written by pharmaceutical company staff. Nearly all scientists reject altering or manufacturing data; that is scientific fraud. But they are less squeamish about not publishing some findings, about highlighting results favourable to sponsors, or doing research on behalf of companies with vested interests. These forms of misrepresentation and bias are never given the stigmatising label of fraud, even though they are bigger problems of companies with vested interests. These forms of misrepresentation and bias are never given the stigmatising label of fraud, even though they are bigger problems.
Earlier I discussed the idea of undone science: some topics are not researched because powerful groups either are uninterested — for example pharmaceutical studies of substances that can't be patented — or actively hostile. Few scientists see it as their responsibility to address the imbalance in research due to powerful groups. Perhaps some scientists at the beginning of their careers, perhaps some scientists towards the end of their careers, or some scientists who have already achieved the standard career positions and are also more willing to speak out. This is because they may be receiving significant research recognition, including election to prestigious academies, grants and other awards. In contrast, some scientists towards the end of their careers become more open to non-standard or unorthodox research paths because they may be less tied to established post-tenure career paths and are also more willing to promote and receive peer recognition. Some scientists at the beginning of their careers, perhaps while doing their PhDs or for some years after, are also more open to challenging the system, perhaps because they have already achieved the standard career positions and are less tied to further research success. Most scientists focus on the quality of research they do and are usually less concerned about being independent of patrons. They may be more concerned about being independent of research and are usually less willing to challenge the research they do. To put it another way: most scientists focus on the quality of the research they do and are usually less concerned about being independent of patrons. They may be more concerned about being independent of research and are usually less willing to challenge the research they do.
90  The controversy manual

They have less stake in conventional views and are less
acclimatized to them.

For example, groups can have different sorts of interests in
something at stake — it is called an interest. When the
individual or group has something to lose or gain —
political, professional, career or psychological. When an
outcome, what sort of stake? It can be financial,

2.1 Interests

INTERESTS

Emotional and based on other people.

Summary: Scientists and controversies

When an individual or group has something to lose or gain —
financial, political, professional, career or psychological. When an
outcome, what sort of stake? It can be financial,
Companies like Monsanto: profits, market share
Governments: economic growth
Scientists: jobs, grants
Farmers: livelihoods

Let's look a bit closer at the interests of Monsanto and other companies that produce and sell genetically modified seeds. This can be called a corporate interest in GM crops. This enterprise, Monsanto has an interest in GM crops, which can be manifested in substantial amounts of money and resources have been invested in it. Some employees benefit with greater job security, and for others, the company's success may mean higher wages.

On the other hand, Monsanto is a diversified multinational corporation, so not every employee is going to get excited about some particular new product or modification. Some employees have a personal interest in GM crops, and this will affect its position on the GM controversy.
The controversy manual

92

market share. To identify those who have the greatest personal stake in GM crops, just zoom in on the parts of the company promoting them and benefiting the most from them. This includes some scientists and, most importantly, the top managers in the relevant divisions devoted to marketing these crops. Their careers and reputations depend on success, so they are more likely to strongly pursue GM crops. Moreover, they have an incentive to push ahead in the area, for example to create new markets, mount publicity campaigns and refute the opposition, and even set up fake citizen groups. Top managers may be able to commission research and recommend buying small companies.

Vested interests are important in controversies for several reasons. One is that vested interests can have a powerful influence on beliefs. When people’s careers are linked to the belief in the value of these products, then they are far more likely to believe in the value of these products. Further, beliefs are expressed in an environment that reinforces their beliefs, and in sales, buildings, research, marketing, training and sales force. These beliefs can be reinforced by the organisation, and within the organisation, individual’s personal stake: it is deeply embedded in a vested interest in GM crops. This is not just one vested interest, it is reasonable to say that Monsanto has much else — it is reasonable to say that Monsanto has invested in salaries, buildings, research, marketing, training and sales force. Further, it is possible to hire a lot of money involved, then it is possible to hire more likely to strongly pursue GM crops. More likely to strongly pursue GM crops.

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understand 
controversies —

Some studies of the role of vested interests in controversial scientific issues...
If you work for an extended period in a hospital's surgical unit with colleagues sceptical of complementary medicine, then you are likely to shift your views in their direction — and similarly in a unit dedicated to complementary medicine, then you are likely to shift your views in their direction and similarly with colleagues sceptical of complementary medicine. When vested interests are involved, the influence on your views is likely to be greater.

If you work for an extended period in a hospital...
There are various ways in which a conflict of interest can occur.

- A scientist sits on a decision-making panel of a research grant agency that awards research funds to the scientist.

- A doctor is wined and dined by a pharmaceutical company and dispenses the company's drugs to patients.

- A scientist sits on a selection committee for a position; one of the applicants is the scientist's closest collaborator (or the scientist's lover, or a relative).

- A scientist who regularly receives industry funding writes an editorial in a scientific journal supporting a policy that favours industry.

- An agency is responsible for both promoting a technology and regulating it.

It is important to note that a conflict of interest is generated by relationships between two sets of interests. It does not depend on psychology. A conflict of interest can exist even though the scientists involved are personally honest and objective.

Here’s a typical misunderstanding, involving a scientist who received research funding from a pharmaceutical company and sat on a committee dealing with one of the company’s drugs:

"I don’t believe it is a conflict of interest at all," he tells The Australian. "I am a scientist. I am honestly.
The controversy manual objective about what I observe, scrupulous about the ethics of what I do.”

A conflict of interest can exist whether or not the person is objective or scrupulous. The conflict in this instance is generated by the existence of the two interests that are potentially in tension, one in funding and the other in public safety.

Conflicts of interest are rife in science. Many scientists hide, deny or dismiss them.

• Scientists hide the existence of conflicts of interest by not declaring income or other benefits from companies or by not declaring relationships or other relevant associations.

• Scientists dismiss conflicts of interest as irrelevant or not significant.

• Scientists incorrectly equate conflicts of interest with lack of objectivity (as in the quote above).

The positions taken in scientific controversies are sometimes categorised using political terms such as left-wing and right-wing. Selection of such terms provides much
to the positions taken.

The terms right and left are most appropriate for referring to the positions of capitalists on the right and workers on the left. A right-leaning political party is more likely to support employers against workers and a left-leaning party is more likely to support employees against employers.

Left, right, conservative, radical

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Understanding controversies

leaning political party the workers against employers. However, different employers sometimes have different interests, for example multinational corporations compared to corner shops, and likewise different workers can have different interests, for example male airline pilots compared to female nurses. It is not always obvious whether a policy that affects workers is better classified as right or left.

When applied to scientific controversies, the same spectrum is sometimes used, but with different meanings. Conservative means sticking with traditional ways of doing things, whereas radical means transforming them. Creation science is conservative in this sense compared to the radical change introduced by evolutionary theory, though science is conservative in this sense compared to the revolutionary transformation of creation science. Radicals are sometimes conservative and right-wing, whereas conservatives are sometimes radical and left-wing. But this is not always the case; there is nothing new to say, but it's also possible to look at the deeper meanings: conservative and right-wing are identical as the term conservative means sticking with traditional ways of doing things, whereas radical means transforming them. Fewer abortions might mean more work for midwives and obstetricians; more abortions mean more work for abortion clinics. Smoking means more jobs for tobacco farmers and shop-keepers, among others. Less smoking means more jobs for tobacco farmers and shop-keepers. When applied to scientific controversies, the right- and left-of-center philosophical spectrum is sometimes used to classify policies, but this is not always obvious. It is not always obvious whether a policy that affects workers is better classified as conservative or radical, for example multinational corporations compared to corner shops, and likewise different workers can have different interests, for example male airline pilots compared to female nurses. However, different employers sometimes have different interests, for example multinational corporations compared to corner shops, and likewise different workers can have different interests, for example male airline pilots compared to female nurses. It is not always obvious whether a policy that affects workers is better classified as right or left.
The controversy manual

Environmentalists are often called radicals, but there is another way to look at things: the changes introduced by new technologies are the truly radical changes, and opponents are the true conservatives. Nuclear power, nuclear weapons, and genetic engineering represent, from this perspective, the radical position, because they involve dramatic changes in both economic and social arrangements. Opponents and the anti-nuclear groups in both Europe and the United States are the real conservatives, because they oppose new technologies that they see as threatening the status quo. But in other countries, the left-wing groups are the real conservatives, because they want to protect society from these innovations and their consequences.

Another complication is that, when viewed on the same issue from this perspective, the radical position is the one taken by the opponents. In the US in the 1950s and 1960s, opponents of fluoridation included such icons as the John Birch Society and the Ku Klux Klan, a connection satirized in the film Dr. Strangelove. Proponents labelled opponents as right-wing fanatics. But in other countries, the right-wing connection to anti-fluoridationism was much less prominent. In capitalist Western Europe, with social democratic governments, fluoridation was not taken up except in a few countries. It was adopted more readily in English-speaking countries. pi

Understanding controversies

(from more free-market orientation than in Western Europe) and by communist governments of the Soviet Union and Eastern Europe. As the years rolled on, fluoridation began to be seen as an environmental issue, and hence opposition more identified with the left.

These examples illustrate how positions on scientific controversies may be difficult to pigeonhole. As people think of themselves as part of a group — conservatives, Republicans, left-wingers or whatever — they are likely to adopt the positions taken by the group rather than assess issues on their own merits. If the left-wing or Republican Party supports the right to bear arms (interpreted as including automatic weapons), people who think of themselves as part of that group are likely to adopt the positions taken by the group rather than assess issues on their own merits. What this means is that labels are used not for accurate description but for devaluing and dismissing opponents. The more important use of the labels is as rhetorical tools. It is common for partisans to try to discredit their opponents by labelling them left-wing extremists or out-of-touch conservatives, depending on the audience. If the opponents can be pigeonholed as members of some undesirable group or as subscribing to a stigmatised belief system, then this supposedly justifies ignoring or deriding their views on the issues.

The more important use of labels is as rhetorical tools for devaluing and dismissing opponents. But for developing accurate description, labels should not be used. If labels are used for accurate description, then the labels should be descriptive of what the group believes, not the other way around. For example, the right-wing and left-wing of a group may be difficult to pigeonhole. Labels such as conservative and radical are applied to a group by others but not necessarily by the group itself. These examples illustrate how positions on scientific controversies may be difficult to pigeonhole.
Republicans are likely to adopt the same position — without looking at the arguments. However, they believe they were influenced only by the arguments.30

When you hear someone in a controversy being labelled right-wing, left-wing, conservative or radical, be sceptical. If you are subject to this sort of labelling, be prepared with illustrations or pungent arguments to shine a light on the labelling itself. For example, “opponents of genetically modified food are the true conservatives.”

2.12 Entrenched technology

It’s far easier to get rid of entrenched technology than to get rid of entrenched technology. Cars, airports and mobile phones are entrenched. Cars, airports and mobile phones exist, people are used to them and they are deeply embedded in the way society operates is called entrenched. A proposed technology is easier to resist because entrenched technology has become standard and is deeply entrenched. It would be very hard to get rid of them.

A proposed technology is easier to resist because entrenched technology has become standard and is deeply entrenched. If you are subject to this sort of labelling, be prepared with illustrations or pungent arguments to shine a light on the labelling itself. For example, “opponents of genetically modified food are the true conservatives.”

Lesson When you hear someone in a controversy being labelled right-wing, left-wing, conservative or radical, be sceptical. They were influenced only by the arguments. However, they believe Republicans are likely to adopt the same position —
Some technologies are entrenched in some places but absent elsewhere. Fluoridation is entrenched in Australia and the US but absent in most of Europe. To better understand what happens in a technological controversy, look at how entrenched the technology is.

Planes

In the 1960s, the next new aircraft on the agenda was the supersonic transport (SST). In the US, officials anticipated a fleet of 500 large SSTs that would fly in the lower stratosphere. But before a single one was built, a controversy erupted. As usual, it had many facets, covering questions of cost, equity and environmental impact. One of the crucial issues was the effect on stratospheric ozone from the exhausts of SSTs. As usual, there were many facets, covering questions of cost, equity and environmental impact.

The opponents of the SST prevailed before a single US SST was built. Britain and France constructed a total of 18 SSTs, called the Concorde, and the Soviet Union constructed a few called the Tupolev-144. The opposition of the SST prevailed before a single SST was built.

The controversy manual
ments from manufacturers, airlines, airports and governments — would have been much harder to bring down.

Cars
A major controversy involving cars concerns auto safety. Ralph Nader wrote the book *Unsafe at Any Speed* and helped bring about a movement towards greater safety for drivers and passengers. The thing to note is that the automobile industry, and associated industries including oil and road-building, form an extremely powerful complex, one of the strongest in the world. That makes a big difference to the outcome of controversies.

One debate has been about large four-wheel drives, called SUVs in the US. These monster trucks cause vastly more road damage than cars. Some governments, such as in New Zealand, impose road-user charges to take some of such damage into ac-

Another debate is about large trucks, and how much they should pay to use the roads, given that they cause vastly more road damage than cars. Some governments, such as in New Zealand, impose road-user charges to take some of such damage into ac-

Yet another debate is about universal mobility. Critics of car-dominated transport systems say that exclusion of a minority of the population, including those who are unable to drive due to age, disables or "paralyzes" many of them. Critics of car-dominated transport systems say that inclusion of a minority of the population, including those who are unable to drive due to age, disables or "paralyzes" many of them.

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Yet another debate is about universal mobility. Critics of car-dominated transport systems say that exclusion of a minority of the population, including those who are unable to drive due to age, disables or "paralyzes" many of them.
A transport system designed around mobility for all would privilege walking, cycling and public transport, restricting the role of motor vehicles. Only in a few European countries has this vision made headway.

2.13 How controversies proceed

Active and inactive periods

Understanding controversies

Controversies can flare up and die down. You may not have heard anything about an issue for years, but it still might be boiling away in some areas or arenas. You may need to understand controversies can flare up and die down.
The controversy manual on the agenda is the possibility of a change in fluoridation status. If fluoridation is proposed for a town, then a debate will flare. Likewise, if a town’s water is fluoridated and it is proposed to stop fluoridating, a debate will flare. Some places have had a succession of referenda, which always trigger debate. On the other hand, fluoridation is hardly mentioned in places where it has been comprehensively rejected and in places where it has been used for decades. A stable status quo can be hard to disturb.

Ever since nuclear weapons were dropped on Hiroshima and Nagasaki in 1945, peace activists have opposed them. The anti-nuclear weapons movements flared in the late 1950s and early 1960s, with mass participation, and then faded away. Opposition flared again in the late 1970s and early 1980s, when mass nuclear weapons were produced. The anti-nuclear weapons movements opposed them, and their nuclear weapons movements. Peace activists have been working against nuclear weapons. A stable peace can be hard to disturb. Peace activists have been working against nuclear weapons. A stable peace can be hard to disturb.

Issues can be hot or low-key in different arenas. Scientists might be fiercely debating an issue unknown to the public or, alternatively, members of the public might be fiercely debating an issue unknown to the public, while scientists think it’s a non-issue. During lulls in controversies, there will always be some partisans who are still active, gathering information, producing articles, and so forth. There will always be some partisans who are still active, gathering information, producing articles, and so forth.
Understanding controversies

These committed individuals are often highly knowledgeable about the issue and about campaigning.

Local and global dimensions

Some controversies are local issues, of interest only to a few people. Others are major issues across the globe. The way debates start and are waged can either be similar or different in different places. If the same sorts of problems occurred in the past, why do we give more weight to discussion and local government (due to the cost of the outfall) than to interest to local residents, environmentalists, and scientists from prior coal mining on the cliff-side and residents from potential losing houses and lives? Some of the risk potentially threaten houses and lives. The outfall from the slope can be high volume and the outfall from the slope can be high volume and a partially filled ocean and a steeply rising slope to between the Pacific Ocean and a steeply rising slope to a bluff, called the escarpment. When the rain is heavy, there was a debate over how to deal with the risk of whether to get a similar sort of controversy, Australian. In Wombarra, a suburb of Wollongong, Australia.

In Wombarra, a suburb of Wollongong, Australia.

local and global dimensions

There are two levels of controversy, and the issue about and about campaigning.
In other places, there would be the possibility of wider significance. For example, in Louisiana, there was a debate about the safety of the levees containing Lake Ponchartrain, just north of New Orleans. This debate was little known until 2005, when Hurricane Katrina hit the south coast of the United States, causing devastation through several states and breaching the levee, causing extensive flooding in New Orleans. The scale of the disaster led to intense scrutiny of prior decision-making about the adequacy of the levees and responsibility for dealing with the levees failure and breaching the levee, causing extensive damage. This is an example of a local scientific controversy.

have known or read about the issue. Because the Orings malfunctioned and caused a failure in an extremely high-profile event, the matter became one of the most closely scrutinised technical disagreements in history.38

Biological weapons are organisms designed to be used in war or other hostile action against an enemy. Anthrax is an example. There are a number of controversies associated with biological weapons. Should they be used? Should they be legal? Who should be allowed to use them? What are the ethical implications of their use? These are questions that have been debated in both academic and political circles for many years. Biological weapons are organisms designed to be used in war or other hostile action against an enemy. Anthrax is an example. There are a number of controversies associated with biological weapons. Should they be used? Should they be legal? Who should be allowed to use them? What are the ethical implications of their use? These are questions that have been debated in both academic and political circles for many years.

• Analyse the special conditions that are locally relevant. This might provide ideas for different sorts of arguments and tactics.

• When policies and outcomes are different somewhere else, try to figure out why. When, from your point of view, policies are better elsewhere, this can be used as an argument for similar policies where you are. On the other hand, when policies are worse somewhere else, you need to develop arguments as to why they shouldn’t be applied.

• Contact campaigners in other places and learn from their insights and experiences. This might provide ideas for different sorts of arguments and issues.

Why controversies continue

Some controversies keep going for decades. What makes them possible?

Psychological factors

When people support a particular viewpoint, they are more likely to interpret new evidence as supporting their own position. Researchers have studied the way people respond to US presidential debates. In 1960, supporters of Nixon thought he did better whereas supporters of Kennedy thought he did better. The same applies to evidence. When people have a strong view on an issue, they are more likely to dismiss or discredit evidence that opposes their position.

When both supporters can trust their evidence, it becomes more credible.
Understanding controversies

This process is called confirmation bias. Everyone with a viewpoint treats evidence in a biased way, rather than a neutral way. Amazingly, being exposed to contrary information sometimes can lead to a stronger commitment to one’s original position. Confirmation bias is grounded in cognitive dissonance. If there is a discrepancy between your viewpoint and some evidence, then you try to reduce the discrepancy — and usually the easiest way is to ignore evidence that conflicts with your viewpoint and find evidence that supports it. Everyone knows about confirmation bias. Even people who know all about it still try to disprove the evidence. Even people who know all about confirmation bias are subject to it. When groups are set up to support a position, they help to maintain the dispute. People in a group pursuing a cause are self-selecting: they join because they are sympathetic to the cause and maintain the dispute. People in a group pursuing a cause are self-selecting: they join because they are sympathetic to the cause. They might become less active or die, and thus exit the public arena, but they never always maintain their views. Which in part reflects the power of confirmation bias in organizations. Leading figures in major debates hardly ever switch sides. They might become less active or die, and thus exit the public arena, but they never always maintain their views. Which in part reflects the power of confirmation bias.

For discussions of various sorts of confirmation bias, see Margaret Heffernan, Willful Blindness: Why We Ignore the Obvious at Our Peril (New York: Walker & Company, 2011); Daniel Kahneman, Thinking, Fast and Slow (New York: Farrar, Straus and Giroux, 2011); Carol Tavris and Elliot Aronson, Mistakes Were Made (but Not by Me): Why We Justify Foolish Beliefs, Bad Decisions, and Hurtful Acts (Orlando, FL: Harcourt, Brace & Company, 2007).
The controversy manual through discussions of issues and campaigning that assume certain positions. An absence of dissenting voices means groups can be remarkably single-minded and oblivious to alternative evidence and viewpoints. The mutual reinforcement of viewpoints within a group is sometimes called "groupthink." Groups with vested interests typically have money, organisations and allies, all of which can be used for maintenance of a long-term commitment to an agenda. Groups with strong financial, political or ideological commitments will persist in promoting their views. These groups often differ concerning stands on issues and how to proceed. Despite these sorts of conflicts, members of campaigning groups often differ over the issue of which viewpoint to adopt. Groups are subject to internal conflict, power plays, and sometimes called "groupthink."
campaigning purposes. Groups with money can sponsor research that serves their interests and can pay employees to do lobbying or public campaigning. Groups with extensive networks and strong allegiances, like churches, can draw in large numbers of individuals to join controversies. Groups with connections, for example with politicians, can get their way more easily.

In many controversies, such as nuclear war and means of the climatic consequences of nuclear war, controversies over nuclear war involve different interests. Some other controversies are quite different. The medical profession is overwhelmingly supportive of vaccination and most members of the public have their children vaccinated. Nevertheless, there is a continuing controversy over whether vaccination is safe. Some other controversies are quite different. The controversy over nuclear war involves different interests. Some other controversies are quite different. The medical profession is overwhelmingly supportive of vaccination and most members of the public have their children vaccinated. Nevertheless, there is a continuing controversy over whether vaccination is safe.
The controversy manual

The controversy manual

112

The controversy manual

the weaker side is hardly visible any more. In other words, it does not necessarily mean that everyone agrees, just that there is little or no debate. In principle, everyone could agree that one side is right. But if this happens, resolution of controversies is more a matter of power than knowledge.

Resolving controversies

Resolving controversies

In summary, controversies can persist due to individuals’ psychological commitments, the involvement of groups with vested interests, and the ideological frameworks in which they are embedded. For some controversies, people’s personal experiences can make them receptive to joining one side or the other.

112
Understanding controversies

So what closes down controversies? There are quite a few possibilities:

- Leading partisans on one side die, retire or burn out, so their viewpoint is seldom expressed.
- Key outlets — usually including scientific journals and mass media — no longer accept or cover one side of the debate.
- Informed opinion — meaning the most prominent scientists, editors, politicians or other leaders — support one position, and most other people go along with them.
- Challengers to orthodoxy are discriminated against, sometimes to the extent of losing their jobs.
- A government makes a decision that endorses one position, and enforces it, so it is impossible to investigate alternatives.
- All sources of research funding accept one position, and support it. Few will admit to supporting the other.
- Challengers to orthodoxy are discredited, or the establishment dismisses them.
- Key outlets — usually including scientific journals — no longer accept or cover one side of the debate.
- Leading partisans on one side die, retire or burn out, and most other people go along with them.

Quite commonly, more than one of these sorts of possibilities is involved.
The controversy manual believed that unpasteurised milk was healthier. For example, pasteurisation destroys vitamin C. Pasteurisation became standard through government regulations and standard practice in production and sales. This view has been presented as the standard view, and alternative views have been seen as discredited by opponents and government decision-making. In recent years, supporters of raw milk have resurfaced: the controversy is not closed after all.

In the debate about the origin of AIDS, two main theories have been taken seriously within the scientific community. Both involve viruses from chimpanzees entering humans via contaminated polio vaccines used in Africa in the late 1950s. A conference of the Royal Society of London in 2000, however, has not been taken seriously. The scientific community has been presented as the standard view, but critics have been silenced. In the debate about the origin of AIDS, two main theories have been taken seriously: the standard view involves a chimpanzee bite or hunter who, in the course of butchering a chimpanzee, got chimpanzee blood in a cut. The alternative view is that chimps were infected by contaminated polio vaccines used in Africa in the late 1950s. Support for the standard view has been organised through media coverage to discredit the polio-vaccine theory.43

A different view on the origin of AIDS is that HIV was inadvertently or deliberately manufactured in a research or weapons lab. This view has been presented in a number of books, alternative magazines and online treatments. However, it has not been taken seriously.
Understanding controversies

Serious within the scientific community: scientists do not publish papers on the theory, even to rebut it. The mass media have not given much attention to the theory. For example, there have been few mainstream reviews of books advocating this view.

In the US, decisions about fluoridation are sometimes made by local or state governments. However, sometimes governments, to offload responsibility, prefer to hold public referenda on the issue. There have been hundreds of referenda over the decades. In some towns, there have been successive referenda, sometimes resulting in fluoridation being introduced and later withdrawn.

2.14 Why people get involved

People get involved in a scientific controversy for a variety of reasons, and it is difficult to determine what influences people's actions. People become involved in particular controversies for all sorts of reasons, but there are few systematic analyses of how people get involved in scientific controversies. Here are some of the reasons people get involved:

1. They study the issue, become concerned, and decide to do something.
2. They see what happened to others and want to know what happened to them.
3. They have been exposed to a pesticide or vaccine reaction or know others who have been exposed to these substances.
4. They have a connection through their job. For example, they work as a nuclear engineer and support nuclear power, or they work for a solar energy business and oppose nuclear power.
5. They are paid to campaign.

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4. They have a connection through their job. For example, they work as a nuclear engineer and support nuclear power, or they work for a solar energy business and oppose nuclear power.
6. A friend told them about the issue and got them interested.
7. They received some information about the issue and decided it was important.
8. They went along with a friend to a rally or public meeting and developed a concern from that experience.

Reason 1 is based on rationality. We can imagine someone who objectively studies a number of issues and decides that a particular issue is the most important or at least sufficiently important to warrant taking action. This decision often happens as in reason 1. Involvement comes through personal contacts and personal experience. Rather than convincing someone to join a social movement, according to research into social movements, involving others through personal contacts and personal experience is more effective in some cases.

Reason 6 and 8 are two of the most important factors, according to research into social movements. The usual idea is that thought precedes action, but this isn’t always the case. Involvement often comes through personal contacts and personal experience. Rather than convincing someone to join a social movement, involving others through personal contacts and personal experience is more effective in some cases.

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The controversy manual
are stimulated to learn more about it, as in reasons 6 and 8, leading to greater commitment. On a few issues, vivid campaign materials can make a difference. Photos of aborted foetuses can stimulate some people to join pro-life action groups, and photos of animals being experimented on can lead some to join the animal liberation movement. However, even in the pro-life and animal liberation movements, the majority of new recruits are attracted through friendship networks. For example, in the pro-life and animal liberation movements, the majority of new recruits are attracted through friendship networks.

In a few issues, personal experience can initiate a dominant mode of recruitment. Individuals with chronic fatigue syndrome, for example, may be particularly responsive to approaches by campaigners.
Before they even considered taking a paid position. But this depends on the level of payment. A nanotechnology campaigner working for Friends of the Earth is likely to be on quite a low wage: this sort of paid campaigner is personally committed, first and foremost, with the wage allowing more time to be devoted to the issue. A pro-smoking campaigner working for a tobacco company is a different matter: a high salary may help to overcome scruples. Nevertheless, only some people will take such a job, and those who do are likely to be sympathetic to the cause. Nevertheless, only some people will take such a job, and those who do are likely to be sympathetic to the cause.

Interests can be employed, research grants, consultancy, looking at the world that makes commitment seem natural. Interests can also be employment experience or links. Providing a way of securing their industry experience or links provides a way of making their work more interesting.

When you work for companies that sell antidepressants, you’re more likely to agree with the arguments about the safety and effectiveness of antidepressants. You’re more likely to become an advocate of antidepressants. Nevertheless, only a tiny minority of those who work for pharmaceutical companies are active participants in controversies. The majority of people work for an industry, when it’s natural to take the industry’s side in a controversy. When you work for a pharmaceutical company, you’re more likely to agree with the arguments about the safety and effectiveness of antidepressants. You’re more likely to become an advocate of antidepressants.

Reason 5 is a link with interests. When a person works for an industry, then it’s natural to take the industry’s side in a controversy. When you work for a pharmaceutical company, you’re more likely to agree with the arguments about the safety and effectiveness of antidepressants. You’re more likely to become an advocate of antidepressants. Nevertheless, only a tiny minority of those who work for pharmaceutical companies are active participants in controversies. The majority of people work for an industry, when it’s natural to take the industry’s side in a controversy. When you work for a pharmaceutical company, you’re more likely to agree with the arguments about the safety and effectiveness of antidepressants. You’re more likely to become an advocate of antidepressants.

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The controversy manual widespread and long established, dentists are largely in support. They learn the arguments in favour of fluoridation in dental school and have them reinforced through dental journals, meetings of dental associations and peer pressure. The small minority of dentists who become pro-fluoridation campaigners often have no personal stake in their position, and sometimes they make sacrifices to maintain their efforts.

Interests are important in helping understand people’s stands on issues, but interests do not determine positions and do not explain why only a few individuals become members of the side supported by industry or government in debates over nuclear weapons. So the campaigner’s stance in a world without nuclear weapons is based on motivation, not industry-linked interests. In debates over nuclear weapons, many supporters have no financial stake in a world without nuclear weapons. So the motivation for anti-weapons campaigners is based on a concern for a better world. However, in some debates there are industry-linked interests. In debates over nuclear power, supporters may have interests on both sides, through selection of the same scale. Interests on both sides, through selection of the same scale, are important in helping understand people’s stands on issues, but interests do not determine positions and do not explain why only a few individuals become members of the side supported by industry or government in debates over nuclear weapons.

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Many campaigners are totally committed. They believe in their cause. They are passionate. They want to win. Some campaigners live and breathe the issue. You could say they are dedicated or, if you want to be critical, you could say they are obsessed.

Both scientists and non-scientists can be committed to a cause. Scientists have a reputation as being objective; they are seen as detached observers of nature. However, scientists are often portrayed as detached observers of nature. It is important to realise that scientists, both privately and in public, can be just as subjective and driven as other campaigners. Sometimes they are able to get away with their biases more easily by capitalising on the reputation of scientists as unemotional and uninvolved.

I say this not to denigrate scientists. They are, on average, no better or worse than anyone else. However, scientists have a reputation as being objective; they are seen as detached observers of nature. It is important to realise that scientists, both privately and in public, can be just as subjective and driven as other campaigners.

2.15 Commitment

The controversy manual

If campaigners are highly committed, so what? The main thing is that they are willing to do a lot to advance the cause.

Being a committed campaigner often means putting in long hours to learn about the issues, give talks, write letters, organise meetings and support others in the campaign. It is astounding how much a single person can do by undertaking such actions. Just take the number of events that occur at any given time that many people are involved in.

Many people think that being committed to something means being unscrupulous. For some campaigners, being committed means doing things that might be seen as disreputable or even criminal. It is important to remember that many people who undertake or sponsor such actions feel justified because their cause is more important than the ends justify the means. Some people feel that the ends justify the means, and that if the ends are important, the means are justified.

Violence is not an option. Some campaigners, however, do use violence in their campaigns. This is not acceptable, and it is important that we do not support or encourage violence.

For some campaigners, being committed means doing things that are not ethical. This is unacceptable, and we should not support or encourage such actions.

In many controversies, the media play a crucial role. It is important to remember that the media are not neutral and that they can be influenced by the people who control them. It is important to be aware of this and to be careful about what we say to the media.

2.16 The media

In many controversies, the media play a crucial role. Types of media include television, radio, newspapers, magazines, books, interviews, electronic publications, such as websites, blogs, Facebook and Twitter. Other media include email, SMS, websites and newspapers.

In many controversies, the media play a crucial role. It is important to be aware of this and to be careful about what we say to the media.
Understanding controversies

Mass media are involved, and among newsworthy snips, and
are publishing such releases, holding media conferences, such
controversies use active media-management strategies, such as
be reported fairly, but usually one of both sides in a
meant of providing information, when controversies initially
al media could be a neutral
If it were possible then the media can be thought of as having three roles in

Information from online sources.

The media can be thought of as having three roles in

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The controversy manual

The mass media have their own criteria for what counts as news. Journalists and editors use an implicit set of criteria to judge whether something is worth reporting. These criteria, called news values, influence the prominence the media give to conflict. Controversies are newsworthy because of the conflict factor. Journalists prefer to report on a conflict between individuals — the personality factor — rather than an abstract conflict between points of view. If the controversy affects readers in their everyday lives, for example screening for cancer, it will be more newsworthy than a remote issue like building an airport in Tokyo — unless you live in or regularly fly to Tokyo, of course.

Over the past few decades, major media companies have pushed for greater profits by cutting back on staff numbers, forcing journalists to produce more output to maintain their jobs, and therefore increase their numbers. Local journalism to produce more output to maintain their jobs, and therefore increase their numbers. The result is that many investigative and check stories, which are often labor intensive and cost money, are neglected.

Other sorts of media, for example websites, gatherings and blogs, are also neutral, or at least, neutral. They often have different news values and sets of ethics and criteria for what counts as news. The effect of news values and the influence of the mass media is that the media are not neutral in the way the public perceives them.

Other sorts of media, for example websites, gatherings and blogs, are also neutral, or at least, neutral. They often have different news values and sets of ethics and criteria for what counts as news. The effect of news values and the influence of the mass media is that the media are not neutral in the way the public perceives them.
Understanding Controversies

Press International — but they too have been squeezed, so stories are less carefully verified. The result is that mass media are more vulnerable to manipulation by sources. In mass media are more vulnerable to manipulation by sources.

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Press International — but they too have been squeezed, so stories are less carefully verified. The result is that mass media are more vulnerable to manipulation by sources.
The controversy manual conduit for broadcasting their favoured views in the guise of independent reporting. As environmental and other campaigning groups become more adept at using the media, the result is a lack of independent investigation of controversial issues, so readers and viewers are subjected to pre-packaged partisan viewpoints.

In summary, the media's first major role in controversies is as a conveyor of information. The sort of information conveyed is shaped by campaigners' media-management strategies and by the implicit values of the media about what is worth reporting, with journalists and editors operating under extreme time and resource constraints.

The media's second role is as an active player. Some media organisations take a stand on controversies, or even campaign on one side. Whether this occurs, and the extent to which it happens, depends a lot on the issue and the organisation. It is most common when a media organisation has direct links with, or an ideological affinity for, a particular view in a controversy.

The dominant scientific view is that the climate is heating up and that this is occurring at least in part due to human activities, most notably the burning of fossil fuels. In some countries, this is the position most often held.

For an examination of these developments, see Nick Davies, Flat Earth News: An Award-winning Reporter Exposes Falsehood, Distortion and Propaganda in the Global Media (London: Chatto & Windus, 2008); Tom Fenton, Bad News: The Decline of Reporting, the Business of News, and the Danger to Us All (New York: ReganBooks, 2005).
Understanding controversies

Commonly reported by the mass media. However, fossil fuel industries, especially coal and oil companies, do not welcome standard climate change science: some of these companies sponsor sceptical viewpoints and sometimes media are responsive to company agendas. In Australia, where the influence of the fossil fuel lobby is strong, The Australian, a national daily newspaper, published extensively sceptical viewpoints on the sceptical climate change science. "I'd walk a mile for a Camel" and "Winston tastes good like a cigarette should" were widely recognised slogans such as "I'd walk a mile for a Camel," and "Winston tastes good like a cigarette should" were widely recognised. As the evidence against smoking became more well known and opponents of smoking far fewer advertisements were aired on television, Cigarette ads were so effective. As the evidence against smoking became more well known and opponents of smoking far fewer advertisements were aired on television, Cigarette ads were so effective.

Today, advertisements for smoking are illegal in many countries. Only a few decades ago, smoking was commonly reported by the mass media. However, today, advertisements for smoking are illegal in many countries. Only a few decades ago, smoking was commonly reported by the mass media. However, today, advertisements for smoking are illegal in many countries. Only a few decades ago, smoking was commonly reported by the mass media. However, today, advertisements for smoking are illegal in many countries. Only a few decades ago, smoking was commonly reported by the mass media. However, today, advertisements for smoking are illegal in many countries. Only a few decades ago, smoking was commonly reported by the mass media. However, today, advertisements for smoking are illegal in many countries.

Does violence in the mass media contribute to greater violence by readers and viewers? There is evidence that the availability of television leads to higher murder rates and that news reporting of suicides and murders leads to copycat behaviour. It has also been argued that terrorism can be thought of as the use of violence as a means of communication, and that mass media are crucial tools in making terrorism effective. One implication is that if the mass media declined to report terrorist attacks, there would be fewer of them. These claims are controversial and socially significant, but they have received little or no coverage in most media outlets, for an obvious reason: publishers and editors do not like to report views that are potentially detrimental to their businesses.

In looking at the way a media organisation reports on a controversy, it is worth looking at links between the organisation and the controversy. It is difficult to say that the mass media are biased, but it is possible to suggest that certain angles, those that would be less visible or informative to the public, are more likely to be reported. The availability of television leads to higher visibility of television leads to higher viewer and reader interest in these issues. This is evidence that television by readers and viewers is evidence by readers and viewers. The controversy manual
Understanding controversies

The publisher or editor may have an ideological commitment to a position, often due to general support for an industry, profession or government. Advertising income can influence treatment of a controversy. The publisher or editor may have an ideological commitment to a position, often due to general support for an industry, profession or government.

At a high level, media can also set the agenda for which issues are covered, according to popular concern remaining constant. Some controversies are out of step with popular sentiment. Sometimes coverage is too high or too low. People won't think it's so important if there are no stories; people will think it's more important if they think about it a lot. Sometimes people take an issue that media think is not important and position themselves in an issue they do influence, whereas the media are not necessarily determined by what they consider to be the main way in which media affect scientific positions.

Adherence income can influence treatment of a controversy. Support for an industry, profession or government commitment to a position often due to general support for an industry, profession or government. There is a massive amount of research on this topic.
The controversy is the question of whether human activities are contributing to global warming. When the media assume climate change science is solid and report disputes about how to respond, then the agenda is the question of prevention or adaptation. When media assume action on global warming is a matter for government, then the agenda is policy options — and the role of citizen engagement is not given much attention in the media. Climate change options that involve significant personal change — such as switching to a vegetarian diet to reduce carbon emissions — are normally off the agenda. Having favorable media coverage is an advantage in a controversy, but it does not necessarily convince or silence the opposition. Some people and groups will pursue their own agendas despite lack of attention in the media. The media can influence but not determine people's views. Having an influential commentary can sway people's opinions, but it does not necessarily convince or silence the opposition.

2.17 Understanding commentaries

Many people comment on controversies. Especially important are commentaries that are influential in people's understanding of the debate, for example opinion pieces in major newspapers, high-profile blogs, and articles and talks by prominent scientists, politicians, and public figures. These can reach a wide audience, especially when reported on TV or radio. When the media assume climate change science is solid and report disputes about how to respond, then the agenda is the question of prevention or adaptation. When media assume action on global warming is a matter for government, then the agenda is policy options — and the role of citizen engagement is not given much attention in the media. Climate change options that involve significant personal change — such as switching to a vegetarian diet to reduce carbon emissions — are normally off the agenda. Having favorable media coverage is an advantage in a controversy, but it does not necessarily convince or silence the opposition. Some people and groups will pursue their own agendas despite lack of attention in the media. The media can influence but not determine people's views. Having an influential commentary can sway people's opinions, but it does not necessarily convince or silence the opposition.
Some commentaries are obvious partisan pieces: they argue the case for one side. Others, though, seem more independent. They are about the controversy rather than arguing for one side. The case for one side. Others, though, seem more balanced in their presentation of the evidence and arguments. When and how has happened? The government has done this, the government has done that. Campaigns have done this, the opposition has done that. Some commentaries about controversies majorly tell about advocacy. Many commentaries of controversies are obvious advocacy. Some commentaries are about the controversy rather than seeming to argue one side or the other. They present the arguments for the writer’s preferred position and the case against the other side. They use evidence and examples to make points. This sort of treatment is easiest to recognize and understand: the author takes an explicit stand. To understand commentaries, it is useful to classify them into several types.

- Advocacy
- Play-by-play
- Many commentaries of controversies are obvious advocacy. Some commentaries are about the controversy rather than seeming to argue one side or the other. They present the arguments for the writer’s preferred position and the case against the other side. They use evidence and examples to make points. This sort of treatment is easiest to recognize and understand: the author takes an explicit stand.
The controversy manual

actions, not at arguments. It seldom says a whole lot about who is right or wrong. It is like a commentary on a sporting event, saying who's ahead and who's playing well, without being openly partisan.

A play-by-play account of the climate change controversy might tell about mounting concern in the 1990s, the signing of the Kyoto protocol, the Al Gore film *An Inconvenient Truth*, the climategate scandal, failure of the Copenhagen conference in 2009, emissions trading schemes in Europe, increasing popular support for scepticism in the US, and much else. A play-by-play account will not say much about whether global warming due to human activities is actually happening. News and current-affairs stories are most likely to adopt a play-by-play approach. They thus avoid buying into the core of the debate — the evidence, arguments and options — while still being informative.

What does the author of play-by-play account really believe? That can be hard to tell. The author might have a partisan view or might not care who's right. Often others cannot easily tell what stance is being taken. News and current-affairs stories are most likely to avoid buying into the core of the debate — the evidence, arguments and options — while still being informative.

Wrong belief

In this approach, the writer assumes that one side in the controversy is right and therefore sets out to explain why the other side persists in its folly. Only one side of the debate is addressed: the side assumed to be wrong.
Numerous studies of the fluoridation controversy have focused on the opponents of the measure, proposing different explanations for why people oppose the measure. Some have said it is due to irrationality. Others have used a demographic treatment, linking opposition to lower education and income. Yet others have said members of the public are confused by the debate and hence decide that not fluoridating is the safer option.55

Controversy campaigners often use the wrong-belief approach. It’s common to hear campaigners say, “If only they knew the facts, they’d see the error of their ways.”

The assumptions underpinning this approach to controversies is that orthodoxy is seen as rational — so there must be something wrong with anyone who disagrees. Anyone who supports a position contrary to scientific orthodoxy is seen as irrational, afraid, ill informed, duped or any of a number of derogatory descriptions.

The wrong-belief approach contrasts with the assumption that the facts of the issue determine the correct position. The facts are assumed to be known, like the facts of a common criminal case. Anyone who disagrees is assumed to be wrong. So it is the task of a commentator to explain why. The right to be supported by the facts is the correct side. That’s the position of the majority of leading scientists — and the position of the wrong-belief approach to controversies.
Whenever you hear someone trying to explain why one side in a debate persists in campaigning, you can guess that a wrong-belief approach is being used.

An analysis of beliefs can be insightful: it can point to reasons why people take stands on a position. But it is one-sided. It never tries to provide reasons for why people support the other side — the side of orthodoxy. This sort of commentary is rarely based on evidence or detailed analysis. Instead, it speculates about the psychology of the opponents and assumes that adherence to orthodoxy is based on prejudice or ignorance. A commentator might say they are persuaded by the fossil fuel industry, or say that they support the standard scientific position — global warming is occurring and human activities are responsible. Or they might say they are confused by the arguments put out by sceptics, who are supported by the fossil fuel industry. A commentator might say they are persuaded of the correctness of the standard scientific position — global warming is occurring and human activities are responsible. If they accept this view, a commentator might say they are persuaded to accept this view.

Applied to the climate change controversy, a wrong-belief approach is one-sided. It never tries to provide reasons for why people support the other side — the side of orthodoxy, who are supported by the fossil fuel industry. This approach assumes that adherence to orthodoxy is based on prejudice or ignorance. A commentator might say they are persuaded by the fossil fuel industry, or say that they support the standard scientific position — global warming is occurring and human activities are responsible. Or they might say they are confused by the arguments put out by sceptics, who are supported by the fossil fuel industry. A commentator might say they are persuaded of the correctness of the standard scientific position — global warming is occurring and human activities are responsible. If they accept this view, a commentator might say they are persuaded to accept this view.

Whenever you hear someone trying to explain why one
Understanding controversies...

Only a few people in controversies actually read lots of original scientific papers and make a personal judgement based on the evidence. This applies to supporters of orthodoxy as well as to critics. So why do people support the orthodoxy? Trust in experts? Joining the crowd? Those are the sorts of questions not asked in wrong-belief commentaries.

There can be wrong-belief commentaries on both sides of a debate. Climate change sceptics can and do speculate on what makes people accept the orthodoxy. A Marxist analysis of the climate change controversy will look at class struggle between the ruling class and the proletariat, or working class. Such an analysis will focus on the role of the fossil fuel industry in misleading people about the evidence.
The controversy undermining support for reductions in carbon emissions. On the other hand, a different Marxist analysis might look at the role of the bourgeoisie — most prominently, Al Gore — in promoting concern about global warming and the impact of increased fuel prices on ordinary workers. A Marxist analysis does not automatically come down on one side or the other. An ideology is just a framework for understanding the world — it may be useful or not so useful, depending on the circumstances. So just because you see a Marxist analysis of a controversy, Marxism is not necessarily wrong.

There are many potential ideologies for analysing controversies. Two in particular are relevant to our discussion.

- Religious beliefs. For example, Christianity is commonly used as a framework in discussions of abortion, contraception, euthanasia and evolutionary theory.
- Feminism. This is prominent in controversies of gender differences about abortion, cervical cancer, contraception, and special relevance to women, for example debates about global warming and the impact of increased fuel prices on ordinary workers. A Marxist analysis may look at the role of the bourgeoisie — most prominently, Al Gore — in promoting concern about carbon emissions. On the other hand, a different Marxist analysis does not automatically come down on one side or the other. An ideology is just a framework for understanding the world — it may be useful or not so useful, depending on the circumstances. So just because you see a Marxist analysis of a controversy, Marxism is not necessarily wrong.

You don't have to be a Marxist to undertake a Marxist analysis of a controversy. Marxism is a sort of toolkit of ideas, to be applied, or not, depending on the circumstances.
• Neoliberalism, the ideology of corporate capitalism, is relevant to debates over GMOs, nanotechnologies, pesticides, and other products of industrial society. (For example, scientific orthodoxy on global warming (for example, vested interests in the fossil fuel industries) and the vested interests in farm subsidies.)

• Libertarianism involves support for free markets with minimal government interference. Libertarians have distinctive positions on some controversies, for example, opposing drug laws.

If you can figure out that someone is coming at a controversy from a particular ideology, this can help to understand their thinking. Although some ideologists make simplistic analyses, it would be a mistake to simply dismiss someone as ideological, because ideologies can be complex and flexible. It is important to understand that someone’s ideological perspective can help to understand their thinking. Although some ideological perspectives are relevant to debates over GMOs, neocorporatism, and other products of industrial society, they can also help to understand the climate change controversy.

\[ \text{Suppose you want to analyse the climate change controversy.} \]

**Symmetrical analysis on environmental protection.**

In symmetrical analysis, each side is analysed using the same intellectual tools. An intellectual tool is a concept or framework of ideas. Suppose you want to analyse the climate change controversy using the concept of vested interests. In a symmetrical analysis, you analyse both sides using the concept: you assess the vested interests associated with scientific orthodoxy on global warming (for example, profits for renewable energy industries) and the vested interests involved with the sceptical position (for example, profits for fossil fuel industries).
Symmetrical analyses are most commonly undertaken by social scientists, especially those in the interdisciplinary field called science and technology studies. Most commonly, studies of controversies by social scientists end up in specialist academic journals that are only read by a few other social scientists. But sometimes social scientists write accessible articles or commentaries published in journals, magazines, newspapers or blogs. On the surface, it might seem that a symmetrical social scientist supports the credibility of the position supported by the majority of scientists. But usually such analyses are more likely to undermine the credibility of positions supported by the side with less scientific support, even when they analyse both sides in the same way. The implication is that social analyses of controversies, even when they are symmetrical, are more likely to undermine the credibility of the science. Social explanations, such as political, economic, cultural and communal factors, are not rejected by social scientists because they believe scientific knowledge is based solely on evidence. But if science is policed, even symmetrical analyses of controversies by social scientists are more likely to undermine the credibility of a position supported by the majority of scientists. Social scientists usually undertake symmetrical analyses when they don’t really care about scientific support, such as when they don’t really care about the side with less support. Pam Scott, Evelleen Richards and Brian Martin, “Captives of controversy: the myth of the neutral social researcher in controversies,” Science, Technology & Human Values, Vol. 15, No. 4, Fall 1990, pp. 474–494.
Understanding controversies is crucial to determine which side is correct. This may help explain why there are no prominent symmetrical analyses of the climate change controversy: they would probably aid the sceptics.

### What to look for

When reading or listening to someone discuss a controversy, it's useful to know where they are coming from, namely what stance they take and what assumptions they make. To do this, look for the following types of commentary:

<table>
<thead>
<tr>
<th>Type of Commentary</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Advocacy</td>
<td>Arguments and evidence all supporting one side and/or attacking the other side</td>
</tr>
<tr>
<td>Ideological</td>
<td>Explanations for why one side adopts misguided beliefs</td>
</tr>
<tr>
<td>Play-by-play</td>
<td>Descriptions of what has happened in the debate without much discussion of the evidence or arguments</td>
</tr>
<tr>
<td>Symmetrical</td>
<td>Analysis of both sides of the debate, looking at how the same sorts of factors influence each side</td>
</tr>
<tr>
<td>Wrong belief</td>
<td>Explanations of what drives the debate</td>
</tr>
</tbody>
</table>

### When to look for

When reading or listening to someone discuss a controversy, it's useful to know where they are coming from and how they would probably affect the sceptics. This may help explain why there are no prominent symmetrical analyses of the climate change debate.
2.18 Learning about an issue

If you care about an issue and want to learn more about it, there are several options, including reading, discussing, and writing.

Reading

You can search for material in various places, including scientific journals, the mass media (including television, radio, magazines, and newspapers), online forums (including websites, blogs, and videos), and books.

For most people, reading is the most efficient way to acquire information, but audio and video sources are increasingly common. Some people learn best from listening and watching rather than reading.

Using Google, Yahoo or some other search engine, searching online can provide a good start for getting into an issue, but there are pitfalls. Wikipedia is highly convenient and often quite informative, but treatments on controversial issues may be unbalanced because partisans on one side constantly alter entries to support their position.58 (Traditional encyclopaedias, such as Encyclopaedia Britannica, are sometimes no better. It depends on who writes the entry.)

Wikipedia can provide a good start for getting into an issue, but there are pitfalls. Wikipedia is highly convenient and often quite informative, but treatments on controversial issues may be unbalanced because partisans on one side constantly alter entries to support their position.58 (Traditional encyclopaedias, such as Encyclopaedia Britannica, are sometimes no better. It depends on who writes the entry.)

58 Scholars seldom cite Wikipedia as an authoritative source. (They seldom cite any other encyclopaedia either.) However, many who refuse to cite Wikipedia read it for an introduction to an unfamiliar topic and use the references to find relevant readings.
news stories and much else. But to get a more in-depth picture, you need to be more discriminating, or more comprehensive.

Some journals are prestigious and have a distinguished record of publishing high-quality papers. Others are of lower status. In recent years, a host of new online for-profit journals have opened, some with virtually no quality control. However, a journal’s high status does not guarantee that every one of its articles is high quality. Some prestigious journals contain papers involving bias, misrepresentation, or other flaws.

Therefore, a journal’s high status does not guarantee the quality of its articles. It is important to be aware of potential biases and to use critical thinking when evaluating scientific evidence.

To find high-quality articles, consider using search engines like Google and databases like OAIster. Librarians can also help you access relevant databases and use various techniques to interrogate them. Review articles are a good starting point as they provide overviews of a topic and have a lengthy bibliography.

Most scientific journals are contained in databases with comprehensive indexes. In addition to search engines, you can also set up alerts to receive notifications when new issues or articles are published.

The open access movement is promoting free access for all scientific publications, allowing everyone to access high-quality research without cost. Librarians can help you navigate this movement and access the latest research.

Be careful: interest groups can influence search engine results. They may present their own biased view of the issues. Librarians can help you access a wider range of perspectives.

I thank Lucia Tome for valuable comments on this section.

The open access movement is pushing for all scientific publications to be freely accessible online.
The controversy manual

tation or even fraud. Many papers published in lower-
status journals are very high quality. While it is sensible to
take notice of where a paper is published, there is no
substitute for evaluating the paper itself.

**Books**

Reading books can be a good way to get on top of an
issue, because authors usually give a balanced picture:
highly partisan; a few authors give a balanced picture.
Many authors are

**Mass media**

Some newspapers put their content online, so you can
search back issues. Many don't, so again it's useful to use
databases. Radio and television are less likely to be online;
there is no substitute for monitoring broadcasts. For example, a topical issue might be debated on talkback radio. No
one person can do this, so for comprehensive monitoring it
is essential to have committed members who will report
what is being covered in the media.

**Online forums**

Some people involved in controversies write blogs. There
are discussions on pages in Facebook, Google+, and other
social networking sites.

substitute for evaluating the paper itself. Many papers published in lower-
status journals are very high quality. While it is sensible to

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142 The controversies manual
Understanding controversies afterwards. On Amazon, readers can write reviews, and rate them. Only some of this vast outpouring of commentary is useful for understanding an issue. Many comments are off-the-cuff and ill-informed. If you trust the author of a blog, by all means check it regularly. But if you are new to an issue, online forums may not provide much useful insight. Reading some of the more technical treatments may help you get a sense of the arguments. Then, to go more deeply, I pick one facet of the debate — one argument or element that interests me — and try to learn more about it by reading some of the overviews of the issue, or rather several overviews, to give me a sense of the arguments. Then, to go more deeply, I try to find an overview that seems likely to be overviews of the issue. But for bigger controversies, especially those that have been going on for some time, it is overwhelming to try to obtain most of the key publications about the issue. But if you need to address the shortcomings can give you a sense of the sorts of arguments that would become a speaker or writer. Then checking online provides much useful insight. Looking at online forums are off-the-cuff and ill-informed. Any comments That are useful for understanding an issue. Many comments are off-thecuff and ill-informed. On Amazon, readers can write reviews, and afterwards.
To better understand the issues, it’s extremely valuable to discuss them with others. You can branch out into other dimensions of the debate, consolidate your understanding of this particular topic, and then you already know something about. After you understand how to start with a topic and develop an understanding debate, you might want to share your thoughts. In the genetic engineering debate, you could start with genetically modified soybeans. Often it’s useful to start with a particular vaccine like polio or chickenpox. In the vaccination debate, you could start with a particular vaccine like polio or chickenpox.

As well as gaining from the experience of explaining something is to learn it as in the familiar saying that the best way to learn is to teach it to someone else. The better you will understand it, the more you will be able to talk about it once you are focused on it. You are likely to think about it in a different way to someone else. You’re more likely to express it in a more succinct way than re-writing the information. Now it’s your turn to communicate it to someone else. But this is more than regurgitating what you’ve learned. When you meet someone who knows nothing about the issue and is willing to listen, it is your chance to tell them what you know — at least a small portion of it. You’ve been reading various articles and now it’s your turn to communicate it to someone else.

As well as gaining from the experience of explaining the issue, you also learn how listeners respond. They will say “I’ve learned to learn more about cholesterol and health” and you may well get an opportunity to discuss the issue further. When you are introduced to ask what you do, it could be someone you’ve just met at a social gathering. It could be someone you’ve just met at a social gathering. It could be someone you’ve just met at a social gathering.
It is important to learn a few questions and then listen. For
example, this is a great opportunity to learn. One all you
know is about the issue — who represents your perspective
and what is the key message of your campaign. Anyone who
requests to learn more about the issue can be this key
message. After all, you are presenting some arguments and
evidence. But you may also have the opportunity to ask
whether you might more about the issue.

In conversations, you could get knowledgeable for the purposes of
casual encounters. You will want to learn answers to those questions, so if you take the
time to discuss the issue, you will remember the question, or write
It down, and find out the answer. If you see the same
person again, you can tell them, but this is not the main
reason. The value of learning answers to seemingly
random questions is that you learn more about the issue.

When asking someone about the issue, when did
nanotechnology get started? What's the biggest company? Are there
military applications? The safest answer is "I don't
know." But if the question is "What's the biggest company?" and
you can't readily answer, "When did nanotechnology get
started?" then it might be a good idea to ask a question even a basic question that you
might well ask a question even a basic question that you
may have asked about a hundred times, or to
someone who doesn't know very much about it. They
know you know very much about it. They

When asking someone about the issue, you may want to
learn more about the issue. For those who know the arguments well
and can present them clearly, you can be valuable for anyone campaigning on an issue.

Yet others, you are learning what arguments work well.
appear confused or confused others, and react negatively to
and when you present some arguments and examples,
example, you could ask "What about the argument that the latest antipsychotics are much safer?" and then hear some good counter-arguments. If there's a question you've asked and couldn't answer easily, this is your chance to ask and could it answer easily. If someone more experienced addresses an issue, you need to understand people's stances as well as the technical dimensions. To become really knowledgeable about the issue, you also need to be aware that prominent figures in a debate do not necessarily all agree, nor do they have the same knowledge and skills. For example, some leading individuals are entirely focused on a particular issue, whereas others believe it is part of a wider picture. One expert might want pesticide use minimised to benefit human and environmental health, another might want pesticides or chrysanthemum. Where people disagree, it is important to see the benefit of each pesticide substance involved. 

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and can give you insight into how the other side thinks. Of
question your assumptions and thus help you clarify them.
your concern, and the other person states a position
counterpoint. A communicative opponent — a person who is
and arguments. If you are lucky enough to know such a
contact person is well-informed and has well-developed
true engagement — a friendly conversation, with
A true engagement — a friendly conversation, with
Also, if you are in the unusual position of having an
able to be open, argumentative communicators are likely to be
However, speaking one-on-one
records are available. However, speaking one-on-one
written and spoken widely on the topic, so articles and
knowledgeable opponent, this can be informative.
If you have the opportunity to speak with a high-
knowledgeable opponent, this can be informative. But if
your conversation partner in order to learn what they
2. Your communication partner's point of view is closer to your
the high point of view, and see how the other person
once you know how they think, what assumptions they make and
when they disagree with you. Your communication partner in order to learn what they
point of view is. This could be an opportunity to try out
your concern, and the other person states a position
The controversy manual

course, your friendly opponent may be seeking the same sorts of advantages by knowing you.

Writing

Another worthwhile way to learn about issues and conventions is to think more rigorously about the points you can explain clearly. As you learn about the issues, you think more about them in a logical order. This requires thought. When you're discussing your issue, in meetings and in public or private letters, you might write down your thoughts in notes before you speak. You can also take notes on meetings and conversations.

You can also use writing to help you understand better what is going on by

conventions and summaries. Then I can give you examples of this source to the issues your own words, not to parrot the authors. Then I write a one-paragraph summary of the key ideas. Do I write where? These are loads of options. I find it useful to write where? These are loads of options. I find it useful when writing. Another useful exercise is to write notes about books.

There are various ways to use writing to help you

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forcing you to concentrate on the things that are most important for your purposes. Another possibility is to write a diary, which is like taking notes on your own thoughts and actions.

Notes like these are just for you — in two senses. As you compile notes on more and more sources, you develop your memory of what you’ve written, as well as improving your understanding of the material. By writing, you improve your memory of what you’ve written and develop your understanding of the material. When you compile a file of material that can be useful for looking up information on finding a citation, the notes are also tools for refining your understanding of the material that can be useful for looking up information on finding a citation.
Fluoridation is the addition of compounds containing the element fluoride to public water supplies, with the aim of reducing tooth decay, especially in children.

**What it is**

Fluoridation is a low-cost way of getting fluoride to nearly everyone's teeth, including those at greatest risk of tooth decay.

**Arguments for**

- Fluoridation greatly reduces tooth decay in children by as much as 50%.
- Fluoridation has no documented harmful health effects.
- Fluoridation greatly reduces tooth decay in children, by as much as 50%.
Arguments against fluoridation:

- The benefits of fluoridation are much smaller than claimed.
- The benefits of fluoridation are mostly from its effect on the surface of teeth; swallowing it is unnecessary.
- Fluoridation involves individuals receiving an uncontrolled dose of medication and hence is unethical.
- Fluoridation is linked to various health problems, including dental fluorosis, skeletal fluorosis, hip fractures and intolerance reactions.
- Fluoridation involves individuals receiving an uncontrolled dose of medication and hence is unethical.

Experts and authorities:

Doctors, dentists and health authorities in most countries support fluoridation. A few doctors, dentists and scientists oppose fluoridation.
Groups with vested interests

Sugary food manufacturers benefit from the belief that tooth decay is due to a deficiency of fluoride. Companies causing fluoride pollution — such as aluminium manufacturers — benefit from the belief that fluoride is a beneficial substance. Dentists have gained status by promoting fluoride toothpastes, mouthwashes, fluoridated salt, and fluoride treatments by dentists. Fluoride can be provided to individuals via tablets.

Alternatives

Fluoride can be provided to individuals via tablets, mouthwashes, fluoridated salt, and fluoride treatments by dentists. More generally, dental health can be improved by better dental hygiene (brushing teeth), good nutrition and limiting consumption of sugary foods.

State of play

In several countries, including Australia, Canada, New Zealand, Singapore, and the United States, a significant proportion of the population drinks fluoridated water. There is little or no fluoridation in most of Europe, and little in Africa, Asia or South America.

In several countries, including Australia, Canada, New Zealand, Singapore, and the United States, a significant proportion of the population drinks fluoridated water.
You meet someone at a social gathering and you’re talking about various issues — and you bring up your interest in climate change, microwaves, ADHD or whatever. You’ve joined in the controversy! Even a casual conversation can be considered a strategic engagement, in which you present your ideas, maybe trying to persuade the other person, trying to find out what they’re thinking, or seeking to learn so you can help decide your own stance.

Arguing is at the core of controversies. It occurs via one-on-one encounters, public meetings and mass media treatments. This chapter focuses on the arguments themselves, including information, examples and logical organisation. Chapter 4 deals with the communication dimensions of controversies, though in practice there’s a close connection between the choice of arguments and how they’re communicated.

Discussing an issue typically involves several elements. One is information. Specific bits of information are sometimes called facts, though these may be contested. Information is often organised to support a sequence of logical steps, leading to an argument: this is called an argument. One important mode of presenting information is through examples. These help illustrate particular lessons or conclusions. Underlying the use of information and deployment of arguments are various assumptions, often unstated, including assumptions about how they’re communicated.

Arguing to learn so you can help decide your own stance.

Some assumptions, often unstated, include:
The controversy manual

The controversy manual

The controversy manual about values. All this takes place in the context of what people already know, including perspectives and attitudes that shape what they are likely to find relevant and important. Part of arguing is attempting to shift other people's perspectives so they attend to different sorts of information and think about the issue in a different way.

Imagine contributing to a controversy in the following way. You examine all the scientific evidence and prepare a summary highlighting the findings commonly agreed by the best researchers. You explain the way the research was carried out, so others are likely to draw you back to standard ideas. You cannot just present arguments the way you'd like, but you can try to present arguments the way you'd like, by presenting information, arguments, assumptions, and perspectives that are standard packages of shared beliefs in which people already know about. This is not to say that you cannot present information in a different way, but in 99.9% of cases, people enter a controversy with a standard package of views, and in which these are already present in the research. People already know about the most appropriate information and ways to present arguments in a different way. You are likely to be influenced by the first information and think about the issue in a different way.

In short, you've prepared a definitive review of the various positions, credibly, pointing out both strengths and weaknesses of the scientific viewpoint, in a style appropriate to the basis for the findings. In addition, you present alternative ways readers can judge the findings, so others are likely to draw you back to standard ideas. You explain the findings in an accessible fashion but with faithfulness to the research.

Imagine contributing to a controversy in the following way.
Arguing that new evidence should make much difference in controversies is an illusion. This is a special case of the more general phenomenon that new evidence often does little to resolve disputes among rational people. The resolution of many controversies may depend on ideological, political, or economic factors that are not directly addressed by new evidence.

For these and other reasons, a careful analysis and exposition of scientific findings may do little to resolve controversies. For instance:

- You examined only the scientific research that's been done. What about the research that hasn't been done? There could be political influences on research agendas.
- You looked only at scientific research. In most public controversies, a key topic of debate is the social implications of the research. Assessing these social implications is not easily addressed in a review of the science.
- You might be biased yourself — horrors! Of course you are the most independent, objective and sensible commentator in the world, but even so you can be accused of partisanship in any controversy. You are the most independent, objective and sensible commentator in the world, but even so you can be accused of partisanship in any controversy.

A careful review of the evidence is needed to resolve disputes among rational people. For these and other reasons, a careful analysis and exposition of scientific findings may do little to resolve controversies.
The controversy manual

Do not despair. Evidence and careful, balanced arguments may not be definitive, but nevertheless they can be powerful tools in the struggle. Note that I use the word "tools." It is useful to think of evidence and arguments as methods in a struggle. Scientists often think of research findings as statements about reality. In a controversy, it is more useful to think of them as tools for waging the debate.

3.1 Arguing: factors to consider

To decide what evidence and arguments to use, there are many criteria. Experienced campaigners develop an intuitive grasp of what needs to be said. Here, I will try to spell out and illustrate some of the main factors worth considering. It can be useful to review these when presenting arguments.

Key issues

When you are writing or speaking, you get to choose what to say. So, to start at the beginning, when do you think are keeping your own agenda in mind.

Presenting arguments:

Critics of GMOs often focus on risks. You, though, might think that the issue of benefits needs more attention. You might question the scale of the benefits or even whether they exist or perhaps attribute the issue of benefits more to misprovision than the issue of risks. You, likewise, keep your own agenda in mind.

When you are writing or speaking, you get to choose what to say. So, to start at the beginning, when do you think are keeping your own agenda in mind.
Arguing mostly go to large companies rather than farmers and consumers.

What works?

Some pieces of evidence or lines of argument resonate with the public; others fall flat. To be persuasive, it is vital to choose or restyle arguments so they tap into the concerns of the audience.

Campaigners against surveillance have learned that examples — such as individuals who are denied loans due to mistakes in identity — are valuable for highlighting wider concerns, for example about the inability of people to correct false information on databases. These campaigners sometimes couch their arguments in terms of privacy even though surveillance might be a more accurate way to talk about these issues. Campaigners against surveillance have learned that some pieces of evidence or lines of argument resonate with the public.

The standard agenda

Most debates follow a standard set of lines, with familiar evidence and arguments. When you contribute to the debate, you may wish to address these standard lines. This is straightforward. But if you prefer to emphasise some different matters — key issues that you think are important — you usually need to at least mention the standard lines. Key issues that you think are important — such as proliferation of nuclear weapons — are familiar even though surveillance is straightforward. However, the issues most familiar to people are probably those that are relevant to their own concerns, for example those about databases. These campaigners sometimes couch their arguments in terms of privacy even though surveillance might be a more accurate way to talk about these issues. Campaigners against surveillance have learned that these concerns of the audience.

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What works?

Consumers,
The controversy manual reactor accidents and long-lived radioactive waste. So you may want to mention these at least in passing.

Links to values Evidence and arguments are fine but values are also involved. You need to decide whether to mention values explicitly or to embed them in your choice of evidence and presentation of issues.

Robustness Some pieces of evidence and lines of argument are robust:

Impartial theme? Might it be better to keep it as an impartial theme? Or would it be better to keep it as an issue with a strong pro- or con-viewpoint? You have to decide.

The climate change debate is often presented as a conflict between risks of climate disaster versus harm to the economy. A key value is intergenerational equity, namely benefits and harms to people today versus those in the future.

Links to values You may want to mention these at least in passing.
In all sorts of debates, advocates make bold claims about an absence of hazards. “There is no health risk from X.” X can be fluoridation, fracking, nanotechnology, EMF, sun screens, chlorination, or whatever. Sometimes the claims are more specific: “There is no risk of autism from MMR vaccines.” Such sweeping claims are vulnerable to attack. All it takes is one plausible case to undermine the claim. It’s far safer to say, “The health risks from X are extremely small.”

Ease of explanation
Your evidence might be powerful, but you need to be able to communicate it. If a long and complicated explanation is needed to make a point, it may not be worth making, at least for some audiences. Some points can be reduced to a sound bite; others require several sentences to present; yet others need an elaborate exposition. The most complex sorts of evidence may need to be left unmentioned unless they can be compressed into something shorter, without mangling them in the process.

The evidence in support of global warming includes a combination of results from climate models and diverse sources of data. The models and the data each have an associated uncertainty: findings are typically presented as a figure with an error range, for example a temperature rise of $3.4 \pm 1.2$ degrees. For public discussions, the uncertainty is usually downplayed compared to the predicted figure: it’s easier to communicate just one number. Then when it comes to the economic, health and other impacts of global
The controversy manual warming, the range of figures leads to a range of impacts. Explaining the precautionary principle in relation to a range of figures gets messy, so this complication is usually omitted from the public debate.

Who speaks?

It sometimes makes a difference who makes a claim. If someone with formal credentials or a high public profile speaks, the audience will need to back up their statements with more facts and figures to display their knowledge. If they are a citizen or a member of a smaller movement, they may need to appeal to other arguments to support their case. In the 1980s during the debate over nuclear war, atmospheric scientists such as Carl Sagan called for drastic reductions of nuclear arsenals. Sagan drew on his credentials as a scientist with knowledge of the effects of nuclear war, whereas peace movement activists emphasised moral arguments, namely that weapons of mass destruction are unethical and that a scientific case could be made for disarmament. Peace movement activists such as Sagan called for drastic reductions of nuclear arsenals.
Putting it all together

In summary, several factors can be used to help choose evidence and arguments.

- Key issues: what you think is important
- What works with audiences
- The standard agenda for the issue
- Links to values
- Robustness against criticism
- Ease of explanation
- Who speaks?

Putting it all together
Pathologies of arguing

Here are some typical pathologies.

If you experiment with responses, the list of factors can be used to help decide how to find out if doing things differently and keep a record of different styles or content are even more effective. The way standard delivery might seem effective—and would a presenter see the same information the same way. The key thing, though, is to experiment. Campaigners and groups should research not how to do it themselves. The best

Pathologies of arguing

Corporations can do something more systematic. If a group's members, all around, discuss what they think will be effective. Sometimes informal interactions are influential in

The controversies manual
Arguing

Key issues: what you think is important. When a group declares what it thinks is important to the exclusion of any other considerations, this runs the risk of appearing dogmatic and alienating audiences. This problem can occur with any sort of group, including ones advocating a particular religious belief, Marxists, liberals, free-market assumptions or scientific orthodoxy. This risk is over-emphasizing values when actually some listeners may be part of religious faith and open. To understand the debate led to missing opportunities for introducing new angles that would not fit the standard set of topics conventionally addressed in a controversy is normally due to beliefs unsupported by evidence or to popular opinion without having any principles. This is especially a risk when popular values appear to change, especially a risk when popular values appear to change, especially when public opinion is based on media coverage or opinion polls due to the vagaries of public opinion and assumptions of scientific orthodoxy. Key issues: what you think is important to the exclusion of any other considerations, this runs the risk of alienating and alarming audiences. This problem can occur with any sort of group, including ones advocating a particular religious belief, Marxists, liberals, free-market assumptions or scientific orthodoxy. To understand the debate led to missing opportunities for introducing new angles that would not fit the standard set of topics conventionally addressed in a controversy is normally due to beliefs unsupported by evidence or to popular opinion without having any principles. This is especially a risk when popular values appear to change, especially when public opinion is based on media coverage or opinion polls due to the vagaries of public opinion and assumptions of scientific orthodoxy. Key issues: what you think is important to the exclusion of any other considerations, this runs the risk of alienating and alarming audiences. This problem can occur with any sort of group, including ones advocating a particular religious belief, Marxists, liberals, free-market assumptions or scientific orthodoxy. To understand the debate led to missing opportunities for introducing new angles that would not fit the standard set of topics conventionally addressed in a controversy is normally due to beliefs unsupported by evidence or to popular opinion without having any principles. This is especially a risk when popular values appear to change, especially when public opinion is based on media coverage or opinion polls due to the vagaries of public opinion and assumptions of scientific orthodoxy. Key issues: what you think is important to the exclusion of any other considerations, this runs the risk of alienating and alarming audiences. This problem can occur with any sort of group, including ones advocating a particular religious belief, Marxists, liberals, free-market assumptions or scientific orthodoxy.
The controversy manual

but if arguments are chosen too defensively, this can limit the repertoire. Sometimes arguments are worth presenting even when they are apparently flawed and vulnerable to challenge, because they resonate with audiences.

• Ease of explanation. Choosing arguments that are the easiest to convey is fine much of the time, but it can be worthwhile presenting complex arguments. This is more challenging to do but may be appreciated by some people who have occupied key speaking and writing roles or who have occupied key campaign roles the longest. But if the same few people do all the speaking, others don’t have a chance to develop their skills, and a campaign can get stuck in a rut, or even be distorted by a speaker’s personal agenda.

Sometimes several of these pathologies of arguing are present in a single organisation. Another possibility is that different organisations display different pathologies. In any case, it is worth reviewing the list of features to see whether it is worth making changes.

3.2 Framing

Evidence and arguments can make a difference in a debate, but framing is a more powerful tool. Framing refers to the angle or perspective from which a person speaks. It is worth making changes.

• Who speaks? It is tempting to rely on the same speakers and writers, usually the ones with the highest status, best speaking and writing skills, or who have occupied key roles the longest. But if the same few people do all the speaking, others don’t have a chance to develop their skills, and a campaign can get stuck in a rut, or even be distorted by a speaker’s personal agenda.

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3.2 Framing

Evidence and arguments can make a difference in a debate, but framing is a more powerful tool. Framing refers to the angle or perspective from which a person speaks. It is worth making changes.
Arguing abortion is central to the abortion debate. The frame is central to the debate. Opponents of abortion use the words "pro-life" to describe their position. They support the right to abortion, rather than abortion. Opponents of abortion use the words "pro-choice" to describe their position. They support the right to abortion, rather than abortion. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate. In the abortion debate, frames are central to the abortion debate.
Whereas the abortion debate involves the frames of life and choice, the euthanasia debate involves the frames of death and choice. Opponents of euthanasia label it “killing” or “murder,” and try to equate the apparently neutral term “euthanasia” (literally “peaceful death”) with killing. Supporters previously referred to “voluntary euthanasia” — the word “voluntary” implies choice — but have largely switched to expressions such as “death with dignity,” “peaceful death,” “voluntary euthanasia,” and “Compassion and Choices.”

Opponents of euthanasia emphasise the preciousness of life, medical professionals’ commitment to maintaining life, and the danger of allowing active measures to hasten death as this will open the door to involuntary euthanasia, namely killing. The anti-euthanasia frame is built around a contrast between peaceful death and a life left suffering.

Supporters of voluntary euthanasia emphasise the need to allow people to be able to choose death to end suffering. The voluntary-euthanasia frame is built around a contrast between peaceful death and a life left suffering, namely killing. The voluntary-euthanasia frame involves looking at two different sorts of people: from the anti side, it is someone whose precious life is terminated without their consent; from the other side, it is someone who is suffering and desires to die peacefully.

Participants in controversies seek to frame their own positions in desirable ways and to frame their opponents' positions in less desirable ways to the be especially effective. The competing euthanasia frames involve looking at two different sorts of people. From the anti side, it is someone whose precious life is terminated without their consent; from the other side, it is someone who is suffering and desires to die peacefully. Opponents of euthanasia emphasise the preciousness of life and the danger of allowing active measures to hasten death; supporters emphasise the need to allow people to be able to choose death to end suffering.
Arguing positions in negative ways. The choice of words can assist in this process, but the meanings and connotations of words can change through the efforts of advocates. In the US in the 1960s, the word "black" was derogatory but was then transformed into a positive, with the phrase "black is beautiful" a tool in this transformation. It has been superseded by "African American" or the more inclusive "person of colour."

Likewise, campaigners concerned about war can refer to something that needs protecting, "privacy," or something that needs to be challenged, "surveillance." The concept of privacy is more nebulous, but it is the way a lot of people conceive the issue. How should campaigners describe their concerns: as "global warming" or as "climate change"? However, the more neutral expression "climate change" has been promoted by the more modest expression "global warming." Because it builds in a particular outcome "global warming" because it builds in a particular outcome, "global war...
The controversy manual position. Think of nanotechnology, genetic modification, nuclear power and fluoridation. Those challenging these innovations usually end up being labelled opponents or critics, for example anti-fluoridationists. It is difficult to create a positive image. Critics of vaccination can say they are pro-choice. However, critics of GM, nuclear power and fluoridation don't just want choice: most of them oppose these technologies. There are various terms presenting the movement, for example the "global social justice movement," the "anti-globalisation movement" or the "movement of movements." These terms are used outside the movement, not by the movement itself.

Names of issues and organisations are important, but are just one aspect of framing. Every issue dealt with can be presented from several different angles. In other words, it is possible to present a single frame in different ways. Astute campaigners will promote the most favourable framing on separate issues, sometimes in competition with the frames imposed by the other side. Sometimes it may be worth dropping a frame when it no longer serves the movement well.

Tobacco companies, when first faced by claims about health hazards from smoking, adopted a defensive mode of saying the claims had not been proven. The key issue was hazards. Over the years, as the evidence mounted, the companies adopted a more positive framing, shifting the emphasis from hazards to the benefits of cigarettes. For example, tobacco companies now promote the "pleasure of smoking."
Arguing about the hazards, they shifted to a different argument, individual freedom: people should have the right to choose to smoke. Opponents of smoking countered with a different argument about freedom: freedom from smoking, or the right to a smoke-free environment. The choice of words affects the way people think about issues, because all words have connotations. Scientists sometimes use words that mean one thing to them but have different meanings to non-scientists. Using such words can cause misunderstandings and create misleading associations. Table 4 lists some examples from the climate debate, from the point of view of climate scientists.

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<th>Scientific term</th>
<th>Public meaning</th>
<th>Better choice</th>
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<tbody>
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<td>Aerosol spray can</td>
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<td>Manipulation</td>
<td>Illicit tampering</td>
<td>Positive feedback</td>
</tr>
<tr>
<td>Positive feedback</td>
<td>Self-reinforcing cycle</td>
<td>Initial impetus</td>
</tr>
<tr>
<td>Theory</td>
<td>Scientific understanding</td>
<td>Beauty can beliere</td>
</tr>
<tr>
<td>Self-reinforcing cycle</td>
<td>Positive feedback</td>
<td>Haze: Speculation</td>
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<td>Scientific understanding</td>
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<tr>
<td>Theory</td>
<td>Scientific understanding</td>
<td>Beauty can beliere</td>
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2 Adapted from Richard C. J. Somervile and Susan Joy Hassol.
Framing is incredibly important in controversies. The side that can convince people to adopt its frame has a great advantage, because evidence and arguments are interpreted from within the frame. Campaigners may think evidence supporting their position is conclusive, but actually it only makes a difference for those who adopt the campaigner’s frame: others may ignore or dismiss the evidence because it doesn’t fit their frame, which is different. Dedicated campaigners can study framing and use insights to improve their efforts.3

3 Valuable activist-oriented treatments include Doyle Canning and Patrick Reinsborough, Re:imaging Change: An Introduction to Story-based Strategy (smartMeme, 2009); George Lakoff, Don’t Think of an Elephant! Know Your Values and Frame the Debate (White River Junction, VT: Chelsea Green, 2004).

3.3 Responding

It can be infuriating when the other side uses poor evidence, faulty logic, misleading claims and various other sins against rational discussion. You may encounter this anywhere, for example in media stories, blogs, everyday conversations and campaigning materials. Here are some common types of poor argument:

1. Evidence is picked to make a point, ignoring a large quantity of contrary evidence.
2. An entire body of evidence is dismissed as unsound, irrelevant or anecdotal.
3. Some point you’ve made is misinterpreted: you are claimed to have said something you actually didn’t.

use insights to improve their efforts. Different dedicated campaigners can study framing and campaign. Campaigners frame: others may ignore or dismiss the evidence because it doesn’t fit their frame. Campaigners may think evidence supporting their position is conclusive, but actually it only makes a difference for those who adopt the frame. Framing is incredibly important in controversies. The side that can convince people to adopt its frame has a great advantage, because evidence and arguments are interpreted from within the frame. Campaigners may think evidence supporting their position is conclusive, but actually it only makes a difference for those who adopt the campaigner’s frame: others may ignore or dismiss the evidence because it doesn’t fit their frame, which is different. Dedicated campaigners can study framing and use insights to improve their efforts.3

3 Valuable activist-oriented treatments include Doyle Canning and Patrick Reinsborough, Re:imaging Change: An Introduction to Story-based Strategy (smartMeme, 2009); George Lakoff, Don’t Think of an Elephant! Know Your Values and Frame the Debate (White River Junction, VT: Chelsea Green, 2004).
4. Claims are made that Dr X has been discredited.

5. There is said to be no contrary evidence, when actually Dr X’s contributions have been exaggerated.

6. False statements are made.

7. Discussion of the role of vested interests is dismissed as „conspiracy theories“.

8. Scientists are assumed to be objective and incorruptible.

9. Scientists are assumed to have a vested interest, even when there is no evidence they do.

10. Facts are assumed to speak for themselves. This usually means there is no implicit value assumption.

11. Facts, taken in isolation, are assumed to be unassailable.

12. A single error is assumed to discredit an entire argument.

13. Poor logic is used to derive a false conclusion from a fact accepted by both sides.

Exercise: Consider the following examples. Into which category of poor argument might each one be assigned?

- Climate sceptics refer to the medieval warm period, implying that global warming is nothing new or special.
- Climate sceptics say that global warming is a natural event.
- Climate sceptics refer to the current cold period, implying that global warming is not taking place.
- Climate sceptics refer to a cold period in the past, implying that global warming is not occurring.

(Climate sceptics can propose a contrary list of examples!)
The controversy manual

• A mistake about melting of Himalayan glaciers in the 4th IPCC report is mentioned as if it discredits the IPCC entirely.

• Climate sceptics argue that, because natural flows of the greenhouse gas carbon dioxide are much bigger than human-made flows, human activities cannot be the cause of global warming.

Another problem is when some people on your side do these sorts of things. Perhaps, sometimes, you do them yourself!

It can be a useful exercise to analyse the opponent's arguments and pick out logical flaws and misuse of evidence, and then to work out ways to respond. If you can do this sort of thing, perhaps, sometimes, you do learn.

Know the context

Arguments can be used in a variety of situations. The circumstances make a big difference in how to respond.

Personal conversation — just you and one other person.

This normally allows you an opportunity to both initiate and respond to points. If there's plenty of time, you can probe into issues and test the other person's knowledge.
general a type of slow-moving dialogue.

- Lecture. You can put material on your website.
- Mass media articles. If there's an article in a newspaper.
- Blogs. Someone writes an online article or comment, and anyone else can add their comments. If the blog is moderated, this can become a well-informed discussion. If not, it can become a free-for-all. Sometimes it can become a discussion away from its original topic.
- More. When your article could be circulated more widely.
- Email exchange with someone on the other side. Email is more formal than a conversation. Further, you may be able to establish a dialogue with someone on the other side.
- Public debate. There might be a formal debate organized.
- Questions. You might give a talk in a public meeting or to a group such as a class or club. Typically there is time for you and one other person, plus there's an audience.

Arguing

Conversation in a group. The main ones talking might be you and one other person, but there's an audience.

- Lecture. You might give a talk in a public meeting or to a group such as a class or club. Typically there is time for you and one other person, plus there's an audience.

- Public debate. There might be a formal debate organized.
- Questions. You might give a talk in a public meeting or to a group such as a class or club. Typically there is time for you and one other person, plus there's an audience.

Webinar. You can put material on your website.

- Lecture. You might give a talk in a public meeting or to a group such as a class or club. Typically there is time for you and one other person, plus there's an audience.
Advertisements

Scientific articles. You write a scientific article. Another scientist writes an article in reply, and so forth. It should be obvious that there are considerable differences in context, which can greatly affect how the debate proceeds. If you want to engage in different types of forums, you need to learn how they operate. There are several characteristics worth noticing:

Speed. Some forums allow immediate response; others are very slow. In a conversation, you can reply the next time you speak. Scientific articles, especially if adversarial, take months to be published; sometimes years.

Certainty. With some forums, you can be reasonably confident of being able to respond, unless the other person suddenly leaves (or hangs up the phone). However, in sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published.

In a two-person conversation, you can be reasonably sure of being able to respond, unless the other person suddenly leaves (or hangs up the phone). However, in sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published. In sending a letter to the editor of a popular magazine, you may have only a small chance of being published.
Arguing

175

Length. You may be able to reply with just as many words or minutes as the original statement, or be far more restricted in the length of your response. If you're having a balanced conversation with others, you can reasonably expect to have equal time to comment on a topic. In writing a letter to a newspaper responding to an article, you can reasonably expect to have equal time to comment on as many words or minutes as the original article.

Visibility. Your reply might be seen or heard by a number of individuals. If you're among a group of friends discussing an issue, and you respond to someone's comment, your response will likely be heard by just as many people as heard the original comment, provided the original comment is clearly articulated. On the other hand, if you write a response to a popular blog, your comment may only be seen by a small, restricted audience.

For making an effective response, the ideal is that it is

...
The controversy manual

More reliable but the readership will be much smaller. You and your supporters can reply. This is more frequent, but your comments can add to the discussion. You could also connect the editor of the article to another perspective. This could be a valuable counter to the original article. A direct appeal to a major media outlet often fails. An article appears in a major media outlet giving a one-side treatment of an issue. Your perspective has been seriously misrepresented.

Responding to an article

An article appears in a major media outlet giving a one-side treatment of an issue. Your perspective has been seriously misrepresented. You and your supporters could write letters to the editor. The acceptance rate for letters in major newspapers is quite low. Therefore, writing letters involves a lot of work with a low return.

Option 1

You could contact the editor proposing an article of your own, or by someone on your side. If accepted and published, this could be a valuable counter to the original article. However, it’s possible that the article might be given the go-ahead and yet the article never appears or is only published in abridged form. Some editors seldom send rejection letters. Writing letters involves a lot of work with a low return.

Option 2

You and your supporters could write letters to the editor responding to the article. The acceptance rate for letters in major newspapers is quite low. Therefore, writing letters involves a lot of work with a low return.

Option 3

If the article is available online and allows comments, you and your supporters can reply. This is more reliable but the readership will be much smaller. You and your supporters can reply. This is more frequent, but your comments can add to the discussion.
Option 4
You prepare a point-by-point refutation of the article and post it on your side’s website. This will mainly be read by your supporters. It will be useful in demolishing a contrary viewpoint. You may have other thoughts. For example, another criterion might be duplicity.

Once you’ve set up a table like this, you can draw up a table rating each option in terms of the criteria. Here’s an example:

<table>
<thead>
<tr>
<th>Option</th>
<th>Speed</th>
<th>Certainty</th>
<th>Length</th>
<th>Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article</td>
<td>low to medium</td>
<td>medium to high</td>
<td>long</td>
<td>high</td>
</tr>
<tr>
<td>Letters</td>
<td>medium to high</td>
<td>high to medium</td>
<td>short</td>
<td>low to medium</td>
</tr>
<tr>
<td>Online comments</td>
<td>high</td>
<td>medium to high</td>
<td>short</td>
<td>low</td>
</tr>
<tr>
<td>Web refutation</td>
<td>medium</td>
<td>high</td>
<td>long</td>
<td>medium</td>
</tr>
<tr>
<td>Email refutation</td>
<td>medium</td>
<td>high</td>
<td>long</td>
<td>medium</td>
</tr>
</tbody>
</table>

To aid your assessment of options, you can draw up a table like this. You can add other options to this list. In choosing between options, you should consider what has happened previously. For example, if a news outlet has a track record of ignoring or denigrating your viewpoint, then putting effort into getting letters published may not be worthwhile. One way to evaluate your options is to give a link to the article and provide a refutation of the article and email it to your list of subscribers. This might be a version of the article on your side’s website. This will mainly be read by your supporters.
The controversy manual

It’s not so clear what’s important. So you need to make some decisions about what is most important for you and for others. There are so many criteria that you might want to add columns to your table. Like this:

<table>
<thead>
<tr>
<th>Option</th>
<th>Durability</th>
<th>Supporter involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article</td>
<td>medium</td>
<td>low</td>
</tr>
<tr>
<td>Letters</td>
<td>medium?</td>
<td>medium</td>
</tr>
<tr>
<td>Online comments</td>
<td>medium?</td>
<td>medium to high</td>
</tr>
<tr>
<td>Web refutation</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Email refutation</td>
<td>low</td>
<td>low</td>
</tr>
</tbody>
</table>

This is getting complicated. You might find it helpful to involve your members. They could add a column to your table. Like this. How much does the effort put into responding help to inform and mobilise your supporters? Writing a response article is most commonly done by a highly experienced campaigner. Likewise with preparing a highly effective, compelling refutation of the original article. So these options probably do little to involve your members.

There's another factor: how much does the effort put into responding help to inform and mobilise your supporters?
3.4 Deconstruction

Consider the context, and assess options for responding. Out what sort of challenge you’re facing, carefully produce options and consider options. You can further immediately responding to the latest provocation. How can be more which you will think are seriously flawed. Rather than

**Conclusion**

So about what? Who feels capable of what at this time. Who are you going to respond to? A good idea means there’s no one response article seems like a good idea. But there’s no one writer. On the other hand, imagine that you write a letter. In that case, maybe it would be a good idea to organise a letter-writing workshop, giving interested members practice in responding. Writing workshops, giving interested members time to write. In quality of such contributions might just be up to scratch. In quality, which are implications. More members might.

Then there are implications. More members might.

Become more aware of what is stake.

Deconstruction. Thinking about options is a good way to intervention. Thinking about options is a good way to respond to in a newspaper has all sorts of response to an article in a newspaper is a straightforward key point is that sometimes ecosystems are structured. The

Your group. Is rapid higher profile response most important.
The controversy manual

arguments carefully, showing weaknesses, inaccuracies, assumptions and value judgements.

This sort of critical analysis is sometimes called deconstruction. Imagine the opponent's argument as a solidly constructed object, perhaps a building or even a fortress. What you are doing is taking this object apart bit by bit, revealing its inner parts. The other side constructed this object — its arguments — and now you're breaking it into pieces, examining each part carefully, in turn. What's on the inside of the different parts? What you are doing is taking this object apart bit by bit, revealing its inner parts.

How to go about this? There are various aspects to deconstruction, best learned by practising and watching others go about it. Here I'll discuss various elements.

What's missing?

You know the important arguments on your side. You know the evidence that's crucial. So what you do is carefully examine the opponent's article or text and see whether these vital arguments and evidence are mentioned at all. If not, then you've found a weakness. They are either ignoring or skirting around centrally important issues. How do you know the important arguments on your side? You know the important arguments on your side.

Imagine you're a critic of vaccination and one of your chief concerns is adverse reactions, such as when children suffer serious convulsions, disability or death from vaccinations. You read an article in a newspaper about two pro-vaccination books. If the argument is addressed, it is mentioned in the article. How do you know? Because you know how to go about this. Who've you read an article? You're a reader of the newspaper. What's the newspaper? USA Today. What's the article about? Books get to the truth about vaccines. What's the author of the book? Liz Szabo. What's the title of the book? USA Today. What's the date of the article? 11 January 2011. What's the source of the article? Liz Szabo. What's the title of the book? USA Today. What's the date of the article? 11 January 2011. What's the source of the article? Liz Szabo.
Arguing many vaccines overwhelm children's immune systems … it's safe to 'space out' vaccinations … vaccines contain toxic chemicals … vaccine-preventable diseases aren't much of a concern … it's safe to space out vaccinations … vaccines overwhelmed children's immune systems much more effectively than many vaccines.
The controversy manual toxic effects. It might be true that ethyl mercury is much safer than methyl mercury, but to say without qualification that ethyl mercury is safe is incorrect. What's misleading?

Statements can be factually correct but quite misleading. You need to examine the article or text looking for words, statements, evidence, pictures or anything else that gives the reader an impression that isn't correct — from your perspective. When searching for and exposing misleading statements, the reader in impression that isn't correct — from your perspective. The pro-vaccination article says, “Some parents are also concerned about aluminum, used in small amounts in some vaccines to stimulate a better immune response.” Yet babies get far more aluminum than concerned about aluminum, used in small amounts in some vaccines to stimulate a better immune response. The article includes a table showing that babies might receive 4 milligrams of aluminum in the first six months of life from all recommended vaccines, 10 milligrams from breast milk and 30 milligrams from breast milk formula. You might want to question the figures, but let’s take them at face value here.

What's potentially misleading is the assumption that the mode of receiving aluminium is irrelevant: aluminium from vaccines is injected into flesh, whereas aluminium from milk is taken orally. It's well known that the mode of ingestion makes a big difference in the impact of some toxic substances, such as plutonium. So where's the evidence that injected and orally ingested aluminium are comparable?

The article says the author of a scientific study (Andrew Wakefield, though he is not named) was found guilty of receiving $800,000 from a lawyer trying to sue vaccine makers. This misleadingly suggests Wakefield accepted a $800,000 bribe to get the results the lawyers wanted, whereas according to Wakefield none of the money was used for the cases the lawyers were working on. According to Wakefield, none of the money was used for the cases the lawyers were working on.6

6 You need a source for this, such as Andrew J. Wakefield, Callous Disregard: Autism and Vaccines — The Truth Behind a Tragedy (New York: Skyhorse, 2010). Of course Wakefield’s account can be challenged, but this example is a deconstruction of what’s potentially misleading: the assumption that the mode of receiving aluminium is irrelevant.

What's potentially misleading is the assumption that the mode of receiving aluminium is irrelevant.
Are there double standards?

In controversies, it is common to accuse the other side of shortcomings, such as hiding evidence, personal abuse or conflict of interest. The other side might be guilty as charged but sometimes the accuser is just as guilty. The standard or expectation for one side (the opponent) is higher than the standard for the other side (the accuser). This is called a double standard. The accuser is setting a higher standard for the other side than he or she might be guilty as well. Examples can be found in many articles and talks on controversies. The article about vaccines refers to a scientist (Andrew Wakefield) as having been found guilty of serious misconduct. What is not mentioned is that Wakefield’s chief accuser, Professor Sir Michael Michael Rutter, had received money from pharmaceutical companies and failed to declare this in publications he wrote. Rutter’s actions were similar to those of Wakefield, but no charges were brought against him.

There is also a more general double standard. Critics of vaccines seldom receive significant financial benefits. In contrast, the chief accuser in the hearings before the General Medical Council in Britain, Professor Sir Michael M. Rutter, had received money from pharmaceutical companies and failed to declare this in publications he wrote. Rutter’s actions were similar to those of Wakefield, but no charges were brought against him. There is also a more general double standard. Critics of vaccines seldom receive significant financial benefits.
They're implicit, namely taken for granted. That makes
Assuming support for their research; Wakefield was an excep-
pharmaceutical companies fund research by supporters of vaccines. Vaccination advocates are quick to condemn Wakefield but hardly ever mention conflicts of interest due to pharmaceutical company funding. If both sides in a debate agree about an assumption, then it

What assumptions are made?
Arguments are usually based on various assumptions. Sometimes assumptions are stated explicitly. If so,

Arguments are usually based on various assumptions.
The controversy manual

There is only one right answer. Wise researchers grow in decades despite enormous economic growth in developing countries. Average happiness levels in rich countries haven't increased in decades despite enormous economic growth in developing countries. Average happiness levels in rich countries haven't increased in decades despite economic growth in developing countries. Economic growth is beneficial to everyone. Data show most of the benefits go to the wealthiest people. Economic growth is beneficial to everyone. Data show most of the benefits go to the wealthiest people. Economic growth is beneficial to everyone. Data show most of the benefits go to the wealthiest people.

Freedom, happiness, health, the quality of life, the environment and human life are important. Freedom, happiness, health, the quality of life, the environment and human life are important.

New technology is progress. Only some new technologies are progress. New technology is progress. Only some new technologies are progress.

Human life is important. Yes, but so are other things like the quality of life, the environment and human life are important.

Some arguments are inconsistent. Some arguments are inconsistent. Some arguments are inconsistent. Some arguments are inconsistent.

Exposing and challenging assumptions can be subtle, covered and tricky. Assumptions, though, can be subtle, covered and tricky. Exposing and challenging assumptions can be subtle, covered and tricky.

Sometimes different assumptions conflict with each other. Sometimes different assumptions conflict with each other. Sometimes different assumptions conflict with each other.

Assumptions are like the building blocks of arguments. Assumptions are like the building blocks of arguments. Assumptions are like the building blocks of arguments. Assumptions are like the building blocks of arguments.

How should you expose and challenge assumptions? How should you expose and challenge assumptions? How should you expose and challenge assumptions? How should you expose and challenge assumptions?

You can do this by using a general argument or by using counter-examples. You can do this by using a general argument or by using counter-examples. You can do this by using a general argument or by using counter-examples.

Sometimes different assumptions conflict with each other. Sometimes different assumptions conflict with each other. Sometimes different assumptions conflict with each other.

Nuclear weapons are a good thing. Nuclear weapons are a good thing. Nuclear weapons are a good thing. Nuclear weapons are a good thing.
Professional scientists know better than non-scientists. Bloggers found mistakes in a climate-change research paper that the authors and peer reviewers did not.

Jobs must be protected at any cost. Other jobs can be created at lower cost to the community.

Animal suffering is irrelevant. Animals shouldn't have to suffer just so people can have cheaper meat or cosmetics.

You can see from these examples that you can challenge assumptions in different ways. Sometimes just exposing an assumption is enough. Most people do care about animal suffering, so exposing an assumption that animal suffering is not important will damage an argument. In other cases, assumptions may seem plausible at first but further examination will change an argument. For example, in the case for vaccination, one assumption is that vaccination was responsible for much or all of the decline in whooping cough mortality before mass vaccination began. This could be countered by citing whooping cough mortality from infection diseases such as scarlet fever, which was not affected by vaccination. The assumption that vaccination was responsible for much or all of the decline in whooping cough mortality was probably wrong.

Retraction Watch, "Paper claiming hottest 60-year-span in 1,000 years put on hold after being published online," 1,000 years pur on hold after being published online..
The controversy manual vaccination was introduced or, better yet, presenting a graph showing this decline. What value judgements are involved?

Value judgements are judgements about what is worthwhile, such as life or economic growth. In some debates, partisans — usually on the side of scientific orthodoxy — say or imply that the issue is entirely about science; anyone who disagrees with the facts is ignorant and obstructionist. However, in just about every public debate, scientific findings are only part of the issue. Differences in values are important. They often melt scientific differences in values and anyone who disagrees with the facts should be listened to respectfully. Scientific objections — usually assume that human life is inherently valuable; those arguing for action to limit global warming usually assume that the welfare of future generations needs to be taken into account. They often adopt or need to be taken into account. They often adopt or assume the precautionary principle, which is that action should be taken to prevent the possibility of future damage even if the evidence is not conclusive.

• Those arguing for action to limit global warming usually assume that the welfare of future generations needs to be taken into account. They often adopt or assume the precautionary principle, which is that action should be taken to prevent the possibility of future damage even if the evidence is not conclusive.

• Those arguing against abortion (or euthanasia) usually assume that human life is inherently valuable, and sometimes that any life, even one with a lot of suffering, is better than no life.

• Those arguing for vaccination often assume that the collective benefit from vaccination, namely reduction in disease, overrides risks to individuals from being vaccinated. Vaccination critics may put a higher priority on protecting individual liberty.
Arguing on risks to individuals. Proponents often assume that experts know best and people should do what the experts recommend. Critics argue for personal choice. What is unquestioned?

In many debates, there are things that are not questioned, such as authorities, facts, assumptions and claims. Questioning what is taken for granted is the essence of deconstruction. A "black box" is something that is not usually questioned. "Opening up the black box" is a metaphor for examining something that is seldom questioned. It might be a leading figure in the debate, whose motives have never been questioned. It might be a classic experiment that has never been scrutinized. "Black boxes" are things that are not open for inspection. People can't see inside them, so it is hard to understand what is going on inside. Deconstruction means to take things for granted as the essence of argument. Critics argue for personal choice. Experts recommend it, but people should do what they think is best based on their own assumptions.
The controversy manual

unstated value judgements. What seemed a solid edifice is revealed as a facade filled with holes and built on sand.

3.5 Countering deconstruction

When faced with deconstruction — a critical analysis of one’s viewpoint — the most common response is to defend. That means responding to every bit of the critique.

When faced with deconstruction — a critical analysis of one’s viewpoint — the most common response is to defend. That means responding to every bit of the critique.

• Valid, responding to every critique gives credibility to the position.

• Attacking critics can seem heavy-handed and make their arguments seem shaky-handed and make sound arguments and leaves the critique unanswered.

• Defending against a critique gives credibility to the critique and makes it seem like the points may be valid.

• Defending against a critique gives credibility to the critique and makes it seem like the points may be valid.

• Defending against a critique gives credibility to the critique and makes it seem like the points may be valid.

Each of these responses can be effective, but they have limitations.

Some background on deconstruction

Partisans have challenged and undermined each other’s arguments since the earliest controversies. The term used to describe this process is “deconstruction.”

To find other ways to respond, it’s useful to understand a bit more about deconstruction. It is a widely used technique, perhaps increasingly so.

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Arguing for helpful comments about postmodernism.

"Deconstruction," though, dates from the rise of postmodernism and poststructuralism, two related approaches used in the humanities to analyse things taken-for-granted as "real" and show they are actually human constructions. They use deconstruction to expose and question the assumptions underlying these two concepts. Simultaneously, concepts such as race, culture, emotions, and identities are seen as constructs, and the assumption that they are fixed and unchangeable is questioned. Deconstruction involves exposing and questioning the assumptions underlying these two concepts.

In most scientific controversies, there is no need to analyse science as a rational means to the truth. Concepts such as race, culture, emotions, and identities are seen as constructs, and the assumption that they are fixed and unchangeable is questioned. Deconstruction involves exposing and questioning the assumptions underlying these two concepts.

One of the goals of postmodernist analysis is to show the inadequacy of "grand narratives," which are comprehensive accounts of how the world works. Grand narratives include:

- The rise of western civilization as a triumph of superior culture
- Marxism, an explanation of the economy and society in terms of class struggle
- Neoliberalism, based on the superiority of corporate capitalism
- Sciences as a rational means to the truth
- National ceremonies, celebrities and popular culture immune from critical examination
- Nothing is treated as sacred, namely, scientific controversies about western civilization, Marxism or science as a rational means to the truth.

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Arguing the creation of facts and theories. "Social factors" include dominant ideologies. For example, ideas about competition in human society, taken from Thomas Malthus, may have influenced the way Darwin formulated evolutionary theory. Social factors also include the interaction of scientists in the lab as they design pieces of apparatus, evaluate data, develop concepts, and write papers. From this point of view, scientific knowledge is socially constructed, which means it is created by humans rather than being taken directly from nature.

The controversy manual

194

The diamond, actually it was created from coal in a lab — but

The second angle from within science and technology
studies is political economy.14 This refers to political and
economic influences on science, for example funding from
companies. This can result in biases in research done due
to suppression of findings — as done by the tobacco
companies — or due to research that remains undone. It's
like looking only for blue diamonds and ignoring or hiding
red diamonds, because there's more money and power in
the looking only for blue diamonds and ignoring or hiding
the diamond. The second angle from within science and
technology is political economy.14 This refers to political and
social influences on science and technology.

Based on the general approaches of social construction

1. Analyse facts and theories to find weaknesses.
2. Show the role of vested interests.

Both of these can be used against any viewpoint. What can
you do when they are used against you? In other words, how can you
counter deconstruction out of control?

There are no easy answers, but there are some ways
to turn the issue around.

1. Change the discussion from deconstruction to
construction.

There are two main ways to

14 Works on the political economy of science include David
Dickson, The New Politics of Science (New York: Pantheon,
1976); Hilary Rose and Steven Rose (eds.), The Political
Economy of Science: Ideology of/in the Natural Sciences
2. Show double standards in discussions of vested interests.

7. Conspiracy theories. Examples are:

a. The US government was involved, either by letting the attacks have something to gain.

b. The conspiracy involves groups that apparently are responsible.

c. Powerful groups, often governments, are said to be even seeking to explain a significant, open shock.

There are hundreds of other conspiracy theories involving humans.

a. The world is ruled by reptilian aliens in the guise of

b. in a US biological weapons laboratory.

c. HIV, the virus responsible for AIDS, was designed by the Nazis.

d. The 1933 burning of the Reichstag (parliament building) in Berlin was done by the Nazis.

e. Princess Diana's death was orchestrated by the British royal family.

f. The 9/11 terrorist attacks were organized by the US government.

There is much more evidence to argue for the role of deconstruction in scientific controversies. It is useful to examine when and why called for the generation of new arguments. To learn more about the role of deconstruction in scientific controversies, it is useful to examine when and why called for the generation of new arguments.
The controversy manual happen or by causing them directly. The reason: the US government gained worldwide sympathy, and President George W. Bush’s popularity soared. Meanwhile, US military might was unleashed against Afghanistan and security and military expenditures greatly expanded under the guise of the war on terror.

Conspiracy theories have existed for many decades but have become more widely known in recent years, particularly on the Internet. Some authors have examined conspiracy theories as social phenomena, attributing their popularity to increasing distrust of governments and official sources of information, as well as a search for meaning in a world with fewer anchors of stability, among other explanations.

However, for the purposes here, the value of looking at conspiracy theories is to see how evidence and arguments are deployed. Some conspiracy theories take the form of rumors, without much evidence to back them up. Others, though, are quite elaborate. Some authors have examined conspiracy theories as a form of evidence and arguments, creating your own conspiracy theories by using the standard format. It’s possible to find websites that allow you to create your own conspiracy theories.

For example, some conspiracy theories claim that the government is covering up evidence of extraterrestrial life. Others claim that the government is involved in secret, and potentially dangerous, experiments. In many cases, these conspiracy theories are based on evidence that is either false or misinterpreted. However, these theories have existed for many decades and have been debunked repeatedly. The controversy manual happens by causing them directly. The reason: US government gained worldwide sympathy, and President George W. Bush’s popularity soared. Meanwhile, US military might was unleashed against Afghanistan and security and military expenditures greatly expanded under the guise of the war on terror.

The dominant mode of conspiracy-theory argument is deconstruction: the standard account of events is scrutinised for flaws; lists of anomalies are highlighted to show that something more must be involved. The underlying assumption is that if there is a flaw in the standard account, there must be a conspiracy.

For example, some 9/11 conspiracy theorists claim that if an aeroplane flies into a building, it will fall over rather than collapse. The World Trade Towers collapsed on themselves as if demolition experts had planned it — so the conspiracy theorists say explosives must have been planted in the towers.

On the surface, many of the claims by 9/11 conspiracy theorists sound plausible. How to counter them? One way is by carefully and patiently Mustering the evidence against the critique, for example by explaining how the fires started in the twin towers burnt at a very high temperature from jet fuel, eventually melting the frames of the building and causing them to collapse.

Another way to respond is to put the onus of proof on the conspiracy theorists, which in practice can be done by applying deconstruction to their own claims. For example, the claim that explosives were planted in the World Trade Towers is well known, and many conspiracy theorists are quick to dismiss. How do these conspiracy theorists explain this? Why didn't anyone notice the explosives being planted? Why didn't anyone notice the explosives being planted in the World Trade Towers if they had been there?

It's worth noting that calling something a conspiracy theory can be a way to dismiss a dissenting view.
Conspiracies do exist, after all. One of the most famous involves the justifications for invading Iraq in 2003. Members of the George W. Bush administration claimed that Iraqi dictator Saddam Hussein had an active nuclear weapons program as well as chemical and biological weapons. Due to deceptive language by Bush, many US citizens believed that Saddam Hussein was responsible for 9/11. In fact, the controversy over whether the moon landings occurred demonstrates a similar pattern. Critics argue that the moon landings were faked, staged in a movie studio, and that the flag planted on the moon was blowing in the wind, which is impossible on the moon. Those who believe the moon landings occurred can answer every single point raised by the critics, and indeed have done so. However, this is a defensive strategy: it allows the critics to use the tools of deconstruction and undermine the standard account proposed by the critics, and indeed answer every single point raised by the critics. This is equivalent to allowing the critics to assign the onus of proof to believers.

An alternative or supplementary strategy is to demand the critics to defend their own explanation.

- Where is the studio where the filming took place?
- Where are the whistleblowers from the fake moon landing conspiracy?

Anyone familiar with the moon landings could provide dozens of difficult questions for the sceptics to answer, and these questions can be used to undermine the authority and solidity of climate science. For example, the sceptics have used computer models to predict warming periods, to the Heath Island effect, to point to the limitations of computer models, to earlier warming periods, and a host of other issues that undermine the authority and solidity of climate science. For example, the sceptics have used computer models, to earlier warming periods, to the Heath Island effect, to point to the limitations of computer models, to earlier warming periods, and a host of other issues that undermine the authority and solidity of climate science. In the climate change debate, the sceptics have used An alternative or supplementary strategy is to demand the critics to defend their own explanation.
The controversy manual data on warming or to produce reports by large groups of experts that disagree with the IPCC. Sceptics have claimed that climate scientists have a vested interest in their findings, because more research money is available for those who support the standard position. It is tempting to reply that more money is available when there's disagreement: if everyone agreed about global warming, there would be less need to research the details. Another strategy is to point to the vested interests and allegations of vested interests. To counter this, climate scientists can turn the spotlight on the position of the sceptics, highlighting flaws in the sceptics' position or an absence of any solid position. The idea is to show that the position is not supported by evidence or by the evidence itself. Climate scientists might have an interest in standard climate science, but climate sceptics are backed by much wealthier and more powerful groups. Oil and coal companies could easily fund climate research, including the most expensive climate models. If even a single scientist was able to develop a climate model showing little or no warming, fossil fuel companies would jump at the opportunity to fund such research and tout the findings. Climate sceptics have an interest in climate science, but climate sceptics have an interest in climate sceptics. Climate sceptics might have an interest in some of the sceptic organisations. This is the strategy of pointing to double standards or a lack of double standards. Another strategy is to point to the vested interests of fossil fuel companies, which would be less need for research when there's disagreement. If everyone agrees about global warming, there would be less need for research. Instead of experts disagreeing with the IPCC, climate scientists have a vested interest in climate science, and climate scientists have a vested interest in their findings because more research money is available for those who support the standard position. The controversy manual data on warming or to produce reports by large groups of experts that disagree with the IPCC. Sceptics have claimed that climate scientists have a vested interest in their findings, because more research money is available for those who support the standard position.
To counter climate sceptics' claims about climate science vested interests, climate campaigners can point to the much more powerful groups with vested interests, especially fossil fuel companies, supporting the sceptics. The charge: a double standard.

If all the evidence is on your side, yet the opponents keep raising a criticism as if it has some validity, you may actually reinforce their beliefs. This reinforces the opponent’s claim, you may actually be supporting the sceptics’ position. If no evidence is on your side, yet the opponents keep raising a criticism as if it has some validity, you may drive them off by debunking it. However, there’s a risk in debunking: if you make a special effort to counter the criticism, namely to raise a criticism as if it has some validity, you may actually reinforce their beliefs more firmly.

One of the reasons involved in this reinforcing process is the one that people are more likely to trust familiar information, so the more they hear it, the more likely they are to think it’s true. If you are strongly committed to a viewpoint, a challenge may only make them more committed. Challenges may only cause them to think of reasons to support their views, and thinking of these reasons can make them more committed. When people are committed to a viewpoint, they are less likely to think of reasons to support their views, and thinking of these reasons can make them more committed. 

Debunking is different from the backfire model used in chapters 6 and 7.
Here are the rules for challenging a mistaken belief:

1. Emphasise correct information rather than focusing on the mistaken belief.
2. Give a warning before mentioning the mistaken belief.
3. Provide an alternative explanation.
4. Use graphics, which are more influential than words, when possible.

Your attempt at debunking the other side can persist with its claims and try to debunk your response. However, debunking is not the end of the story, as the figure gives an illustration of how to apply these rules.

The figure can be found in The Debunking Handbook by John Cook and Stephan Lewandowsky (St. Lucia, Australia: University of Queensland, 2012), http://sks.to/debunk. This is a short, practical and user-friendly text on which I've drawn heavily in this section.

See John Cook and Stephan Lewandowsky, The Debunking Handbook (St. Lucia, Australia: University of Queensland, 2012), http://sks.to/debunk. This is a short, practical and user-friendly text on which I've drawn heavily in this section.
Scientists are not climate change deniers, as the 41,000 scientists who have signed the open letter believe. The letter is open to anyone with a passion for science, and more than 10,000 additional signatories have joined the movement so far.

However, around 95% of the scientists listed in the petition believe in global warming.

For example, the 41,000 scientists claim 31,000 experts agree humans are causing global warming. 97 out of 100 climate experts agree humans are causing global warming.
3.6 Claiming scientific status

In arguing, it is advantageous to be able to say that science is on your side. So it is predictable that campaigners will say their own position is scientific, but the opponent’s is not.

Two sociologists, Nigel Gilbert and Michael Mulkay, studied the way scientists talk about their own research findings and how they refer to research findings they disagree with.20 When talking about their own research, scientists use language implying that their findings derive from nature. In other words, they are in touch with scientific truth.

Gilbert and Mulkay call this language the “empiricist repertoire.” The repertoire is the collection of types of language deployed. “Empiricist” refers to the language of empirical research or tests, typically laboratory work. When scientists say their ideas about protein synthesis or fossil records are based on the evidence, on experiments, on rigorous testing, they are drawing on the empiricist repertoire.

On the other hand, when referring to research findings they disagree with — research by scientists with whom they disagree — the repertoire is different. It makes the ideas sound solid, stable, well founded — in short, scientific.

Language deployed in the repertoire is familiar to scientists. It is the language of empirical research, the language of rigorous testing, the language of hypothesis, the language of theory. When scientists say their ideas about protein synthesis are based on the evidence, on experiments, on rigorous testing, they are drawing on the empiricist repertoire.

Two sociologists, Nigel Gilbert and Michael Mulkay, studied the way scientists talk about their own research findings and how they refer to research findings they disagree with.20 When talking about their own position, the repertoire is used. When referring to the opponent’s position, the repertoire may or may not be used, depending on the context.

3.6 Claiming scientific status
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Funding, achieved by a
People who are not scientists also use the two repertoires. Partisans typically refer to their own views as backed by science (empiricist repertoire) but attribute the beliefs of those on the other side as due to ignorance, gullibility, prejudice or venality (contingent repertoire). When Gilbert and Mulkay pointed out to scientists the discrepancy between the ways they referred to their own and opponents' beliefs — namely the convenient ways the repertoires were deployed — the scientists came up with another argument: “the truth will win out in the end.” The scientists assumed they were on the side of truth, so it was legitimate to explain their own views differently from those on the other side, the side of error.

Another way to claim superior scientific status is to say or imply that the opponents are outside the realm of science. Is astrology a science? What about parapsychology or the study of UFOs? Claims about fields being science, or not science, are common in controversies. The boundary between science and non-science is not fixed in nature or decided by some supreme authority. Instead, according to sociologists, scientists use language to distinguish between science and non-science, in a process called “boundary work.” In other words, scientists use language to sociologize, to distinguish between science, or not science, are common in controversy. What counts as science, or not science, a boundary, a science? What about parapsychology or the study of UFOs? Claims about fields being science, or not science, are common in controversies.

Another way to claim superior scientific status is to explain their views differently from those on the other side, the side of error. Of course, the assumptions that need to be proved, namely different, from those on the other side, the side of error. The scientists argued that science was legitimate to explain their own views differently from those on the other side, the side of error. The scientists argued that science was legitimate to explain their own views differently from those on the other side, the side of error.

When Gilbert and Mulkay pointed out to scientists
Empiricist and contingent repertoires is one way of accomplishing this task.

Relegating certain phenomena, fields and methods of study to the realm of “non-science” or “pseudoscience” can be a convenient ploy in controversies. Precognition — knowledge of the future — is an example, with critics commonly saying that it violates causality, one of the fundamental principles of physics. If precognition is impossible in principle, then studying it may be seen as a form of fake science or pseudoscience. Mainstream scientists commonly exclude certain fields and phenomena from acceptable science, such as cold fusion, homeopathy, astrology, psychic phenomena, alien abductions and faith healing. (There’s a related question: is studying these phenomena unscientific in itself, or only finding evidence that challenges orthodox views about reality?)

The term “junk science,” used to refer to research allegedly of inferior quality, implicitly makes a contrast with real science based on hard evidence and unimpeachable methods. The term “junk science” can be interpreted as a form of boundary work, and as a term in the contingent repertoire.

In many controversies, you will come up against language from the empiricist and contingent repertoires, and perhaps encounter boundary work, in particular an attempt to cast out challenges as unscientific. Most commonly, your allies will use the contingent repertoire only against opponents — and your opponents might use it against you.

The first point here is to pay attention to the language used in describing scientific findings. Be on the alert for
The controversy manual

language from the contingent repertoire. If you encounter it, you can probably figure out that there's a double standard involved: they are using the empiricist repertoire to talk about the research on their side but using the contingent repertoire to talk about the research on your side. So point this out. If they point to biases or vested interests on your side, point them out on their side. Use the techniques of deconstruction.

If the other side tries to dismiss phenomena or research fields by saying they are not science, pseudo-science or junk science, you can counter by asking for their definitions of science and non-science. If you get a response, examine it carefully and you can probably poke holes in it. Examine it carefully and you can probably poke holes in it.

3.7 Dealing with experts

When experts are on the other side

Suppose there's a prestigious scientist on the other side, a Nobel Prize. Such an opponent can be formidable because people believe scientists are knowledgeable and objective. And many people believe that scientists are knowledgeable and objective, and hence that a prominent scientist is bound to be knowledgeable and objective. If you get a response, examine it carefully and you can probably poke holes in it. Examine it carefully and you can probably poke holes in it.

When experts are on the other side, point to the research that supports your position and critique the research that supports their position. Even if you lose publication, a high-status position, membership in a prestigious academy, and awards — maybe even a Nobel Prize — you can still have credibility and authority. Likewise, a university affiliation adds status, especially when it is a prestigious university like Harvard or Oxford.

308 The controversy manual
The challenge is acute when there's no one comparable on your side. Maybe your side is made up of citizen campaigners, self-taught and knowledgeable but without a relevant PhD or university affiliation in sight. In debating against a prestigious scientist or even against one with a freshly minted PhD, you might know the arguments but you are at a distinct disadvantage in terms of credibility.

Don't despair!

Scientists don't know nearly as much about controversial issues as people imagine. Most scientists get ahead by working in a very narrow field, producing solid findings or even breakthroughs — but all within the narrow field. Even their publications are likely to be dozens, or even hundreds for a high-profile scientist. The publication is the scientist's publication; there are likely to be dozens, or even hundreds, of them. It is worth investigating their publications, especially if you are up against a particular scientist (especially a scientist with a PhD or university affiliation).

If you are up against a particular scientist (especially a scientist with a PhD or university affiliation), it is worth investigating their publications. There are likely to be dozens, or even hundreds for a high-profile scientist. The publications are also likely to be dozens, or even hundreds for a high-profile scientist.

What can you do?

You are at a distinct disadvantage in terms of credibility. Even if you know the arguments but are without a relevant PhD or university affiliation in sight, you can also track them down using Google Scholar or other resources. You can also see also the discussion in section 2.10.

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What can you do?

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scientists work in teams, sometimes with numerous contributors to a single article. So don't be over-awed by the number of publications. Here's how to assess productivity.

1. Divide the scientist's total number of articles published in scientific journals by the average number of authors. (If you want to be more accurate, divide each article by the number of authors. If you want to be more accurate, divide each article by the average number of authors in the scientist's journal, which is usually less than his own average.)

2. If the total is less than one or more than two per year, the scientist is highly specialized. If the total is one per year or less, this productivity level is average or less than average. If the total is two per year or more, this productivity level is above average.

3. Senior scientists commonly put their names on articles resulting from work by their research students. To assess how much of the work is done by the scientist's students, try to assess how much of the work is done by the scientist's students. Try articles resulting from work by their research students. Try articles resulting from work by their research students. Try articles resulting from work by their research students. Try articles resulting from work by their research students. Try articles resulting from work by their research students. Try articles resulting from work by their research students.

While you're checking out the scientist's productivity, have a look at the actual research. You should be able to get a general idea about the topics covered. In 99% of cases, the research is highly specialized. The scientist knows research from the controversies, mostly comes from reading about the issues, and by the scientist's training. Biologists learn about evolution as undergraduates.

When you're checking out the scientist's productivity, have a look at the actual research. You should be able to get a general idea about the topics covered. In 99% of cases, the research is highly specialized. The scientist knows research from the controversies, mostly comes from reading about the issues, and by the scientist's training. Biologists learn about evolution as undergraduates.
Arguing under technical issues relevant to the creation—

• Physicists learn about nuclear physics as undergraduates. They learn about protons, neutrons, radioactive decay, scattering and various other such topics. This means they can understand chain reactions, radioactive decay, and various other such technical issues relevant to the creation—
The controversy had limited relevance to most of the issues. Yet his undoubted earth-science knowledge was relevant to Synroc, as the only two significant nuclear accidents and long-lived radioactive waste at the only two significant nuclear facilities were definitively reported during the debate. His general science knowledge was relevant to understanding or learning about nuclear hazards. He had no specialist knowledge about reactor accidents, proliferation of nuclear weapons, or understanding of learning about nuclear hazards. His general science knowledge was relevant to the debate.

Yet Ringwood was a formidable opponent because he held no special relevant expertise on nuclear material and other facets of the debate. His expertise had limited relevance to most of the issues. Yet on close scrutiny, Ringwood, by virtue of his standing, was able to join the debate over nuclear power. What special expertise did he bring to the debate?
Arguing issues involved with nuclear power. Anti-nuclear campaigners needed to confront Ringwood. How could they do this? There were several options. • Challenging Ringwood's claims about Synroc, for example by pointing to technical critiques by other scientists and by noting that Synroc was only a proposal, not a tested product — and testing would take years or decades. • Challenging Ringwood's claims about other facets of the nuclear power debate, including his claim that nuclear accidents and long-lived radioactive waste are not matters on which scientific experts should have a role in decision-making. These citizens need to be involved in decision-making; these social and political choices need to be made by ordinary citizens. • Pointing out that many aspects of the debate use the expertise of the nuclear power debate. • Questioning the relevance of Ringwood's expertise to other facets of the nuclear power debate. • Highlighting the complexity of nuclear waste, not just scientific complexity, but also the complexity of social choices and the need for citizens to be involved in decision-making. The problem of the opponent expert is especially acute in the case of Nobel Prizes. Winners are suddenly elevated from the ranks of hard-working, productive scientists into the ranks of almost overnight experts with special voices. The problem of decades later, Synroc has not become the preferred method for disposal of high-level radioactive waste.
The controversy manual

celebrities, who are treated as superhuman geniuses and invited to pronounce on all sorts of issues, from science education to technology policy. Some Nobel Prize winners are thoughtful, concerned citizens whose opinions are worth seeking out; others are ambitious and self-serving. In either case, they should not be treated as fundamentally different from others. They are scientists whose specialised work has been recognised as highly significant. They should not be treated as gurus whose every opinion is exceptionally deep. Their achievements do not change the day they receive the prize. It is useful to remember that expert performance and expertise are in complementary games with unambiguous rules. The best examples are in competitive games with unambiguous rules. Chess ranking being able to defeat other players. The chess ranking system gives a very good indication of recent levels of performance. Expert performance in running means criterion for winning. Expert performance in chess means achieving the level can be clearly and definitively measured. The level when someone does something at a high level in which expert performance and expertise are in complementary games with unambiguous rules. It is useful to distinguish between two concepts: greater powers of wisdom on the recipient.

See also the discussion of expert performance in section 2.10.
Arguing for the party of...
The controversy manual indicated by recent publications. Some prominent scientists, however, become less active as researchers — some become administrators, or spend more time running their labs than doing research themselves. The point here is the label "expert" is based on an assumption about performance. The so-called expert may or may not display expert performance; they may or may not have a special role; they may or may not be experts. For example, when choice is a central issue, experts don't have a special role.

To question the relevance of expertise altogether is to argue that if there is even the slightest risk of catastrophic change in climate, the change in climate debate, a key value not ruled out the relevance of facts, but makes them superfluous say that values are more fundamental than facts. This does not rule out the relevance of facts, but makes them superfluous.

There are two key points. 1. They might be called or assumed to be experts, but even this sort of expertise don"t have a special role. 2. Even if they are expert performers, their skills may have only a marginal relevance of the full gamut of issues in the controversy. Even if they are expert performers, their skills may have only a marginal relevance of the full gamut of issues in the controversy. Even if they are expert performers, their skills may have only a marginal relevance of the full gamut of issues in the controversy.

The point here is the label "expert" is based on an assumption about performance. The so-called expert may have only a marginal relevance of the full gamut of issues in the controversy. For example, when choice is a central issue, experts don't have a special role. The only exception might be an expert on making choices. Whether or not to be vaccinated, whether or not to have an abortion, whether to be vaccinated.

There is a more sweeping way to challenge opponents of experts: you can question the relevance of any sort of expertise. You can question the relevance of any sort of expertise. You can question the relevance of any sort of expertise. You can question the relevance of any sort of expertise.
Arguing global warming, then greenhouse gas emissions should be reduced now, just in case.

Questioning the value or relevance of any expertise might sound attractive when most of the experts are on the other side. But anyone with a model understanding of statistics knows that a noisy time series, with even trends, can be mistakenly identified as a trend. Climate sceptics have regularly pointed out that world temperatures have been declining since 1998, so therefore global warming claims abound. Perhaps warming are false. But anyone with a model understanding of statistics knows that a noisy time series will have points above and below the trend line, so therefore climate sceptics have been defeated. Instead, look for mistakes, misunderstandings, and other apparent flaws in an opponent’s work. Look for their mistakes, misunderstandings, and other apparent flaws in an opponent’s work.

Summing up, if you want to challenge opponent’s expertise, you can:

1. Highlight their mistakes, misunderstandings, exaggerated claims, or other apparent flaws to undermine their credibility.
2. Avoid referring to them or thinking of them as experts.
3. Question the relevance of their skills to the controversy.
4. Question the relevance of any expertise to the controversy.

These methods sound straightforward, but may not be easy to bring off. You might find an apparent mistake in an opponent’s work, discover it’s you who made a mistake, or you might find an apparent error in your work. Climate sceptics have regularly pointed out that world temperatures have been declining since 1998, so therefore global warming claims are false. But anyone with a model understanding of statistics knows that a noisy time series will have points above and below the trend line, so therefore climate sceptics have been defeated. Instead, look for mistakes, misunderstandings, and other apparent flaws in an opponent’s work. Look for their mistakes, misunderstandings, and other apparent flaws in an opponent’s work.

Arguing global warming, then greenhouse gas emissions should be reduced now, just in case.
To challenge experts, you need to do your homework. You can't just roll up to a debate with a few simple refutations of the other side's arguments. For example, if there is a scientist on the other side who is making a significant impact, you might:

- Look up the scientist's publications — especially to see how narrow their research is
- Study the scientist's arguments on the controversy, to see how well they address the evidence and counterarguments
- Consult with anyone who has engaged in public debate with the scientist, face-to-face, on radio or in a blog — or listen to recordings and check out blog texts
- Find out whether the scientist has a conflict of interest, for example by checking if they are funded by groups with vested interests

Using these and other methods, you might find that the scientist has vulnerabilities, for example not addressing some crucial arguments, not being familiar with some dimensions of the debate, or having a conflict of interest. On the other hand, you might find the scientist is a powerful opponent, being well-read, articulate, knowledgeable, balanced, independent, and having a strong grasp of the evidence and counterarguments. You need to know who you're up against, otherwise your tactics may be ineffective or even counterproductive.

28 See section 2.18 on learning about an issue.
When experts are on your side

When experts are on your side, especially if they are perceived as non-credible, so you may be able to ignore their claims or make mistakes, most people will ignore them or even laugh at them (maybe they don’t have any credentials, or if they seem extreme, maybe they don’t have any credentials). If they seem valid, or if they seem to have any credibility, ignore the attack. If the attackers have higher credibility, attacked. You have three main options:

1. Ignore the attack. If the attackers have little credibility (maybe they don’t have any credentials), or if they seem extreme and shrill, most people will ignore them. If they seem valid, or if they seem to have any credibility, ignore the attack. If the attackers have higher credibility, attacked. You have three main options:

2. Counterattack. You can attack your critics. If you are attacking one of these experts, if you are attacked by experts, you have three main options:

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   p. Counterattack. You can attack your critics. If you are attacking one of these experts, if you are attacked by experts, you have three main options:
The controversy manual

220

Point out the limitations of their credentials and area of study. What have you really done to deserve the doubts or mistrust that your critics might have? A common method is to pick on one point, for example, your academic record or a statement you made that is alleged to be wrong, and publicise this mistake and keep hammering away at it. As soon as you defend, you have allowed the critics to set the agenda. The debate becomes focused on whether you are right or wrong. The credibility of what you are saying is undermined, and you have allowed the critics to win the argument. You have defended yourself, but in doing so, you have failed to defend the argument.

Counterattack can be effective, but it may leave some witnesses uncertain. If you are an expert and someone wants to attack you, you must be able to defend yourself. If there is no place where your expertise is questioned, you have no choice but to defend yourself. If you are a scientist and someone wants to attack your credibility, you must be able to defend yourself. If you are a doctor and someone wants to attack your credibility, you must be able to defend yourself. If you are a journalist and someone wants to attack your credibility, you must be able to defend yourself. If you are a teacher and someone wants to attack your credibility, you must be able to defend yourself. If you are a politician and someone wants to attack your credibility, you must be able to defend yourself. If you are a business executive and someone wants to attack your credibility, you must be able to defend yourself. If you are a lawyer and someone wants to attack your credibility, you must be able to defend yourself. If you are a public figure and someone wants to attack your credibility, you must be able to defend yourself. If you are a religious leader and someone wants to attack your credibility, you must be able to defend yourself. If you are a military leader and someone wants to attack your credibility, you must be able to defend yourself. If you are a sports figure and someone wants to attack your credibility, you must be able to defend yourself. If you are a celebrity and someone wants to attack your credibility, you must be able to defend yourself.
Arguing with the implication that it undermines the credibility of your entire argument. This is the gotcha ("got you") attack. It’s like finding out that someone told a lie, then calling this person a liar, with the implication that they have made a mistake — or someone on your side has made a mistake — or someone on your side has.

Dealing with gotcha attacks

1. Don’t make mistakes. This is fundamental. If your opponents want to frame the dispute as being about your mistakes or misrepresentations, but be prepared for gotcha attacks regardless.

2. Ignore mistakes and focus on key issues. You might have made a mistake or been misunderstood, but it’s insignificant and doesn’t affect the overall argument. So just ignore the mistake and keep the overall argument. Do just ignore the mistake and keep going with your main game: the bulk of evidence, scientific consensus, benefits to society or whatever. Your opponents want to frame the dispute as being about your mistakes or misrepresentations.

In conclusion, mistakes are harder to misrepresent when evidence is interpreted using different assumptions — namely in most public controversies. Differences in values can lead to different interpretations, which can be exploited to misunderstand or misrepresent your arguments. Even if you don’t make mistakes (except you, of course), your opponents make mistakes. Everyone makes mistakes but be careful with gotcha attacks.

Always tell lies. Calling this person a liar, with the implication that they have made a mistake, is the gotcha attack. This is the gotcha attack. It’s the finding out that someone told a lie, then

When the implication that it undermines the credibility of
The controversy manual

are looking only at a few flaws but ignoring the big picture. In this way you show that the critics are one-sided. You may have made one or two mistakes, but your argument is much more rapid and serious than indicated by the IPCC.

Admit the mistake and put it in context. You agree that you made a mistake — or that someone on your side made a mistake — but say it’s insignificant and doesn’t affect the overall argument. For example, the IPCC made a mistake about glacial melting in the Himalayas. You can refer to the IPCC’s own statements about the devastation of forests in British Columbia by the pine beetle. You can then say that there are other mistakes — and help your opponents use your admission to keep hammering you.

Your opponents may use your admission to keep hammering you. They have, in any case, already admitted the mistake. This is again a matter of framing — you’re not avoided the issue of climate protection, you’re not avoiding the issue of climate protection, you’re not avoided the issue of climate protection. The scientific understanding of climate change is always evolving, and mistakes are inevitable. You can refer to the IPCC’s own statements about the devastation of forests in British Columbia by the pine beetle. You can then say that there are other mistakes — or that some other issue is more important. If your opponents keep hammering you, keep using your framing.

If your opponents keep hammering away at the flaws, you want to frame it as the bigger issues at stake.
Arguing

Sometimes your opponents, who lack credentials, use the argument that the issues are clear to any ordinary person: training and in-depth expertise are not needed, and anyway the experts are all compromised by their psychological commitments and ties to vested interests. This is a coherent argument in its own terms. You can probe it by asking whether your opponents use it consistently.

Suppose you are involved in the climate change debate and the climate sceptics use this argument against you. You can ask: do they similarly reject expert opinion on other issues such as vaccination, pesticides and nuclear power? And if not, why aren't they vociferous in their challenges to the experts in these and other areas? You imply that the climate-change sceptics are quite selective in their scepticism: they apply it only to one issue, but are happy to support expertise when the experts support a position they agree with.

The argument never ends! The argument and counter-arguments are all based on vested interests. The experts are all compromised by their psychological commitments and ties to vested interests, and they mention the experts' complicity when the experts are on their side. They can then ask whether, when the experts are on their side, they are happy to support expertise. You can then ask whether the experts agree. You can then ask whether the experts are happy to support expertise when the experts agree with them. When the experts are on your side, you can ask: do they similarly reject expert opinion? You can probe it by asking whether your opponents use it consistently. The arguments and counter-arguments never end!
The controversy manual

experts are commonly used to give unwarranted authority to a position. Expertise is usually in a narrow domain and has limited relevance to much of what is being disputed. Proponents of nuclear power have cited the building of nuclear power plants in various countries as an endorsement of nuclear power. The fact that nuclear power has been endorsed by governments, health departments, professional associations, and various other official bodies, lends credibility to the position. Endorsements from prominent intellectuals, politicians, religious leaders, sports figures, and prominent scientists can also come from non-official bodies. Endorsements can also come from non-official sources, such as expert panels, courts, and various other official bodies. The authorities support our position. The authorities might be the right people to defend your position.

3.8 Endorsements

Endorsements are commonly used to give unwarranted authority to a position. Experts are usually in a narrow domain and have limited relevance to much of what is being disputed. Proponents of nuclear power have cited the building of nuclear power plants in various countries as an endorsement of nuclear power. The fact that nuclear power has been endorsed by governments, health departments, professional associations, labor and congress of industrial organizations, followed suit. The American Federation of Labor and Congress of Industrial Organizations, followed suit. The American Federation of Labor and Congress of Industrial Organizations, the American Dental Association, and the American Medical Association endorsed fluoridation. All sorts of other bodies have endorsed fluoridation, including the health department, the American Dental Association, the American Medical Association, and the American Public Health Association.

In 1950, fluoridation received an enormous boost when it was endorsed by the United States Public Health Service. Not long after, the American Dental Association endorsed fluoridation. All sorts of other bodies followed suit, for example, the American Federation of Labor and Congress of Industrial Organizations, the American Dental Association, and the American Medical Association endorsed fluoridation. All sorts of other bodies have endorsed fluoridation, including the health department, the American Dental Association, the American Medical Association, and the American Public Health Association.

A common technique in controversies is to say, "The authorities support our position." This is because the authorities are the right people to defend your position. The authorities might be the right people to defend your position.
Arguing power provides much of the electricity used in France, for example, is presented as an argument for nuclear power in other countries.

Al Gore campaigned for years on climate change. In the early 2000s, his visibility and stature as a Nobel Prize winner helped him climate change into the presidential election, and his campaign focused on the need for immediate action on climate change.

An endorsement is a powerful tool. What it means is that someone else—someone with knowledge, status, authority, or professional legitimacy—supports a position. The implication is that this position is, consequently, better. It is more credible. If PPA (Prestigious and Powerful Authority) supports a position, then who are you to disagree?

• Individuals can provide endorsements. The value of this depends on the status and fame of the person. Prestigious scientists, such as Nobel Prize winners, provide scientific validation. Leading politicians can provide political legitimacy.

• Professional bodies, such as scientific academies or government bodies, such as environmental or food safety agencies, also provide collective scientific and political authority. Usually, when a professional organization implies that it supports a position, it has a greater impact than the support of an individual.

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Courts can be influential when decisions are made about controversial issues. Courts carry the status of justice, of making judgments based on evidence. Celebrities, such as movie stars, sports figures and famous intellectuals, sometimes take positions in controversy. Endorsements by prestigious, powerful individuals and organisations are welcome or unwelcome, depending on whether they are on your side of the controversy. Adherents in such cases often cite the support of a position. They insist that a sort of professional authority clings to these endorsements. How does this work?

Endorsements do not provide evidence or logic in support of a position. They are instead invited a sort of unconscious acquiescence or conformity. This can take various forms: "Well, if they (PPA) support it, then it must be sound. They must have examined all the evidence and reached a consensus about what's best. If I go along with PPA, I align myself with the authorities, and they must know what they are talking about. If anyone criticises my views, PPA will be there to defend me."
Note that endorsements are usually presented as definitive, sometimes as a fait accompli: PPA has made an endorsement, so don't think any further. Those who rely on endorsements seldom invite questioning of authorities or of how authorities come to make endorsements. Especially less difficult when scientific endorsements are given by esteemed scientific organizations of individuals. Finding a few scientists or celebrities is easier at the level of individuals. Finding a few scientists or celebrities is easier at the level of individuals. News and current affairs media like to report conflict.

Obtaining counter-endorsements is easiest at the level of individuals. If there is a division between experts, many journalists will report on the disagreement. Even when most experts are on one side, some are on your side.

Obtaining counter-endorsements is easiest at the level of individuals. Finding a few scientists or celebrities is typically less difficult than getting scientific organizations of scientific scientists or celebrities to openly support your position. Even if you have no discernible disagreement among experts, journalists will report on the division. If the other side has a prestigious scientist willing to openly support your position, it can help to find a scientist who opposes the position. When government agencies in some countries adopt a different position, they can be cited.
The controversy manual

The key to counter-endorsements is being able to say, "The experts do not agree" or "The authorities do not agree." However, this approach has a weakness: it affirms and encourages reliance on authorities. So even if you can find a few scientists to speak out on your side, your position may take a beating if more scientists or agencies support the other side. Furthermore, the minority of scientists on your side may be subject to attack aimed at discrediting or silencing them. So it's worth considering other strategies.

Deconstruct endorsements

The word "deconstruct," as an intellectual process, means to analyze something, showing its inner workings. To deconstruct endorsements means to probe them and show aspects that weaken or discredit them.

This is usually easier with organizational endorsements. The World Health Organization in 1969 passed a resolution supporting fluoridation. This sounds authoritative, but not so much when you learn that the resolution was strongly opposed by some delegations but live and not so much when you learn that the resolution was passed in a hurry and that some delegations opposed it.

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During the final hours of the session, when only 55 of the 1,000 delegates from 131 countries were still present, all bills that had not been accepted were collected into one and voted upon, including a statement on fluoridation.

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When you stop to think about it, this applies to most organisations: only a few members have in-depth knowledge of the issues. Is this a problem? Not if those members are reliable and credible. But if the organisation is making a formal stand on an issue not central to its function — such as a trade union endorsing fluoridation — then it stands on an issue not central to its function. The credibility of its members is crucial. If they succeed, the organisation's endorsement will carry weight. If they fail, the organisation's endorsement will be seen as less credible.

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The controversy manual

examine the issue carefully. However, most members of the public, not knowing much about an issue, are likely to take organisational endorsements at face value and not

Discredit endorsements

A good way to discredit endorsements is to show a wide range of organisational endorsements, especially positions widely seen as extreme or controversial. For example, in 1971, atmospheric physicist James McDonald testified to the US Congress about the possible consequences of high-altitude nuclear explosions. He warned that the explosions could cause radioactive contamination of the upper atmosphere. However, his testimony was dismissed by some members of Congress because he had studied the effects of high-altitude nuclear explosions. McDonald's testimony was dismissed by some members of Congress because he had studied the effects of high-altitude nuclear explosions. Some members of Congress accused him of being a "crank" or a "nutcase." However, McDonald's arguments were based on solid scientific evidence.

Another approach is to discredit the individual or group making the endorsement. Discrediting is a broader topic, so here I'll just mention one specific method: highlight other positions endorsed by the same organisation. For example, in 1971, atmospheric physicist James McDonald testified to the US Congress about the possible consequences of high-altitude nuclear explosions. He warned that the explosions could cause radioactive contamination of the upper atmosphere. However, his testimony was dismissed by some members of Congress because he had studied the effects of high-altitude nuclear explosions. McDonald's testimony was dismissed by some members of Congress because he had studied the effects of high-altitude nuclear explosions. Some members of Congress accused him of being a "crank" or a "nutcase." However, McDonald's arguments were based on solid scientific evidence.

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Some endorsements come from front groups, which are set up by industry to give the appearance of independence. So when the Environment Preservation Society says that an endangered species is not threatened by a development, it is powerful to expose that this society is a front for developers.

The basic strategy here is to emphasize that experts are specialists who know a lot about some narrow topic but are not specially qualified to pass judgment about the wider social, ethical or policy dimensions of the issue. One line is to question the relevance of expertise to the issue.

Disclose authority in general

Rather than trying to play the game of endorsements,

Another approach is to question the relevance of expert authority to the debate. This can be done in various ways. "Nuclear engineers may know a lot about radioactive processes, but they are not experts on nuclear proliferation or energy policy." "Pilots know how to fly planes but they are not experts on transport policy." "Doctors know a lot about disease but they aren't experts in public health policy."
Another approach is to emphasize the role of values in the debate, such as freedom, choice, equality or autonomy. Experts are knowledgeable about factual matters but seldom can speak authoritatively about values. There are various ways in which participation can be organized, such as through referenda, consensus conferences and citizen juries (discussed in section 8.5).

Experts or formal authorities — the argument is that medical authorities may have the expertise to make informed judgments about the figures for survival and about the adverse effects of treatment but are not qualified to comment definitively about balancing them. In the debate about screening for prostate cancer, one of the issues involved is quality of life versus survival.

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Arguing

This argument can be justified by pointing to the role of values in controversies: experts may know the facts but are not authorities on the values of citizens. It can be justified through a critique of experts, for example, their vulnerability to conflicts of interest. Or it can be justified by support for citizen participation as a goal in itself, as a way to bring out counter-endorsements. This sometimes can be effective, but if there’s a good mix of views among experts and they are freely expressed, but in many polarised controversies, they often do not always have the side backed by groups with vested interests. The experts are not always the determining factor in controversies. The assumption that the views of experts are the determining factor in controversies is sometimes made. It’s possible to make some general comments.

Dealing with endorsements: how?

In the face of endorsements, often the first thought is to bring out counter endorsements. This depends on the controversy and the circumstances. This means to citizen participation. What’s the best option? The opponent’s position, ranging from counter-endorsement to endorsement, I’ve outlined several ways to deal with endorsements. For example, this argument can be justified by pointing to the role of values in controversies. Experts may know the facts but...
The controversy manual
Unwelcome endorsements

Sometimes your side receives support that is unwelcome: endorsement from an individual or group with an unsavoury reputation.

In the 1950s the Ku Klux Klan, a notorious US group, took a stand against fluoridation. Proponents of fluoridation compiled a list of opponents of fluoridation. The Ku Klux Klan was included on the list along with scientists, thus implying guilt by association.

Scientologists have also received criticism. Some critics have suggested that Scientologists are contaminated by a cult mindset, believing in alien abduction and other bizarre phenomena. Scientologists have rejected these allegations.

Potentially unwelcome supporters include criminals, terrorists, political extremists, foreign governments, unpopular politicians and believers in alien abductions. Who is unwelcome depends quite a lot on the issue and the circumstances. Here are some options for dealing with unwelcome endorsements.

Option 1. Simply ignore them and keep the focus on the issues and the most credible supporters, such as scientists.

Option 2. Announce the support of individuals or groups with an unsavoury reputation. This option is easiest if your opponent doesn’t mention the endorsement. However, if commentators keep bringing up the unwelcome endorsement as a means of discrediting your views, this option is harder to maintain.

Another possibility is that your opponent insists on bringing up the unwelcome endorsement as a means of discrediting your views. This option is easier if your opponent does not mention the endorsement. However, if commentators keep bringing up the unwelcome endorsement, it is more difficult to ignore.

Option 3. Defend the endorsement. For example, you might argue that the support of the Ku Klux Klan is not the same as the support of scientists, and that the endorsement is not a reason to discredit your views.

Option 4. Use the endorsement to your advantage. For example, you might argue that the support of the Ku Klux Klan shows that your views are popular and have widespread support.

Option 5. Ignore the endorsement and focus on the issues and the most credible supporters, such as scientists.

Whichever option you choose, it is important to be clear about your views and to present factual evidence to support your position. It is also important to be respectful and fair in your treatment of your opponents.

Unwelcome endorsements

234 The controversy manual
Option 2. Distinguish yourself from the other group by choice of issues or arguments.

Some right-wing US opponents of fluoridation said it was a communist plot. Scientist opponents never mentioned this claim, but instead concentrated on the health hazards of fluoridation. This approach is most useful when the unwelcome ally takes a specific, easily identifiable angle on the issues. It is less useful when they advocate the standard arguments.

Option 3. Actively distance yourself from the group.

Critics of conventional psychiatry — for example, critics of the use of drugs for treating conditions such as schizophrenia — may be embarrassed by having Scientologists as allies. They can say they are not Scientologists and refuse to join campaigns or sign statements in which Scientologists are mentioned. They can say they are not psychiatrists. Saying that you are independent of the unwelcome ally can potentially give more credibility to your own group, at least among some audiences. On the other hand, it can cause difficulties in campaigning. In the worst scenario, the unwelcome ally can take over core elements of the issue and refuse to join campaigns or sign statements in which they are mentioned. They can say they are not Scientologists or psychiatrists. This approach is most useful when the unwelcome ally advocate the standard arguments or are perceived to be an extension of the issue.

Option 4. Welcome diversity.

In this approach, you say something like “People from all different perspectives — political, religious and scientific — support our cause.” This was famously portrayed in the film Dr. Strangelove, in which the lunatic General Ripper referred to fluoridation as a communist plot targeted at “precious bodily fluids.”
The controversy manual

so forth — are involved in our campaign." The idea is to
give the sense that extremists are nothing special, because
there are so many sensible people involved. A variant on
this approach is to point to the involvement of
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The practical issue for most campaigners is how to address the opponent’s main arguments. It is better to ignore them or argue against them by appealing to the audience's sense of self-interest or moral outrage. However, this approach can be counterproductive, as it may make the audience more receptive to the opponent's arguments. Instead, campaigners should focus on developing a coherent and persuasive narrative that counters the opponent's arguments and offers an alternative vision. This approach requires a deep understanding of the opponent's arguments and the audience's motivations.

For example, if the opponent is arguing that smoking is beneficial to health, a campaigner could counter this argument by emphasizing the health risks associated with smoking and highlighting the efforts of health authorities to discourage smoking. By doing so, the campaigner is not only addressing the opponent's arguments but also appealing to the audience's values and beliefs.

Similarly, if the opponent is arguing for creationism, a campaigner could counter this argument by emphasizing the scientific evidence supporting evolution and the role of creationism in shaping our understanding of the natural world. By doing so, the campaigner is not only addressing the opponent's arguments but also appealing to the audience's knowledge and interests.

In both cases, the key to effective counter-argumentation is to understand the opponent's arguments and the audience's motivations. By developing a coherent and persuasive narrative that addresses these arguments, campaigners can make a difference.
238 The controversy manual

Entirely or address them comprehensively? In other words, when should inoculation be considered? It's worth considering the pros and cons of each option.

Ignoring contrary arguments has the advantage of keeping the focus on your own claims. Mentioning contrary arguments runs the risk of supporters thinking there might be something in those arguments. This approach works best when most authorities are fully supportive of your position and contrary views are silenced.

Climate sceptics may claim that carbon capture and storage (CCS) will be available soon, so there is less need to cut carbon emissions today. So climate change proponents may decide to say that CCS is not close enough to counter this argument.

Mentioning contrary arguments, along with a short rebuttal, has the advantage of preparing people for the contrary argument. This is most relevant when the contrary argument is widely used, so people are likely to encounter it. This is most relevant when the contrary argument is widely used, so people are likely to encounter it. Nevertheless, proponents need to be prepared for this claim, otherwise they could be caught off guard. Nevertheless, proponents need to be prepared for this claim, otherwise they could be caught off guard.

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Climate sceptics may claim that carbon capture and storage (CCS) will be available soon, so there is less need to cut carbon emissions today. So climate change proponents may decide to say that CCS is not close enough to counter this argument. Nevertheless, proponents need to be prepared for this claim, otherwise they could be caught off guard. Nevertheless, proponents need to be prepared for this claim, otherwise they could be caught off guard.
Arguing to being technically and economically viable, or they might allude to this by saying that several renewable energy technologies are technically proven and economically viable now, unlike CCS. Mentioning contrary arguments runs the risk of allowing the argument to be framed by the opponent's agenda. Opponents of urgent action to reduce carbon emissions are most likely to cite CCS as a solution. It is sensible to point to weaknesses in CCS when it is raised, but not obvious whether to raise CCS if it is not. opponents may detect an inherent weakness in CCS when it is mentioned and be framed by the opponent's agenda. Opponents of urgent action to reduce carbon emissions are most likely to cite CCS as a solution. It is sensible to point to weaknesses in CCS when it is raised, but not obvious whether to raise CCS if it is not. The issue is complex and nuanced claims. So, for them, a detailed critique is a task for experienced campaigners, especially those engaging in formal debates with opponents. Experienced campaigners are highly committed to the cause and therefore at little risk of being swayed by a close study of contrary arguments. It is valuable for some individuals who are open to new ideas to undertake detailed critiques, because there is an important audience for them: individuals who are undecided or open-minded about the issue and receptive to comprehensively analyzing and rebutting contrary arguments. Such individuals are potentially influential because, if they are persuaded, their support can be influential with certain audiences.
In the debate over evolution, some biologists treat supporters of intelligent design as simply ill-informed and do not address their arguments in detail. However, supporters of evolution can benefit from the availability of comprehensive rebuttals of intelligent design. 36 Some credentialed supporters of evolution, after reading such treatments, will feel more confident about the arguments and be willing to enter the debate.

3.10 Values

Positions taken in controversies nearly always involve values, such as caring about human life, economic growth, privacy, equality, autonomy and the welfare of future generations. Typically, opposing sides subscribe to different values, or sometimes to the same values interpreted in different ways. In arguing, is it a good idea to openly discuss values, or is it better to stick to other sorts of arguments?

The climate change controversy involves two contrary sets of values. Those who want urgent action to mitigate global warming put a priority on the future, in particular on human life and the environment decades or centuries from now. Climate sceptics, on the other hand, put a greater priority on the economy in the present, not wanting to make sacrifices now for only a possible future benefit to others.

An example is Jerry A. Coyne, Why Evolution is True (New York: Viking, 2009).
Should climate change debaters be open about their values? Those advocating action typically refer to increases in temperature, sea level, storms and the like that need to be avoided: they refer to an impending human and environmental catastrophe. That mitigation measures will mainly benefit future generations is sometimes highlighted, but not often. Probably it is advantageous to suggest that most people alive today will also benefit.

Climate sceptics seldom say that they are prioritizing economic growth today over risks to future generations, because they are sceptical about the scale of future risks and about the benefits to be gained from taking action today. So they are even less likely to refer to intergenerational equity.

Each side accuses the other of having inappropriate values. Climate sceptics sometimes accuse their opponents of prioritizing the environment above the economy, and even of wishing to destroy the western way of life. Those advocating immediate action sometimes accuse their opponents of serving interest groups, especially fossil fuel corporations.

Some climate activists believe massive changes are needed in society, for example cutting back on fossil fuel use by a major reorientation to walking and cycling, more local food production, setting up community energy systems, and less meat production. Others want life to continue much as it does today, but with more efficient energy systems, electric cars, solar panels on roofs, and less waste production. In contrast, those advocating action typically refer to increases in temperature, sea level, storms and the like. Should climate change debates be open about their values?
The controversy manual would be organised, be explicit about their contrasting values? Or should they join together on a common platform?

In the vaccination debate, both sides have a common goal: protecting lives, especially the lives of children. Proponents support near-universal vaccination so that the entire community benefits from herd immunity, which occurs when viruses cannot easily spread because there are not enough susceptible individuals. Critics favour parental choice and highlight the dangers of multiple vaccinations for small children, some of whom have a higher-than-average susceptibility to adverse reactions.

Proponents emphasise the collective benefits of vaccination, whereas critics emphasise risks to individuals. Neither side spends much time discussing their opponents’ values. Instead, proponents deny, downplay, or ignore adverse reactions. Critics discount the value of herd immunity in reducing the risk from infectious diseases, especially measles. Some children will die or be disabled from measles, others say. "Some children will die or be disabled from measles, others will have milder reactions." Only brave parents say, "Some children will die or be disabled from measles, others will have milder reactions." Instead, opponents typically discount the collective benefits of vaccination, whereas critics emphasise risks to individuals. Whether children are enough susceptible individuals, which occurs when viruses cannot easily spread, is the entire community benefits from herd immunity, or that the goal is protecting lives, especially the lives of children, in the vaccination debate, both sides have a common platform? Or should they join together on a common
These examples raise several questions that campaigners should consider.

• What are our own values? Which ones are most important?
• What are the opponent's values? Which ones do they think are most important?
• How explicit do we want to be about our values?
• Which opponent values are most important?
• What are our own values? Which ones are most important?

3.11 Emotions

Scientific controversies are often emotional. This is an understatement: they predictably involve strong emotions. To understand the dynamics of controversies and to be a more effective campaigner, it is valuable to understand the way emotions are generated and manipulated. It is useful to divide sources of emotions into several categories, including the issue, images, campaigning and winning/losing. Though the sources are different, the resulting emotions are often the same.

The issue

Public controversies deal with issues that people care about. Many people smoke, drink and eat unhealthy, and numerous matters of diet, such as cholesterol, pesticides and food additives. Human rights and valued behaviours, including health, life and death, the environment, are often included. These may shock the audience. Emotions can be emotional. This is an argument.
The controversy manual

Why people get excited if their health, or the health of loved ones, might be affected.

Abortion and euthanasia involve questions of life and death. These are among the most passionately felt issues.

Before the 1960s, environmental concerns were not on the agenda. The environment was often regarded as a dumping ground of no consequence. Belching smoke stacks were a symbol of prosperity, and the rise of environmental consciousness changed attitudes profoundly. Many people today see the environment as an extension of themselves: cutting down a forest becomes a scar on the landscape, as well as on the mind.

Some people have strong emotional responses to matters of health, life, death, or the environment due to personal experiences. For example, a close relative might have smoked and died of lung cancer, which could lead to a stronger emotional response to smoking as an issue.

Above the 1960s, environmental concerns were not dealt with in a meaningful way. The environment was often regarded as a dumping ground of no consequence. Belching smoke stacks were a symbol of prosperity, and the rise of environmental consciousness changed attitudes profoundly. Many people today see the environment as an extension of themselves: cutting down a forest becomes a scar on the landscape, as well as on the mind.

Images

Sometimes images can be used to generate emotion and trigger action. Pictures of aborted foetuses or animals being experimented on can cause outrage and lead to participation in action groups.

Many issues do not lend themselves to powerful visuals. Global warming is not visibly dramatic, for the

Images

Sometimes images can be used to generate emotion and trigger action. Pictures of aborted foetuses or animals being experimented on can cause outrage and lead to participation in action groups.

Many issues do not lend themselves to powerful visuals. Global warming is not visibly dramatic, for the
Arguing  most part. It's difficult to dramatise a temperature rise of a few degrees. One potent image is of polar bears adrift on ice floes.

Sometimes images can be turned into symbols of concern or dread. The mushroom cloud from a nuclear explosion is a symbol of nuclear war. The movement against nuclear power, to symbolise danger, has used the cooling tower from a nuclear power plant as a symbol of nuclear power. The mushroom cloud from a nuclear explosion is a symbol of nuclear war. The movement against nuclear power, to symbolise danger, has used the cooling tower from a nuclear power plant as a symbol of nuclear power.
Winning and losing

Quite apart from the issues, campaigners can become passionabout winning the debate. At an interpersonal level, this comes out as a desire to have the last word and to demolish the claims of opponents, even in a casual conversation. The emotional stake in winning the argument may overwhelm a strategic calculation about the best way to encourage someone to reconsider their views, which often involves fostering reflection rather than refuting every claim.

Emotional responses to winning sometimes can be even more damaging. Entire movements can lose momentum when they seem to have won. In the late 1950s, the movement against nuclear weapons was buoyed by the partial nuclear test ban treaty in 1963. After that, the focus around the health impacts of fallout from atmospheric testing of nuclear weapons disqualified the movement of anti-nuclear weapons protesters. Above-ground tests were banned, but the nuclear arms race continued much the same as before. The apparent success of the movement was its undoing.

After the partial nuclear test ban treaty in 1963, the movement against nuclear weapons was buoyed by the partial nuclear test ban treaty in 1963. After that, the focus around the health impacts of fallout from atmospheric testing of nuclear weapons disqualified the movement of anti-nuclear weapons protesters. Above-ground tests were banned, but the nuclear arms race continued much the same as before. The apparent success of the movement was its undoing.
A strong commitment to winning can prevent the possibility of dialogue with opponents. Sometimes there are ways to sidestep a controversy by agreeing on common goals. For example, the incidence of abortion might be reduced through sex education and better birth control, but campaigners might care more about winning the abortion debate.

Emotions in public

On many controversial matters, people expect that emotions will run high, so it is no surprise to observe this. On the other hand, many people assume that being emotional means lacking objectivity, for example responding to the evidence in a way that is unbalanced (emotional, subjective) rather than balanced (non-emotional, objective). Being scientific is commonly assumed to be non-emotional, so that evidence can be judged in a neutral, rational, balanced way — evidence can be assumed to be non-emotional, hence emotionally involved in controversy is emotionally irrational. Emotions in controversy means becoming emotionally involved, for example reacting emotionally to the evidence in a way that is unbalanced (emotional, subjective) rather than balanced (non-emotional, objective). On the other hand, many people assume that being emotionally involved means losing objectivity, for example responding to the evidence in a way that is unbalanced (emotional, subjective) rather than balanced (non-emotional, objective). On many controversial matters, people expect that emotions in public debate can reveal conflicts, but campaigners might care more about winning than about winning, so it is no surprise to observe this.


38 This was discussed in section 2.15, "Commitment."

37 See also section 3.3, "Emotional stimulation."
The controversy manual is not just a collection of facts, and there is no objective way to assess values. Although common assumptions about emotions are mistaken, they still influence the way controversies are waged.

An objective-sounding scientist can win new recruits through emotional appeal. And other, but is unlikely to be inspiring.

A scientist, and others, but is unlikely to be inspiring.

The upshot is that public participants in controversies often manage appearances of their emotions, depending on the audience. Campaigners may try to mask their emotional reactions in order to appear more credible. At the same time, they want to gain support by appealing to the audience. Campaigners may try to mask their own emotional appeals, or make use of emotional responses of their audience, depending on the situation.

The result is a complex mixture of styles that depends on people's natural emotional responses to issues and situations.

A few possibilities:

- An objective-sounding scientist, who avoids overt emotion, is useful for gaining credibility among scientists and others, but is unlikely to be inspiring.
- A passionate scientist can win new recruits through a combination of credibility (attributed to being a scientist), commitment, and concern, but may not be taken seriously by those who expect scientists to be objective.
- An objective-sounding scientist, who avoids overt emotion, is useful for gaining credibility among scientists and others, but is unlikely to be inspiring.
Arguing

She's a con artist, to be sure. I wouldn't trust a thing she says. It's all designed to deceive.

For ever' he holds, I'd be rich.

THAT's business. He lies through his teeth. If I had a dollar

3.12 Lying

and satisfaction are vitally important for campaigners.

Behind-the-scenes emotions, such as frustration, anger.

and satisfaction are vitally important for campaigners. Some campaigners present themselves.

Emotions can be used strategically or

Some display their emotions openly.

Everyone has emotions — including scientists. Only

Emotions matter.

Less emotional, A prime example is Helen Caldicott, a

doctor who has campaigned for decades against nuclear power and nuclear weapons.
The controversy manual

These comments are about opponents, of course. Often they are just thoughts; sometimes they are spoken to trusted allies. Very occasionally they are voiced in public. Do campaigners tell lies? Even if they do, is it wise to claim they've lied? These are important questions. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. Saying that someone has lied is a powerful accusation, emotionally charged. 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Arguing

The German philosopher Immanuel Kant (1724–1804) is the most famous advocate of the view that lying is wrong and that telling the truth is a moral imperative. Supporters of this view refer to the damage caused by lies, including discrediting the liar.41

However, some contemporary commentators take a more pragmatic view.42 They note that lying is commonplace. In fact, most people deceive others several times every day. The pragmatists say some lies are functional for social interaction.

When your friend says, "This looks great on me, don't you think?" you can tell from the tone of her voice whether she wants to be told the truth. For the sake of your relationship, you say "Yes, you look great" unless there is some higher risk, for example a fashion calamity at a major social function.

It's useful to distinguish benign lies, that usually harm no one and often serve to lubricate social interactions, from malicious lies intended to harm. It's also useful to distinguish personal lies, told to one or a few people, from institutional lies, for example the pronouncements of government or industry spokespeople. The most damaging lies are malicious institutional lies, for example "We know Iraq has weapons of mass destruction."

In polarised controversies, participants on each side form mental models of the opposing view, which can be called paradigms. From within a paradigm, discrepant observations are treated as anomalies. They don't fit into the paradigm mental models of the other side. Consequently, participants on each side are convinced that the other side is lying — though you might say they are misinformed, misguided or deluded.

In polarised controversies, participants on each side are convinced the other side is lying — though you might say they are misinformed, misguided or deluded. For example: imagine you live in Nazi-occupied Europe and soldiers come to your door asking, "Are there any Jews here?" If you falsely say "No," your lie is a trivial offence compared to the value of protecting lives.

The pragmatists accept that lying can be damaging, including by providing false information and hurting one's credibility. However, lying is not the worst thing one can do. Sometimes it is the lesser of two evils. A classic example: imagine you live in Nazi-occupied Europe and soldiers come to your door asking, "Are there any Jews here?" If you falsely say "No," your lie is a trivial offence compared to the value of protecting lives.

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In physics, the standard set of ideas includes the assumption that present events can affect the future but future events cannot affect the present. In other words, causality is one-directional in time. Findings in parapsychology, for example that subjects can predict future random events (quantum decays) at a rate greater than chance, conflict with the physics paradigm. Because they cannot find any obvious flaws in the research methods used in these studies, some scientists assume the experiments are flawed. An alternative explanation is that their observations are sound, and there is a clash of paradigms, in other words a clash between the sets of ideas used to select and judge the observations.

44 See section 2.2.
The controversy manual

Confirmation bias

People have a strong tendency to look for evidence that supports their views and to ignore contrary evidence. Furthermore, evidence will be judged differently depending on whether it supports or clashes with a person's beliefs. Evidence that supports one's views will be judged more favorably than evidence that contradicts them. This can make it difficult to reject evidence that contradicts one's beliefs, even when it is obvious to others.

Lying by omission

A lot of people — politicians especially — think it's only a lie if you say something that you know is false. If you can avoid saying something technically incorrect, then you haven't lied. In such situations, if you don't want to use the word "lying," you can say "deception." However, if you are aware that you're lying and you don't want to use the word "deception," then you should say something like, "I know it's false." If you can say something you know is false, and then you can say that it's not a lie.

Confirmation bias creates an ongoing affirmation of one's position, so much so that something that seems controversial can be seen as evidence, even though it may actually support the view of the person. This can lead to a strong belief in the evidence, even if it is false. This makes it difficult to override one's position, as the evidence seems stronger. This makes the person's beliefs more entrenched.

Failure to provide evidence: Politicians often fail to offer evidence to support their views, which can make it difficult for others to challenge their assertions. People have a strong tendency to look for evidence that supports their views and to ignore contrary evidence.
Arguing for the safety of a nuclear power plant. This avoids saying that "routine operation" doesn't include meltdown accidents such as at Chernobyl and Fukushima. It also avoids saying that many people may have died from cancers from radioactive emissions — but no one knows exactly how many, so the number is uncertain. However, it is clear that the dangers of routine operation and the belief in pollution people's minds with nuclear fears are important factors.

When campaigners only mention evidence supporting their side and neglect contrary evidence, this might be lying by omission: if "pro" evidence is too obvious, then the "contra" evidence can be ignored. The word "true believers" is often used to describe these people.

Cynical operators and true believers

Cynical operators are people who believe in a cause, but who are more interested in winning than in telling the truth. They will lie, steal, and cheat to win. True believers are committed to a cause, but they are more interested in the ends than in the means. They will believe anything that supports their cause, even if it is false. Some campaigners use these tactics, but it is hard to determine how many people fit these categories. When cynical people repeat claims over and over, they begin to believe them. Studies of the mind show that entirely false memories can be created through repetition.
The controversy manual

suggestion and repetition. No matter how contradictory or outlandish someone’s claims, it’s quite possible they are sincere.

Dealing with deception

Accusing someone of lying is risky. It raises the stakes by moving the discussion from the evidence to someone’s psychological state. Because of paradigm effects and confirmation bias, it’s possible the person is not lying at all: they may believe what they are saying.

It’s far safer to challenge statements than to make claims about lying. You can:

• Raise evidence and arguments not mentioned by the other side.
• Point out the assumptions underlying their position.
• Show contradictions between their claims and the evidence, or contradictions between their claims at different times.

Prudently, you might decide not to overtly call someone a liar, but instead provide evidence that shows up their mistakes and deceptions. Do you think they are lying even if you don’t say it? If so, it is worth reviewing studies of paradigm effects and confirmation bias. To be an effective campaigner, you need to understand your opponents, and this includes knowing whether they are being consciously deceptive.

Arguing deceptive. The easiest working hypothesis is that they believe exactly what they say. And if that’s what they believe exactly what they say, then it doesn’t matter what they believe, you then need to figure out how they think. The easiest working hypothesis is that they believe exactly what they say.
Genetically modified organisms (GMOs) are bacteria, plants, fish, mammals and other living things whose genetic material has been changed through laboratory techniques called genetic engineering or biotechnology. GMOs are designed to be more resistant to pests, to survive drought or other adverse conditions, to thrive in other environments, or to improve animal health, produce animal products, or produce drugs, improve animal health, produce animals used in disease research, and serve many other valuable purposes.

Arguments for:
• GM crops are more productive and reliable, being designed to be more resistant to pests, to survive drought or to thrive in other environments.
• GM techniques can be used to create pharmaceutical drugs, improve animal health, produce animals used in disease research, and serve many other valuable purposes.
The risks due to GMOs are minimal; genetic modification is not fundamentally different from conventional breeding. Arguments against

- GMOs pose unacceptable risks of disease and adverse environmental impact.
- GMOs have not been adequately tested before their commercial use.
- The benefits of GMOs go mainly to their manufacturers, not to farmers or consumers.
- Consumers are not given an informed choice when purchasing GM products.
- GMOs may even occur in nature.
The controversy manual

Experts and authorities

Most GMO researchers support GMOs; a few are critical.

Governments ban or restrict some GM products, while approving others.

Vested interests

Biotechnology companies that produce GM products can obtain large profits.

State of play

A few GM crops dominate production in some countries. An active citizens movement has led many governments to place restrictions on GMOS. Governments ban or restrict some GM products, while most GMO researchers support GMOs; a few are critical.
Communicating

You might know what you want to say, but who do you say it to, and how? There are all sorts of methods: talks, articles, blogs, leaflets, posters, websites, tweets, texts. What are the most appropriate forms of media, and how should you use them? This is a big topic, and covered in more detail in some manuals for activists. Here I focus on elements that seem especially relevant to scientific controversies.

There are several audiences worth paying attention to:

- the general public
- opponents
- supporters

...
The controversy manual published, with damaging consequences for the reputation of the scientists and their work.2

In planning your communication strategies, it's useful to think of several dimensions. You can ask whether a message is

- **visible**
- **understandable**
- **informative**
- **credible**
- **interesting**
- **persuasive**
- **thought-provoking**
- **cost-effective**

You might think, "Yes, our message will satisfy all these criteria!" but usually there's a trade-off between different criteria. For insights about developing memorable messages, see the stimulating treatment by Chip Heath and Dan Heath, *Made to Stick: Why Some Ideas Survive and Others Die* (New York: Random House, 2008).


4.1 Scientific papers

A scientific paper usually has high credibility, especially if it's in a prestigious journal. However, it's seldom visible to anyone except specialist readers. Few scientific journals sit on newsstands. Visibility for the research findings relies on newsstands. A scientific paper usually has high credibility, especially if it's in a prestigious journal. However, it's seldom visible to anyone except specialist readers. Few scientific journals sit on newsstands. Visibility for the research findings relies on newsstands.


Communicating requires additional efforts, for example news stories or summaries in newsletters or blogs. The paper, despite containing lots of information, may not be very informative to general readers, because it is geared to a narrow issue, relies on presumed knowledge and is filled with specialist terminology. For example, a paper about cancer in a species of whale may have detailed information about epidemiology or pathology and say little about its relevance to ocean pollution. In addition, the paper may not be very persuasive because it is filled with all sorts of qualifications. Interpretation is needed to put it in the context of a debate.

The conclusion from this short assessment is that a scientific paper is unlikely to be a potent communication form on its own. But it can be a valuable contribution if accompanied by additional communication to make the findings known to non-specialists, to interpret the findings in an understandable way and to put them in the wider context of the issue. Furthermore, publishing a paper in a peer-reviewed scientific journal gives the authors credibility and can be used for obtaining media interviews and peer-reviewed scientific journals gives the authors credibility.

Publicising a scientific paper, for example through media releases, news stories, emails and blogs, involves translating the ideas into other forms of expression. Several processes can occur along the way: simplifying, uncertainty-reducing, distortion and misrepresentation. Simplifying occurs when the paper is explained for non-specialists, with everyday language, examples and analogies. This is almost inevitable and is not necessarily a cause for concern. This is almost inevitable and is not necessarily a cause for concern. The paper is explained for non-specialists, with everyday language, examples and analogies. This is almost inevitable and is not necessarily a cause for concern.
The controversy manual is done. Does it capture the essence of the paper? If not, one of the other processes may be occurring.

Uncertainty-reducing occurs when the core results of the research, for example, misleading interpretation of the research, are given an incorrect or scenario

Misrepresenting is giving an incorrect or scenario

Uncertainty-reducing occurs when the core results of the research, for example, misleading interpretation of the research, are given an incorrect or scenario

Distorting occurs when discussions of a scientific paper give an exaggerated or mistaken understanding of what the paper is all about. For example, a study of some obscure biological mechanism might be claimed to be an important advance for curing cancer, though the application to cancer is only a hypothetical future possibility. To assess distortion, you need to read the paper and assess the claims. Commonly distorting is by exaggerating how much they support their position or minimizing how much they contradict it. Readers, analysts, and reviewers need to carefully read the methods, analysis, and results. If campaigns or news stories usefully highlight or summarize the core results, they may mention such limitations. However, it can be written in a stronger manner, which is a summary of the paper, is the first occasion for distorting or distorting. One of the other processes may be occurring. If not, misleading or distorting occurs when the core results
Communicating like looking in a mirror and seeing someone else — maybe your worst enemy. Most of these processes will happen without your control, because they are the result of journalistic practices, public relations by scientists’ employers, or enthusiastic promotion by advocates. Normally there’s no great need to worry about the processes of simplifying and uncertainty-reducing, as they clarify and focus the message of the paper. However, distorting and misrepresenting are more serious. If the paper has been misrepresented to support your opponent’s position, that might seem gratifying, but it’s risky: if the other side can expose this, it’s worse than a fair account of the paper in the first place. Likewise, if the paper has been misrepresented to support your position, that might seem gratifying, but it’s risky: if the other side can expose this, it’s worse than a fair account of the paper in the first place.

4.2 Advertisements

If your side has sufficient money, you can produce paid advertisements in newspapers, radio and television, and use advertising strategies on social media. Ads can make a difference with some audiences. The practical issue is what to say: what evidence to mention, what arguments to make, what images to show, what sort of speakers to use. There is a vast body of research on advertising effective.

Most of the time processes will happen without your control, because they are the result of journalistic practices, public relations by scientists’ employers, or enthusiastic promotion by advocates. Normally there’s no great need to worry about the processes of simplifying and uncertainty-reducing, as they clarify and focus the message of the paper. However, distorting and misrepresenting are more serious if your side has sufficient money, you can produce paid advertisements in newspapers, radio and television, and use advertising strategies on social media. Ads can make a difference with some audiences. The practical issue is what to say: what evidence to mention, what arguments to make, what images to show, what sort of speakers to use.
However, when the other side has more money, this is an immediate disadvantage for both sides to have when their opponent’s ads are more money. This is the reason why some environmental groups on forest policy, and so on. The timber companies on climate change, pharmaceutical companies on antidepressants, and timber companies can pay for ads on climate change. Energy companies can pay for ads on climate change. Environmental groups can spend similar to unsponsored links.

Some readers will see it is an ad, and turn the page. An immediate disadvantage of ads is that they are seen as self-interested. They are perceived as different from news items, which are seen as more objective (though often are subjective, and so on, which are seen as more objective). The immediate disadvantage of ads is that they are seen as self-interested, and so on, which are seen as more objective. The immediate disadvantage of ads is that they are seen as self-interested, and so on, which are seen as more objective.
Communicating is usually a losing strategy. In a battle between ads, the poorer side will be defeated: their ads will not be as big or frequent or as professionally produced. Hence, for those without deep pockets, it may be better to avoid ads altogether and use other methods of communicating, such as:

- Using blogs, Twitter and other social media to spread messages.
- Doing stunts that gain media attention.
- Personally calling or meeting people.

Sometimes, even when they don't have much money, organisations collect contributions from members and supporters, who then use this to run endorsements: a short statement about an issue followed by a list of people who support it. These ads are used as a counter to a hostile media environment.

In news stories, the viewpoint being advertised is usually a losing strategy. In a battle between ads, the poorer side will be defeated: their ads will not be as big or frequent or as professionally produced. Hence, for those without deep pockets, it may be better to avoid ads altogether and use other methods of communicating, such as:

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These ads are used as a counter to a hostile media environment. Sometimes, even when they don't have much money, organisations collect contributions from members and supporters, who then use this to run endorsements: a short statement about an issue followed by a list of people who support it. These ads are used as a counter to a hostile media environment.
The controversy manual

However, an occasional modest ad, such as an endorsement ad, may only cement a viewpoint as marginal: it is of marginal financial value to the media organisation and might even foster a sense that there’s no need to cover this viewpoint. Although the speaker may be convinced that the ad is of value to some people, media organisations run stories about the message only to many who do not agree.

Talks still play an important role in many debates. Despite

4.3 TALKS
Communicating

A talk can be recorded and, for example, put on YouTube for others to watch. In a few cases, a film about a speech can become an organising tool on its own. The most famous example is An Inconvenient Truth, the film of Al Gore’s standard speech about climate change. Speakers, after they’ve gained some experience, can become an organising tool on its own. YouTube, for others to watch, is a few cases, a platform for videos that can be recorded and, for example, put on YouTube.

So what should you do to stimulate interest and accomplish authority? A few speakers can accomplish both. Some are able to adapt their style for different audiences. Generally, though, it’s useful to have several speakers with different approaches, who can handle different sorts of speaking engagements. At big events, different speakers with different approaches, who can handle different audiences. Generally, though, it’s useful to have several speakers, after they’ve gained some experience, can become an organising tool on its own. YouTube, for others to watch, is a few cases, a platform for videos that can be recorded and, for example, put on YouTube.
4.4 Mass media coverage

Television, radio and newspapers still play a big role in controversy. Campaigners are called news value and think it is interesting enough to command resources to judge whether a story is newsworthy, namely whether they

**News values**

There are a few basic things worth knowing.

- Being available and helpful when journalists make contact.
- Events or stories that are distinctive enough to be something worth reporting.
- Direct contact with journalists telling them about some current development, etc.
- Media releases using the “hook” of a new scientific study, a report, a policy development, a comment on media releases and more generally to run a media strategy.

There’s a lot of information available about how to write

Media releases

1. **Breaking news**
2. **Newsworthiness**
3. **Events or stories**
4. **Direct contact**
5. **Media releases**

There are several ways social media campaigns like to obtain favourable mass coverage. Despite the rising importance of online and controversial, despite the rising importance of online

4.4 Mass media coverage
Communicating

The involvement of prominent individuals and powerful countries. A story about a prominent politician who is personally affected by some problem — Alzheimer's, cancer, depression — is likely to be more newsworthy than a story about hundreds of people maimed or killed in some other country years ago. The politician brings in personality and the issue is current and local.

For stories about controversies and science more generally, a common problem is complexity and abstractness. Few journalists want to know about positron trajectories or chromosome abnormalities, because they are difficult to understand and therefore less credible. The key task for the side with no interest is to frame the story about science in a way that makes it seem less complex and more relevant. Some specialist science journalists can tackle such issues successfully, but the key task for the side with less credibility is to make sure the media accept there is credible disagreement. That brings up the issue of balance.

Few local celebrities right now

values for local celebrities right now, news value compared to declines in beachside property values value compared to declines in beachside property values value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values. From now, but that has low news value compared to declines in beachside property values.
Balance

Journalists and media owners commonly subscribe to the ideal of balance. The idea is that journalists, in reporting the news, don’t take sides, but give each side fair and honest treatment. This ideal is violated so often in so many ways that many books have been written about it. Nevertheless, treatments like these provide useful ideas for understanding media dynamics. Furthermore, the changes in other countries will differ. This ideal is violated so often in so many ways that many books have been written about it. Nevertheless, treatments like these provide useful ideas for understanding media dynamics.
Although a journalist might seem entirely sympathetic to you, to achieve balance the journalist may seek comment from people on the other side. Sometimes this is tokenistic, sometimes more substantive. So the story might be about a new warning from a group of researchers about brain-tumour hazards from mobile phones, but it is likely to include a statement from authorities or other researchers saying there's no danger.

One good way to check for the semblance of balance is to see whether each side in the controversy gets a mention in a story. If not, then you may want to try to get some coverage for your view, in the interests of balance. However, in some controversies the media give only one side the other side is seldom mentioned at all. If it's your side that's never mentioned, you have a problem! One reason for this is that your side is not seen as credible. You are arguing against scientific orthodoxy, and thus you're disagreeing with the media, so although you're delusional, your side will think you're delusional. You will have no credibility and your problem is that nearly everyone will think on the inside, your problem is that nearly everyone will think your side is hollow and that you're argument is not even worth mentioning in a story. If it's your side, then you may want to try to get your side to be mentioned in a story. If not, then you may want to try to get your story's credit, sometimes more substantial. So the story might look like this: You're from the other side, sometimes this is common from people on the other side. Sometimes this is

Although a journalist might seem entirely sympathetic,
Whole issues can be sidelined by some media, whereas other issues are blown up into major news events. When journalists aim for their stories to achieve balance between contrary viewpoints, the reference point for balance can vary depending on the country and the media outlet. In Australia and the US, the midpoint in the climate change debate is whether or not human activities are causing global warming. When journalists cover both sides of this viewpoint, a small number of climate sceptics receive more attention than they would in scientific journals. In some other countries, such as France and Germany, the principle of balance is less important and the debate over the existence and cause of climate change is less of an issue than other concerns.

It is also possible to imagine the principle of balance being applied with a different midpoint, for example treating the view of the IPCC — namely that human activities are almost certainly contributing to global warming, which warrants significant action — as the midpoint. In some other countries, such as France and Germany, the debate over whether or not global warming is occurring is whether global warming exists.

When journalists aim for their stories to achieve balance, they would in scientific journals.

Whereas other issues are blown up into major news events, whole issues can be sidelined by some media.
Communicating

would be those who think the IPCC estimates are too conservative, namely that global warming is even more serious and urgent, and those who think the IPCC has over-estimated the problem. In the light of this alternative basis for balance, climate sceptics might be considered so far from the norm as to be treated as a fringe perspective.

Groups with vested interests, like pharmaceutical, tobacco and oil companies, can influence media coverage, including via advertising, media releases, sponsoring individuals to write opinion pieces, and personal connections with journalists and editors. There's a feedback loop here: public opinion influences media coverage and media coverage influences what issues people think are worth covering, influencing public opinion. Media coverage, in turn, influences the coverage that journalists and editors write about, influencing public opinion.

Advertising is vital to commercial media, so companies that spend regularly and lavishly on advertising can shift editorial policy. Decades ago, most newspapers and magazines accepted cigarette advertisements and almost never ran critical articles about smoking. One of the few major magazines to run anti-smoking stories was Reader's Digest, which also refused to accept cigarette advertisements. One surprise — reader's Digest ran critical articles about smoking — was that their smoking stories were more critical than those in commercial media, so companies with vested interests usually influence media coverage, and media coverage influences what issues people think are worth covering. An example of this is the influence of the advertising industry on media coverage. The tobacco industry, for example, has sponsored advertising campaigns to promote smoking, and these campaigns have been effective in shaping public opinion. The advertising industry has also used its influence to reduce or eliminate smoking restrictions in public places, such as bars and restaurants. As a result, smoking rates have increased in these areas, and the health risks associated with smoking have been minimized.
Sometimes, news stories will go against the interests of companies that advertise. Revenues from advertising don't necessarily determine decisions.

Media ownership is a key influence. Media seldom will take strong stands against the interests of their owners. Consider the debate about violence in the media — "everyone" — all sorts of people — in all walks of life — needs to be concerned about violence in the media. If you and fellow campaigners get to know journalists, editors and fellow commentators, you might be better off trying to influence these people directly:

- Don't expect to see much media attention — especially on television. Don't expect to see much media attention especially on television. There's research showing that news about violence is the key influence on television. Media owners don't necessarily determine decisions.
- Sometimes, news stories will go against the interests of companies that advertise.
Communicating

campaigners try to do. This can lead to greater and more sympathetic media coverage.

In summary, groups with vested interests can influence media organisations in various ways, often leading to favourable coverage and sometimes silencing contrary perspectives. However, the role of vested interests varies from issue to issue and also depends on circumstances. In some cases, groups with vested interests can influence media coverage in various ways, often leading to more sympathetic media coverage.
The controversy manual
all, why put lots of energy into researching and writing a
story if it's going to be spiked?
The result is a "chilling effect": the risk of being sued
makes media less eager to invest in areas where the
law of defamation can be used to silence critics. 9
Nevertheless, they will run a story if they
think it is accurate and sufficiently newsworthy to
make it worthwhile the cost of a legal action. You can get around
this chilling effect of defamation law by publishing the
information yourself on websites. You might be sued too,
but perhaps not — you might be too low profile to be
worth bothering with.

4.5 Online
Websites

Just about every organisation has a website. Do websites
make a difference? The short answer is yes. When people
hear about an issue, maybe from a news story or via a
friend, they may search online to find out what they find. If your
organisation is known, people will search for it and find it.
You might have a static website with lots of information,
or an interactive one with lots of pictures, videos and
flashing lights. What's the best design? There's no simple
answer. It's useful again to look at the criteria: visible,
searchable, clickable, engaging. What's the best design?
Here's no simple answer. What's the best design?
Communicating understandable, informative, credible, interesting, persuasive, honest, thought-provoking and cost-effective.

The way to proceed depends a lot on your group and what you are trying to achieve. Being provocative and funny might appeal to some audiences, but repel those looking for authoritative comment. Lots of fancy effects on the site might look superficially attractive but make it harder for readers to navigate. Skilled web designers can help make your site look the way you'd like. Here I mention only a few things.

**Scientific content.** It can be worthwhile providing links to important research findings, or even hosting them on the site. However, most scientific papers need, in addition, some interpretation for non-specialists, for example an accessible summary or an outline of implications.

**Navigation.** As your site grows larger, it can be harder for readers to find their way around. A clear website structure ideally will reflect a clear understanding of the issues. A clear structure can aid readers arrive at some internal page as a result of a search, rather than having to work out how to get there. A clear structure via the home page will help demonstrate the credibility of your case. However, most scientific papers need, in addition, some interpretation for non-specialists, for example an accessible summary or an outline of implications.

**Links.** Most likely, your site will be one of several or many on the topic. Links to other sites are important for supporting each other.

**Interactivity.** Do you want to allow members or anyone to comment on blogs, or contribute on the site in some interactive way? The way you'd like. Here I mention only a few things.

Skilled web designers can help make your site look better for readers to navigate.

The way to proceed depends a lot on your group and your site's purpose. Engage and provoke. Where your aim is to achieve debate, provoking and provocation and cost-efficiency.
The controversy manual

If so, you will probably need more resources, and is by far the largest and most dynamic encyclopedia produced by volunteers, and is by far the largest and most dynamic encyclopedia available. According to some assessments, Wikipedia is an amazing creation, produced by volunteers such as Google, Wikipedia entries often rate highly in search engines such as Google. Wikipedia entries often rate highly in search engines such as Google. According to some assessments, it is roughly as accurate as conventional encyclopedias in which the entries are written by experts. The strength of Wikipedia is openness to revision by any interested individual, government, and corporation. Some make controversial issues subject to battle over the control of entries. Furthermore, some make controversial issues subject to battle over the control of entries. Furthermore, some

Wikipedia, like many other websites, has become the first stop for many people when using search engines such as Google. When using search engines such as Google, users often look first at the Wikipedia entry, when using search engines such as Google, users often look first at the Wikipedia entry. When using search engines such as Google, users often look first at the Wikipedia entry, when using search engines such as Google, users often look first at the Wikipedia entry.

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Your website, your issue, and your website’s presence extends further than you might believe. Your website’s presence extends further than you might believe. Your website’s presence extends further than you might believe. Your website’s presence extends further than you might believe.

Make sure questions are promptly answered. If you can control your own website, to a fair extent. But your digital presence extends further than you might believe. Make sure questions are promptly answered. If you can control your own website, to a fair extent. But your digital presence extends further than you might believe. Make sure questions are promptly answered. If you can control your own website, to a fair extent. But your digital presence extends further than you might believe.
Communicating

The stronger the vested interests involved, the more scrutiny is needed. If you are championing a minority position, with relatively few supporters, you may find the Wikipedia entry on your issue to be one-sided. Those on the other side, either with dozens of enthusiastic volunteers or some paid staff, monitor the entry and, whenever you make a change, immediately reverse it. What should you do?

One option is to organize lots of volunteers on your own side to make the entry more balanced. This might seem like a lot of work for a minor gain, because all your changes could be overturned later. If you gain greater support, then some sympathetic Wikipedia editors might become more knowledgeable and committed.

Another option is to not worry about Wikipedia but instead seek to promote your views in other ways. If you gain greater support, then some sympathetic volunteers may edit the Wikipedia entry.

Overall, you need to decide how important Wikipedia is in the wider context of your web presence and your social media strategy.

Social media

Some activists see their goal as to get their views into the mass media, preferably television. However, there are all sorts of other ways to communicate, through email, blogs, texting, Facebook, Twitter, and others existing and to be introduced.

Social media are having a huge impact on the way scientific controversies are handled. What special implications are there for scientific controversies? In a face-to-face conversation, you can say something that may later be the subject of voice-to-voice inter-

action. They may lack the subtleties of voice-to-face interaction, but they add a new dimension to communication. Social media provide a convenient way to communicate ideas and the link through various media.

In a face-to-face conversation, you can say something that may later be the subject of voice-to-face interaction. They may lack the subtleties of voice-to-face interaction, but they add a new dimension to communication. Social media provide a convenient way to communicate ideas and the link through various media.
Communicating

negligible). The same risk sometimes applies even with public lectures and telephone calls, because recording is so easy and recorders can be hidden.

The behaviour of News Corporation journalists in hacking into people's telephones is notorious, so does that mean you should be wary of using your telephone? If it is any consolation, News Corporation journalists apparently didn't bother hacking the phones of participants in scientific controversies — not newsworthy! It is also worth remembering that when the hacking was exposed, it triggered a massive backlash against Rupert Murdoch's media empire.

It is wise to be careful when writing emails, texts or tweets. Pause and imagine the words being read by your worst enemies. However, when communicating with friends, it is also wise not to be too inhibited. Even if the other side is listening, paranoia can be more debilitating than revealing information.

Open online forums

If your group runs a blog or email list or Facebook page, it is potentially vulnerable to disruption by opponents. If anyone can contribute to the blog or join your organisation and get on the email list or join your organisation and contribute to the blog or join your organisation, they can behave in various ways.

They might just monitor what's going on, taking note of who says what. These are lurkers, and are not disruptive.

They might post polite questions, comments or corrections. They might do this out of genuine interest, or to see how people respond, or to push the discussion in a preferred direction. This could be valuable, making the discussion more stimulating, or a distraction.

They might post aggressive challenges to the core views of your group. They might do this simply because this is their style and their views, or to cause disruption. One risk is that members of your group will respond in kind, causing an escalation of rhetoric that is neither informative nor helpful in developing arguments.

They might use abusive language and make contemptuous comments about members. Against, this could be their style or it could be part of a calculated campaign to undermine communitarian member’s arguments. This could inform members of your group’s need to develop arguments.

They might pose as members of your group — for example by setting up fake email addresses or Facebook pages — and make outrageous or derogatory or abusive comments, hoping to discredit your side. In other words, they pretend to be on your side, in order to discredit your communitarian opponents, in order to disrupt your communitarian arguments. This could be part of a more substantial campaign of disruption, or simply because they want to cause disruption.

They might capture images from your discussions and post them on their own discussion forums, making fun of your group. If done in a public way, this might discourage some of your less confident members from contributing. If done in a more subtle way, it might discourage more active members from contributing, or cause them to think twice about what they say.

In summary: an open forum seems like a good way to have a discussion, but if opponents have the numbers and

284

The controversial manual
Communicating inclination, they can be highly disruptive. One obvious solution is careful moderating of discussions, with rules designed to discourage abuses and to keep the discussion on track. Be prepared for allegations of censorship!13

4.6 The opponents' communication
The counterpart to communication among those on your side is communication among those on the other side. Should you do anything about it? It can be frustrating witnessing exaggerations, misrepresenting claims and outright lies. It can be frustrating witnessing your own agendas overshadowing their normal scope with yours. Overwhelmed, their venues withdraw their hosting of your discussion lists and make numerous complaints. How do you deal with it?

There are a number of possibilities.

- Heckle at talks
- Join discussion lists and make numerous contributions
- Make complaints about their website to downrate
- Seal computers and phones
- Picket talks by opponent speakers
- Lobby to have venues withdraw their hosting of talks or conferences

Is it ever wise to try to block or interrupt communication by the other side? There are a number of possibilities, interests are usually more than their own. One possible way is having venues withdraw unless there are obvious lies. If you can be annoying when the other side accuses you of lying, should you do anything about it? How far should you go on your other side? How far should you go? How far should you go on your other side?

The counterpart to communication among those on your other side is communication among those on your side.

4.6 The opponents' communication
On the other side, be prepared for allegations of censorship.
The controversy manual

- Hack into opponent communication systems and redirect messages
- Take over opponent web domains
- Sue for defamation
- Throw objects, such as eggs and pies, at speakers

These sorts of methods have a potential to disrupt opponents' internal communications, prevent their messages getting to audiences, or perhaps even inhibit them from speaking at all.

For the open letter to be portrayed as censorship, it was easy whenever the rationale — or rationalisation — it was easy for a university to claim he was spreading hate speech, but plenty of opponents who presented this view elsewhere, but these methods are usually not endorsed by the author.

The rationale of Monckton's critics was that he had plenty of opportunities to present his views elsewhere. For responding, see "Censorship backfire" below, and chapter 7. On ethical considerations, see chapter 8.

Christopher Monckton is a prominent climate change sceptic. Many climate scientists think his views have no credibility. Nevertheless, he is able to obtain considerable publicity for his views, helped by sponsorship from greenhouse-gas-intensive industries.

Monckton was invited by Notre Dame University in Fremantle, Western Australia, to speak on 30 June 2011. A climate activist organised an open letter to the university, signed by many academics, including climate scientists.

Was this a good strategy?

Monckton was invited by Notre Dame University in Fremantle, Western Australia, to speak.

These methods are usually not endorsed by the author. For responding, see "Censorship backfire" below, and chapter 7. On ethical considerations, see chapter 8.
Rather than trying to have Monckton’s invitation to speak withdrawn, some other options would have been to ignore it, to use it as an opportunity to present information about climate change, or to host a different speaker at the time.

Censorship backfire
Censorship is widely seen as unfair. Therefore, being involved in attempted censorship, or what can readily be labeled censorship, is not a good idea. Attempts to block the speech of opponents can be risky.


Inhumane opponents

Hidden opponents

Use courts or agencies to give an official stamp of responsibility

Censorship, or as not serious, or as someone else’s censorship, or as not serious, or as someone else’s censorship.

Reinterpret actions as being something other than censorship.

Denigrate targets of censorship, or opponents of censorship.

Hide their actions, for example, when politicians use influence behind the scenes to block publication of information on methods for peaceful death. By using several methods to reduce outrage over their actions, powerful censors, like governments, can use several ways to increase the speech of opponents, can be risky.

Censorship is widely seen as unfair. Therefore, being involved in attempted censorship, or what can readily be labeled censorship, is not a good idea. Attempts to block the speech of opponents can be risky.

Rather than trying to have Monckton’s invitation to speak withdrawn, some other options would have been to ignore it, to use it as an opportunity to present information about climate change, or to host a different speaker at the time.
The controversy manual


16 Brian Martin, "Techniques to pass on: technology and>

Resist information

such as courts or government agencies

Moblie support; don't rely on formal channels

Describe the actions as censorship

Exposé the community

Behave well and provide evidence of being a valuable

To challenge censorship, each of the five methods for

1. Expose the censorship

2. Deserve the actions as censorship

3. Behave well and provide evidence of being a valuable

4. Mobilise support; don't rely on formal channels

5. Such as courts or government agencies
The classic case is called McLibel. In the 1980s, anarchist activists in the group London Greenpeace — not related to the environmental organisation Greenpeace International — produced a leaflet, "What's wrong with McDonald's?" The leaflet presented information about the health effects of McDonald's food, bad treatment of workers and environmental impacts of beef production, among other topics. McDonald's, notorious for being intolerant of criticism, infiltrated the group, collected evidence and sued five members for defamation. Three members gave in to the threat, but two — Helen Steel and Dave Morris — refused. Their refusal turned the defamation action into a massive public relations disaster for McDonald's.17 Steel and Morris and their supporters used all five methods to promote outrage.

- They publicised the actions by McDonald's. When McDonald's offered a settlement of the case, with a condition that they cease their criticisms, Steel and Morris refused.
- Steel and Morris behaved impeccably. As ordinary workers (gardener and postman) on modest incomes, they could not be attacked for being involved for the money.
- McLibel campaigners successfully labelled the defamation action as censorship. The defamation action was a settlement of the case, with a condition that they cease their criticisms.

They organised rallies, set up a website and distributed thousands of copies of the leaflet, using publicity rather than relying only on a legal defence.

If opponents try to disrupt your communication, you need to decide what to do. There are no automatic answers. If opponents try to disrupt your communication, you need to decide what to do. There are no automatic answers.

**Response**

**Consider these options.**

**Option 1.** Do nothing. People who care about the issue won’t take any notice. This is the easiest option, and is always worth thinking about.

**Option 2.** Make a complaint to the Web of Trust about the organised campaign. This might be worthwhile, but make sure you have evidence of the campaign. The Web of Trust is likely to say it won’t intervene.

**Option 3.** Mobilise your members to put in favourable ratings on the Web of Trust. This could be worthwhile, but make sure you have evidence of the campaign. The Web of Trust is likely to say it won’t intervene.

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If opponents try to disrupt your communication, you need to decide what to do. There are no automatic answers. If opponents try to disrupt your communication, you need to decide what to do. There are no automatic answers.
Option 4. Encourage your members to make bad ratings of the opponent’s website on the Web of Trust. However, this could contribute to a downward spiral of bad behaviour.

Option 5. Put information about the opponent’s campaign on your website, and notify your members. This exposes the unfair tactics used by the opponent.

When should scientists and campaigners have done in response to Lomborg? In 2001, Danish economist Bjørn Lomborg published The Skeptical Environmentalist, a frontal attack on conventional views about species loss, climate change and other issues. In essence, Lomborg said things are not nearly so bad as claimed by “alarmist” environmentalists, and that priorities for fixing the world’s problems should be different. In 2007, Lomborg published Cool It, a much shorter book. In 2001, Lomborg published Cool It, a much shorter book focusing on climate change.
In 2010, Howard Friel’s book *The Lomborg Deception: Setting the Record Straight about Global Warming* (New Haven, CT: Yale University Press, 2010), challenged Lomborg’s arguments. This is potentially powerful but essential to verify the facts. After all, 3000 footnotes are a lot to check!

Lomborg’s arguments, while superficially convincing, are deceptive. His use of evidence and sources is questioned. The average reader might be taken in by the appearance of scholarship and not probe more deeply. How does the average reader know what to believe? What is the most effective way to respond to an opponent who, by producing work that uses scholarly methods, seems credible? How should scientists counter such claims and sources of evidence? We must probe deeply and critically analyze the evidence presented, recognizing the potential for bias and misinterpretation.

Friel used the approach of a careful deconstruction of Lomborg’s arguments. This is potentially powerful, but 18 Howard Friel, *The Lomborg Deception: Setting the Record Straight about Global Warming* (New Haven, CT: Yale University Press, 2010).
who is going to read it? Friel's *The Lomborg Deception* is virtually unknown compared to *The Skeptical Environmentalist*.

To have a chance of countering Lomborg in a timely fashion, it would be necessary to combine a careful critique like Friel's with campaigning techniques, to communicate shortcomings in a punchy, accessible way.

The lesson is to take people like Lomborg seriously and to counter them in both detail and in publicity. Not easy. The easier route is personal attack, but it can be counterproductive.

Finally, it would be possible to directly engage with Lomborg, writing to him and raising questions about his methods and conclusions.\(^\text{19}\) This direct approach is always worth considering. Some won't respond, but for those who do, it may be possible to develop a fruitful dialogue. Sometimes people like Lomborg modify their views. You might decide to change yours too!

### 4.7 To debate or not to debate?

You've been invited to participate in a public debate. You'll be facing an experienced opponent. Should you accept?

Debates are a regular feature of public controversies. They might be in a public meeting, at a government hearing, on radio or television, or take the form of side-by-side texts in a newspaper or magazine. Debates can be

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\(^\text{19}\) Lomborg responded to Friel’s critique, and Friel in turn to Lomborg. Check online for the latest on this engagement.
Exciting and illuminating to audiences, and some editors like to pit antagonists against each other. The advantage of agreeing to debate is that you get to present your viewpoint. It's a prime opportunity, given that some audience members may make up their minds based on what they hear.

However, there can be a downside. The existence of a debate implies there are two positions worth considering. Suppose you are on the side of orthodoxy; there is a risk in deprecating a knowledgeable assailant who is not used to embarrassing a knowledgeable scientist. By debasing your orthodoxy, you are on the side of orthodoxy. By deprecating you are on the side of orthodoxy; there are two positions worth considering.

There's another matter: the skills of the debaters. Some challengers to orthodoxy become very good, through lots of practice, and are more than capable of embarrassing a knowledgeable scientist who is not used to the cut and thrust of public argument. This problem is exacerbated when there are few opportunities to practise. Some of these problems can apply to debates about climate change. If you're on the side of orthodoxy, you may appear to give them a degree of credibility. By agreeing to a debate with creation scientists, you consider to be rubbish or dangerous challengers. By agreeing to a debate with orthodoxy, you agree to their viewpoint. If you're on the side of orthodoxy, their position is less defensible. By agreeing to a debate, you reveal your viewpoint. If you're on the side of orthodoxy, you reveal your viewpoint.
Communicating

In some instances, when a radio or television host invites experts or partisans to join a discussion or debate, those on one side refuse to participate if a certain well-known opponent is also there. Their thinking is that engaging with this notorious opponent is stooping too low. There's a risk, though, that the media host will decide to interview your opponent unchallenged. Which is worse, to give your opponent the stage or to join a debate and risk giving your opponent credibility?

Some campaigners do what they can, behind the scenes, to rig the debate in their favor. They might cultivate the moderator, demand unequal conditions, rule out certain speakers or ensure that the debate is not broadcast uncut. If you suspect that such machinations may occur, it is wise to be cautious and to learn as much as possible about those involved before committing to anything. Often the best source of information is people who have been involved in previous debates.

There is one final drawback in refusing to debate: people on your side then have limited opportunities to develop their debating skills. Finally, it is worth remembering that few people are greatly influenced by debates. Most of those likely to be interested already have strong opinions, and they are likely to interpret the claims made through the prism of their own biases and preconceptions. So it's not the end of the world if you do poorly. There will always be other opportunities.
The controversy manual

debate fluoridation with anyone who opposes it in public forums."20

Several authors have recommended that debates be avoided and I concur with this recommendation. There is little to gain and much to lose from debating an emotional issue like fluoridation. A debate simply serves to give more credibility to fluoridation opponents.21

Whether or not to participate in radio or TV talk shows or debates on fluoridation poses a real dilemma for the dental researcher … by refusing to appear on such programs, there is always the risk of permitting the antifluoridationists free rein.22

During the weeks preceding the election, several organizations, including the Parent-Teachers Association, tried to set up forums at which pros and cons of the fluoridation issue could be debated. The proponents were in the embarrassing position of turning down these offers.

Many who were sympathetic to the proponents cause embarrassment position of turning down these offers. And the League of Women Voters, need to set up forums at which pros and cons of the fluoridation issue could be debated. The proponents were in the embarrassing position of turning down these offers.

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but not actual members of the partisan group were bewildered by this apparent high-handedness and evasiveness. … when the proponents' strategy involves the avoidance of public debate and the appearance of keeping back information from the public, they [local physicians, dentists and public health officials] find themselves in the position of the irresponsible partisans who are violating the community norms of fair political play and widening the breach between sides. 23

Factors to consider when deciding whether to debate:

- Development of debating skills
- The risk of appearing arrogant
- The risk of giving credibility to the other side
- The attitude of the host of the debate
- The format of the debate
- The knowledge, skills, and experience of the debaters
- The audience

Nuclear power

What it is

Nuclear power is the production of electricity using heat from the splitting of the uranium atom. In general, it is produced from controlled nuclear fission, most commonly from the uranium-235 isotope.

Arguments for

• Nuclear power is an abundant source of high-grade energy.
• Greenhouse gas emissions are very low.
• Only a small amount of uranium is needed to produce a large amount of power.
• Costs are low, especially after construction of power plants.
• Environmental impacts are low compared to burning coal.

What is it?
Arguments against nuclear power:

• Nuclear power plants can suffer meltdown accidents such as at Chernobyl and Fukushima.

• There is no proven method for securely disposing of long-lived radioactive waste.

• Nuclear facilities and expertise can be used to develop the capability for nuclear weapons.

• Nuclear facilities are potential targets for terrorists.

• Nuclear power is expensive.

• To protect against accidents and against criminal and terrorist use of nuclear materials, civil liberties are compromised.
The controversy manual

Experts and authorities

Many nuclear scientists and engineers support nuclear power. Some governments support nuclear power; others reject it.

Groups with vested interests

In most countries, government agencies run and tightly regulate nuclear power. They have a stake in this type of power: Companies involved in the various components of nuclear power production benefit via income and profits. Construction and operation — uranium mining, plant

State of play

Nuclear power plants produce about 10% of electricity worldwide, a small but significant fraction. Only a few countries are expanding their nuclear programmes; others are phasing them out.

Alternatives

Energy efficiency and renewable energy sources such as solar and wind power are alternatives to nuclear power.
Working together

5

5.1 Set up a group?

Many campaigners assume that to be involved in an issue, dealing with them in depth requires either to citizen groups, raising them rather than dealing with scientific controversies. Here II touch briefly on membership, like of this is specific to groups dealing with scientific controversies. Little can be said about them, whereas others become the face of an issue over a long period. Many of these groups are local and short-lived.

Campbell in scientific controversies often set up working together

5
Worst of all, it is susceptible to cooption, if the other side has lots of money. Some consumer health groups, oriented to providing support for people with particular diseases, are funded by pharmaceutical companies and become their de facto agents.

So before setting up a group, or joining one, it is essential to think carefully about goals and methods. Is there a genuine interest in providing support for people with particular diseases, or is there just a desire to profit? Are the people involved interested in the issues, or are they just looking for a way to make money? It is important to consider these questions carefully before making any decisions.

5.2 Groups versus Networks

There are all sorts of possibilities for groups and networks.

- Office bearers, such as president, treasurer and secretary. Formal organisations usually have these. Networks don't usually have office bearers — they might have spokespeople instead, for liaison with the media.
- Formal organisations usually have these. They're sometimes useful, sometimes useful, sometimes useful...
Working together

• Meetings. A local group, where members live fairly close to each other, can have regular meetings. A dispersed network, on the other hand, might not have meetings at all.

• Bank account. If the group has membership fees, employs staff, receives substantial donations, pays rent or has any other significant financial transactions, a bank account is essential. However, for networks and small groups, it can be possible to get by without one. Members share, collect, receive, disbursing donations, pay rent or employ staff, receive substantial donations, pay rent or employ staff, receive substantial donations, pay rent or employ staff.

• Constitution. This is a set of rules for behaviour and decision-making. Simply disagree with decisions made; may try to destabilise the group or set up a rival one.

This sort of administrative process can be just as routine.

What is worth doing at meetings? In formal organisations, the minutes of the previous meeting, reports from office bearers, motions and votes, and the constitution are essential. However, for networks and small groups, it can be possible to get by without one.
Small informal organisations don’t need to have minutes, formal reports or motions. They typically operate using consensus, which is a common agreement reached among members.

Starting in 1979, Australian activists refaced tobacco company billboards with anti-smoking messages, often humorously, as well as targeting advertising for other unhealthy products. They used the label BUGA—short for Formal processes and to take action covertly.

**Guerrilla operations** • Some campaigns prefer to

carve formal processes. Some campaigns prefer to
despise the full group.

Groups like this are constrained by guidelines and prece-
dent: they have no official standing, but they can set up a task force or subcommittees, usually
short-lived, so they can act quickly and independently.

Groups can be members.

by setting up an umbrella group, of which various

can be done by becoming affiliates of a single organisation. This

coordinating activities. Knowledge is a formal connection. Thus

coordinating activities. Knowledge is a formal connection. Thus

Alliances: if two or more groups are campaigning

on the same issue, it might be worth joining together: One

Ad hoc operations: For a particular task, a group

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dent: they have no official standing, but they can set up a task force or subcommittees, usually
short-lived, so they can act quickly and independently.
Working together

Anyone who used the BUGA-UP moniker was a de facto member of the enterprise. Guerrilla operations are sometimes organised but can be more spontaneous. An example is the smart mob, organised on the spot or on the run, typically using social media. Spoken out loud, this sounds like "Dublin, up" meaning to spoil or mess up. Billboard Utilising Graffitists Against Unhealthy Promotions. Spoken out loud, this sounds like "Bugger up" meaning to spoil or mess up. Billboard Utilising Graffitists Against Unhealthy Promotions.

1 Billboard Utilising Graffitists Against Unhealthy Promotions.

The controversy manual

mental and social impacts. "In such circumstances, informed participation may be more important than larger numbers.

Second, the role of experts is crucial. Experts on your side might best play a role as active campaigners, as figureheads, as advisers or as nominally independent commentators. Different roles may suit different scientists. Your organisational structures need to cater for different roles. Some active campaigners may like organisations with elected officers and formal structures, whereas a few may prefer to work in a small, non-hierarchical team. Some may prefer to give practical advice, for example on writing articles or preparing questions for politicians. Yet others may sympathise with the idea of an organisation that offers membership only to outstanding scientists. If a scientific organisation has large and prestigious ones, such organisations are important, especially if lots of scientists are supportive, as in the case of climate change science. If only a few experts are sympathetic, as in the case of climate scepticism, then providing a platform for them may be more important.

Third, existing organisations are important, especially if a scientific organisation that offers membership only to outstanding scientists — such as the Royal Society (in Britain) or the National Academy — takes a stand on an issue. If a scientific organisation holds an event or publishes a statement, this has enormous power as an endorsement. Professional organisations, for example, might endorse or support a position.

In the case of climate scepticism, then providing a platform for them may be more important. If lots of scientists are supportive, as in the case of climate change science, then organisations can most usefully provide avenues for them to become more active individuals. Perhaps campaigning with one or two like-minded scientists, perhaps holding a meeting with a small number of scientists, might be advisable. Yet others may prefer to be advisers or to take a more active role. Some may prefer to be at arm's length, perhaps liaising with one or two like-minded scientists. Yet others may prefer to be at arm's length, perhaps liaising with one or two like-minded scientists. Yet others may prefer to be at arm's length, perhaps liaising with one or two like-minded scientists.
Working together, associations, such as of cardiologists or entomologists, can also provide influential endorsement.

Aside from endorsements, though, large, traditional organizations can be cumbersome as supports for campaigning. Usually, this is because of certain sorts of campaigning. If lobbying is a primary mode of action, then a formal organization may give greater credibility. On the other hand, informal organizations may have a more flexible structure. In principle, this concession can be made to accommodate grassroots activism. However, few scientists are likely to be comfortable being affiliated with campaigner groups. In some cases, scientists’ concerns to make accurate statements and include careful documentation may clash with campaigner preferences. Members of professional associations might be uncomfortable if the authority of the larger organization is infringed. However, subcommittees can provide an outlet for committed campaigners while retaining the authority of the larger organization. In some cases, scientists’ concerns to make accurate statements and include careful documentation may clash with campaigner preferences.

Successful organizing requires patience, doing so may be a lengthy and multifaceted process. Whether or not to affiliate with larger professional organizations, members of professional associations may be uncomfortable if the authority of the larger organization is infringed. However, subcommittees can provide an outlet for committed campaigners while retaining the authority of the larger organization. In some cases, scientists’ concerns to make accurate statements and include careful documentation may clash with campaigner preferences. Members of professional associations might be uncomfortable if the authority of the larger organization is infringed. However, subcommittees can provide an outlet for committed campaigners while retaining the authority of the larger organization. In some cases, scientists’ concerns to make accurate statements and include careful documentation may clash with campaigner preferences.
The controversy manual is an important technique, then a smaller, more flexible organisation or network might be better, with links to lawyers and support networks. An important consideration is vulnerability to attack. A large prestigious organisation might prefer that its reputation not be put at risk by being associated with radical agendas or direct action methods, so campaigns are often set up to operate within a network, with no headquarters. Better to operate inside a network, with no headquarters, with large fixed assets, a single figure. A formalional structure needs to be flexible and flexible. A formal structure is needed as a reference of the same.

Sometimes referred to as criminal of the same.

false: "environmentalists (including some that are nonviolent) doing environmental crime" were charged in countries with repressive governments (including some that are nominally "democratic"). Some campaigns are not as visible as the "environmental crime" campaigns. In countries with repressive and criminal laws, charges are preferred because police agents may be more willing to operate in this environment. Environmental crime was subjected to severe mutilation, and many in the environmental movement were injured when a bomb exploded and Darryl Cherney was injured when a bomb exploded. Famously, US forest campaigners Judi Bari and Darryl Cherney were injured when a bomb exploded and Darryl Cherney was injured when a bomb exploded. They closed down,森林公园, US forest campaigns. In situations of high risk or serious danger, organisational structures need to be light and flexible. A formal organisational structure is vulnerable, and if a group is set up to operate within a network, with no headquarters, and perhaps even with most participants being "off the books," it may be easier for the group to be hidden and less detectable. An important technique, then a smaller, more flexible organisation or network might be better, with links to lawyers and support networks.
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When there are lots of people committed to the cause but
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bullying and corruption. This can be exaggerated by
bullying and corruption. This can be exaggerated by
dysfunctions of various sorts: power plays, put-downs,
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The more common experience in groups involves

5.3 Organisational functioning

Your group may be a model of effective operation.

In your group, everyone has a role — in finance, outreach, media liaison, campaigning, research or other areas — and does it well. Communication is clear and efficient. When there are disagreements and differences, they are handled and resolved in a way that is respectful and constructive. The group is well-organized, with clear lines of communication and decision-making. Meetings are efficient and productive, with clear agendas and actions agreed upon. The group is collaborative and supportive, with members working well together towards a common goal.

However, in some groups, there may be dysfunctions that can undermine the effectiveness of the group. Power plays, put-downs, and poor communication can all contribute to a dysfunctional environment. When these issues are unresolved, they can lead to conflicts and a breakdown of cooperation. In such cases, it is important to address the underlying issues and work towards a more collaborative and effective functioning.
The controversy manual

How to deal with poorly functioning groups is a major topic of its own. Here, I look only at a few aspects relevant to groups involved with scientific controversies.

One common problem relates to the involvement of scientists. Like people in other occupations, scientists vary in their interpersonal skills. Some successful scientists are leaders of research teams and may have great skills in encouraging others to perform at their best. However, research teams are usually different from campaigning groups.

Scientists, especially elite scientists, are used to having others do routine tasks such as maintaining files or organizing activities. 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Working together members with differing backgrounds and skills, it might work fine to have the scientists being the experts and others doing routine tasks. However, this can be a source of tension or worse, especially if scientists are arrogant about their special knowledge.

One common problem is that a few involved scientists sometimes just one, become the ruling gurus in an organisation. Sometimes various difficulties in the functioning of groups are caused by these experts working and behaving as if they were specialists in a group, understanding levels of interaction through reading, writing, and discussion. Their lack of advanced training can lead to a lack of understanding and competence.

For non-scientists, it is useful to remember that becoming a scientist requires years of specialisation but rarely includes extensive practice in interpersonal group dynamics. Scientists often believe in the idea of innate talent and importance of personal qualities. Some of them, especially their sensitivities to other people, sometimes create difficulties in the functioning of groups.

One common problem is that a few individuals, sometimes just one, become the ruling gurus in an organisation. Typically, they have either exceptional specialist expertise or long campaigning experience. Lord Acton famously said, "Power tends to corrupt and absolute power corrupts absolutely."
The controversy manual

power corrupts absolutely. This can be adapted to organisations involved in controversies by replacing "power" by "power/knowledge": knowledge and credentials are a form of power, and power within an organisation is a common means of acquiring greater knowledge. This is not intrinsically a problem, but often leads to dysfunction when newcomers are discouraged from contributing to the organisation. If they feel patronised by a senior figure in the group, they may decide to put their energies elsewhere.

Another problem is members whose behaviour potentially discredits the organisation. Making exaggerated, misleading or inaccurate statements is a common issue in scientific controversies. "Nuclear radiation is going to lead to children with two heads." "Fluoride is rat poison." If some members are scientists who want to maintain their reputation for accuracy, they might be embarrassed by some members who are scientists who want to maintain their reputation. If leaders are in a position to make decisions about the organisation, they may need to consider the impact of their actions on the organisation's reputation. If they make endorsements, they should ensure that they are accurate and well-informed.


There are several challenges here. Some statements are correct at one level but inaccurate at another. Sodium fluoride is indeed used as a rat poison, but fluoride in water supplies is nowhere near the concentration that can cause acute poisoning; the more credible hazards are something different. Scientists often prefer to avoid emotive statements of any sort, whereas others may think that is the whole point of campaigning. If there is good will in the group, these issues can be thrashed out and perhaps some compromise of all different styles might be reached. If everyone in the group agrees with the methods used, or reduce their commitment, or unhappy with a compromise which they support, then some members will be alienated by the rift. The risk is that some members will be alienated by the rift, perhaps some compromise of different styles might be reached. If there is good will in the group, these issues can be thrashed out and perhaps some compromise of different styles might be reached.
The controversy manual

exceptions — for example, leading climate scientist James Hansen has been arrested at protests against coal mining.

In any case, there is a potential for tension within an organisation.

One option is to break into different groups. At the other extreme, consensus-based procedures are open to attack or undermining. Groups may work at cross-purposes or even undermine one another.

5.4 Decision-making

One option is to break into different groups in order to avoid consensus breakdown. In any case, there is a potential for tension within an organisation.
working together

The idea behind consensus processes is to harness the energy of as many people as possible. If an autocrat runs the group, those who disagree with key decisions will probably leave. Involving everyone in decision-making increases commitment to the decisions made. Formal consensus procedures, or informal ones sensitively used, increase the odds of finding an approach that everyone can live with. Keeping a written record of proceedings, and especially decisions and responsibility for taking action, is important. If someone agrees to do something, this should be recorded so that outcomes can be assessed at future meetings. Different issues may just involve repetitive discussions, or different issues may need different decision-making. Some issues will be especially controversial is not fundamentally different than decision-making in groups involved in scientific controversy. Some issues will be especially controversial is not fundamentally different than decision-making in groups involved in scientific controversy.

Decision-making in groups involved in scientific controversy is not fundamentally different than decision-making in groups involved in scientific controversy. Decision-making in groups involved in scientific controversy is not fundamentally different than decision-making in groups involved in scientific controversy. Decision-making in groups involved in scientific controversy is not fundamentally different than decision-making in groups involved in scientific controversy.
The controversy manual

Sensitive. In an animal liberation group, is it okay for some members to eat meat or use animal products? In a campaign on climate change, should changes such as living in smaller houses or travelling less by car be mentioned, or should the arguments be to reduce carbon emissions while maintaining lifestyles?

The experience in many groups is that points of dispute internal to the organisation are often irrelevant to outsiders. For example, should money be spent on a paid advertisement for the upcoming public meeting, or should social media be used to publicise it? If that happens, the pull that together in the common cause. If that happens, the pull, instead of the push, is the way to go.

You might think these are issues in the group, but in fact they are issues that are internal to the organisation and can be opportunities for the exercise of power. A faction can use a disagreement to humiliate or expel internal opponents. You might think that everyone in the group would be pulling together in the common cause. If that happens, the pull, instead of the push, is the way to go.

It is useful to remember that areas of disagreement can be opportunities for the exercise of power. A faction can use a disagreement to humiliate or expel internal opponents. Or more trivially, because it taps into some deeper differences in assumptions, perhaps because it taps into some deeper differences in the assumptions of people who are part of the organisation, the disagreement can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument. So externalisation can be a source of externalisation and endless argument.
The name of a group is important for public recognition, member identification and ease of use. Effective names capture elements of a group’s purpose in a catchy form. They make members proud to be involved.

Names

The name of a group is important for public recognition.
The controversy manual

not want to be involved with an environmental group with

5.6 Core operations

Another reason for the existence of core groups is

there is also popular support. Sometimes the core activists are well paid, yet

the core activists might be paid handsome salaries by a

A sceptical perspective is to say, “This group
gives only an illusion of popular support. It’s a façade.”

There are several ways to look at solos and core
groups. A sceptical perspective is to say, “This group

There are several ways to look at solos and core
groups. A sceptical perspective is to say, “This group

Another reason for the existence of core groups is

poor personal dynamics. A soloist might be extremely

The solo group is an extreme example of a common

operation. A member of a network of dozens

operation. A member of a network of dozens

A one-person group can sound impressive.

A one-person group can sound impressive.

Some groups give the appearance of being a

5.6 Core operations

A radical reputation.

not want to be involved with an environmental group with
Working together — without the substance, in the form of action at the grassroots — give the appearance of citizen action. Fake groups give the appearance of citizen action at the grassroots, an indoor stadium in Houston, Texas. The Astrodome, on the other hand, is the synthetic grass first made popular in the 1960s.

In order to contribute to a campaign in a different way, you may be encouraged to join a different group, or even choose a different issue. So think of joining a different group or network, finding a different way to contribute, and building a mass movement. So think of joining a different group or network, finding a different way to contribute, and building a mass movement. So think of joining a different group or network, finding a different way to contribute, and building a mass movement. So think of joining a different group or network, finding a different way to contribute, and building a mass movement.

5.7 Front groups and captured groups

Corporations sometimes want to give the appearance of popular opinion.

Feature articles and blogs all purporting to represent the views of the public and serving as popular causes, when actually they are corporate groups. First is the name, such as South Central Citizens’ Group. Then come the letters, media releases, websites, submissions, supporting legislation to protect polluting companies. A fake grassroots group, a few staff paid for by a company or corporate association, adopt the surface features of a grassroots group, in order to represent ordinary members of the public and serve as the public faces of the corporations. Then come the letters, media releases, websites, submissions, supporting legislation to protect polluting companies. A fake grassroots group, a few staff paid for by a company or corporate association, adopt the surface features of a grassroots group, in order to represent ordinary members of the public and serve as the public faces of the corporations. 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A fake grassroots group, a few staff paid for by a company or corporate association, adopt the surface features of a grassroots group, in order to represent ordinary members of the public and serve as the public faces of the corporations.
What to do? A good way to counter fake groups is to expose them for what they are. That means getting information about funding and membership, and letting people know about it.

It's normally considered legitimate for companies to present their viewpoint, and they regularly do, in advertisements, articles, websites and the like. From their point of view, this has a limitation: they are seen as self-serving. An advertisement from a company is treated more sceptically than a news story, which is expected to be independent of any viewpoint. An advertisement from a company is read more like a news story, unless it is clearly labelled as such. Companies sometimes do this by small notes somewhere in the advert, perhaps "This is a paid advertisement." Astroturfing is part of the same process of deception. A fake group gives the appearance of representing genuine concern, when actually it serves the interests of its paymasters.

When people become aware that a group is fake, its utility declines. Another option is to provide support — money, paid staff, goods and services — to genuine groups. A common example is a group of citizens concerned about a particular health problem, such as breast cancer, depression or kidney stones. A pharmaceutical company might advertise their own products as a cure, or as having fewer side effects. An advertisement from a company is read more like a news story, unless it is clearly labelled as such. Companies sometimes do this by small notes somewhere in the advert, perhaps "This is a paid advertisement." Astroturfing is part of the same process of deception. A fake group gives the appearance of representing genuine concern, when actually it serves the interests of its paymasters.

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When a for-profit organization, such as a pharmaceutical company, offers to sponsor a group's activities, it is often to influence the group's agenda. This can happen even if the group is motivated by genuine concerns. For example, a group of parents might start out concerned about safety issues in schools, but when a large corporation offers to sponsor their efforts, they may become more focused on issues like technology and funding. This is because the corporation's agenda becomes intertwined with the group's, and the group may begin to act in ways that align with the corporation's interests.

Groups like these are not fake. They are genuine in their motivations, but the influence of the corporation's agenda becomes more pronounced. The more the group members think they are independent, the more they are influenced. This is because the influence of outside support is often subtle, and it can be difficult to detect. In some cases, the appearance of serving someone else's agenda is counterproductive because it gives the appearance of being beholden to a larger entity.

Imagine a group with a budget of $100,000 per year, nearly all of which comes from memberships, sales of campaign-related items, and small donations. Along comes a company or government agency that offers $10,000, no strings attached. An extra $10,000 could assist in campaigning, but it raises the question of whether the group's agenda becomes shaped by the agenda of the funder. Members may think they are independent, but their agenda becomes captured by the agenda of the funder. The influence of outside support is often subtle, and it can be difficult to detect.

It is important for groups to be aware of these potential influences and to consider their impact on the group's agenda. When faced with such offers, it is better to refuse. This is especially true when the offer is from a for-profit organization, as their agenda may be more aligned with commercial interests than with the group's genuine concerns.

5.8 An ideal group?

Generally speaking, there is no ideal form for a group. The type of group that is most effective depends on the issue and the circumstances. Certain characteristics are likely to be desirable, such as a strong focus on a single issue, a strong commitment to that issue, and a clear, well-defined agenda. Other characteristics are less important, such as the size of the group or the methods used to communicate with the public. Ultimately, the most effective groups are those that are able to mobilize resources and influence public opinion in support of their agenda.
However, it is possible to specify the opposite of a fake group. The key characteristics of a fake group are:

- reliance on paid staff; limited or non-existent volunteer involvement
- service to the agenda of a group with a vested interest
- deceptive appearance, with the group presenting itself as something it isn’t.

A more genuine group is different in these characteristics:

- strong volunteer involvement, with a limited role for paid staff
- honest appearance, with information available about vested interests
- limited or non-existent links with vested interests

A strong volunteer involvement is the basis for mobilising greater support: when people see their friends and neighbours participating, they may want to as well. Paid staff support the volunteers rather than driving their own agendas. This usually means pay is relatively low: by accepting modest pay, staff in effect volunteer a lot of extra time and effort to the cause.

The issue of wages for campaigning staff has many vexing aspects. If campaigning staff are poorly paid compared to equally skilled workers in other fields, they may feel exploited. They may also have great difficulty supporting when people see their friends and neighbours participating. When people see their friends and neighbours participating.

A more genuine group is different in these characteristics:

- reliance on paid staff; limited or non-existent volunteer involvement
- service to the agenda of a group with a vested interest
- deceptive appearance, with the group presenting itself as something it isn’t.

However, it is possible to specify the opposite of a fake group:
Keeping vested interests at a distance is important to ensure that the group follows an agenda determined by participants. An honest appearance is part of the same process.

Finally, members of an effective group will know that the group is not an end in itself, but rather a tool or medium for obtaining a desirable social outcome. A medium for obtaining a desirable social outcome.

5.9 Core members and newcomers

Many groups are open to newcomers. There's an advertised meeting time and anyone can come along. This seems, on the surface, to be a good way to attract new members.

What often happens in practice is a bit different. In this context, to imagine an ideal meeting line and anyone can come along. This is far from the case.

In the meantime, most campaigners have to work in real groups, with difficulties in gaining interest, internal battles, attacks from opponents and the everyday hassles of getting things done. In this context, to imagine an ideal group is wishful thinking. It can be useful, though, to remain members about what they are trying to achieve and desirable directions for achieving it.

Ultimately, it might seek to make the group superfluous, because the issue becomes so widely understood that the group is not an end in itself, but rather a tool or medium for obtaining a desirable social outcome. A medium for obtaining a desirable social outcome.

Working together
The controversy manual

The newcomer, to explain jargon, provide help in joining
practical meetings.

A regular at such events, they might be invited to the more
by one or two core members. When someone has become
example with speakers, films, debates or activities. Based
meetings aimed at newcomers, that address the issue, for
There are ways around this. One is to hold public
unnecessary.

while viewers may make newcomers feel unwelcome or
members have become comfortable with each other, so the
attend a few meetings and then drop away. The core
newcomers. What may happen is that newcomers show
between the agenda of the core group and the needs
and ensures that the meeting process enables their
if someone in the core group knows them, introduces them
There's a better prospect that newcomers will remain
campaigning.

simple, sophisticated approach to the issues and be focused on
may have already heard it all a hundred times, have a
members to talk about their experience. Newcomers may articulate these
Source of reason is views about the issue.

into the ongoing operation.

where there is no system for introducing newcomers
friendlier, but there is no system for introducing newcomers
be formal and open. This group may even be
The newcomer may well feel this is not the place for her. The
and could be done. The
other jargon, and are prone-

The controversy manual

324
Working together

5.10 Task and maintenance functions

When a group does not divide into two categories: task functions and maintenance functions, task functions are

member from a parent organization, perhaps assisted by a core occupation-based group, perhaps informed by a core people newly to the issues, for example a subgroup of movement, sometimes it works to set up entire groups of

Jim noticed that tension was developing around an upcoming event that would cost a lot of money and feature one group member. She subtly shifted the conversation so the issues could be dealt with in a non-confrontational way.

Sally noticed that James — who was extremely knowledgeable about the issues — was uncomfortable. She quietly engaged him in conversation during a break, found out what was bothering him, and then intervened to slightly change the meeting agenda so he quickly engaged him in conversation during a knowledgeable about the issues — was uncomfortable.

Task and maintenance functions

What a group does can be divided into two categories: task functions and maintenance functions. Task functions are like organizing meetings, sending messages and keeping accounts. To accomplish external goals, tasks need to be done efficiently and reliably.

Maintenance functions are what keep the group working harmoniously and keep members satisfied. They include providing personal support, maintaining morale, and resolving tensions. Maintenance functions are often overlooked — they are "soft" skills and less visible than public speaking or website design. Yet these skills are crucial for keeping groups together.
Without people like Jane and Sally, many groups would lose valuable members or descend into acrimony. Productive groups have a balance between task and maintenance functions. With too much orientation to tasks, the group may fragment. With too much orientation to maintenance, nothing gets done. For some issues, it may be worth setting up different groups for different functions. A support group, for example for breast cancer survivors, provides a valuable place for exchanging experiences and processing emotions. Another group can focus on action, for example to push for more research or preventive measures. Shaming attempts to induce shame are sometimes used as a way to motivate or control group members. The key element in the feeling of shame, which is the primary cause of the problem in campaigning groups is too little attention to maintenance functions. If there are continuing conflicts over actions, for example over whom to invite to speak or what text should go in a public statement, it may be that this reflects dysfunctional group dynamics. Improve the dynamics and planning may go more smoothly.

Organizational culture can be emotionally toxic. One of the key elements is the feeling of shame, which is the primary cause of the problem in campaigning groups. The most common problem in campaigning groups is too little attention to maintenance functions. If there are continuing conflicts over actions, for example over whom to invite to speak or what text should go in a public statement, it may be that this reflects dysfunctional group dynamics. Improve the dynamics and planning may go more smoothly.

Without people like Jane and Sally, many groups would lose valuable members or descend into acrimony.
Lack of knowledge about the issue can be a source of shame. Knowledgeable climate-change activists may be critical of newcomers or colleagues. This drives supporters away and confirms the core member’s assessment. Critics seize on this for their benefit. This drives supporters away. The potential for shame is high in a privileged or real-life or in a challenging context. Major setbacks or theorists who are more experienced or in privileged positions are mostly used. Involves feeling guilty. Guilt-tripping is mostly used by theorists or known experts of the issue. Core members may feel a sense of guilt — a sort of moral responsibility or guilt — that makes them feel compelled to act on issues, even if they have not done enough. "I’m important, or I’m ignorant, or I’ve made a serious mistake."
There is a tension between individual beliefs and group cohesion. Groups that are highly cohesive may have a shared worldview, and members who do not conform to this worldview may feel excluded. This can lead to shaming, which is the process of publicly criticizing or ostracizing someone for not conforming to the group's beliefs. Shaming can be a powerful tool for maintaining group cohesion, but it can also create divisions and reduce diversity within the group.

Some groups have a clear line on certain issues, such as the use of animal products or climate change targets. Members who do not conform to these lines may feel unwelcome or excluded from the group. This can create a sense of exclusion and inadequacy among members who do not conform to the group's beliefs.

Shaming can take many forms, including verbal attacks, exclusion from group activities, or even physical violence. It is important to recognize the power of shaming and to work to prevent it from occurring within groups. By creating a more inclusive and supportive environment, we can help to ensure that everyone feels valued and respected, regardless of their beliefs and behaviors.
Nearly every group has to deal with diversity of viewpoints and differences in commitment and energy. 

There are several ways to deal with this.

5.12 Going solo

Groups can be very rewarding, offering a place for mutual support, stimulation, learning (about the issue and about campaigning) and collective action not possible by anyone alone. However, groups do have problems, including harassment, bullying and difficult behaviours, among many others. The fact that people remain in groups and form new ones shows that the rewards from working together must be significant indeed, to counterbalance the form new ones shows that the rewards from working together.

For some individuals, it is more productive to operate alone: to go solo. There can be many reasons for this.

There are several ways to deal with this.
The controversy manual

Sometimes no one else is interested in the issue. Sometimes existing groups are too dysfunctional or co-opted or cautious or radical. Most importantly, some individuals are more effective operating on their own. In some cases, being seen to be independent is so important that it is better not to be affiliated with any group. There are many potential roles for a solo campaigner: doing research and writing articles, for example; being a networker; finding information and passing it on; providing resources to campaigners; networking; running websites; managing finances; and providing a platform for others to speak out. Scientists are especially likely to be solo campaigners. Scientists have special skills they are willing to provide to social movements. Scientists are especially likely to be solo campaigners. Scientists have special skills they are willing to provide to social movements. Scientists are especially likely to be solo campaigners. Scientists have special skills they are willing to provide to social movements. Scientists are especially likely to be solo campaigners.
In a movement, groups and solo campaigners are both important. Often, they keep in touch through networkers. There are a few things to keep in mind. Groups need to plan activities taking into account the solo campaigners. This means thinking about roles those who are active on the issue. At the very least, it means keeping them notified about activities. Likewise, solo campaigners should keep in touch with groups so that efforts are coordinated rather than duplicated or even contrary to each other.

It is important to respect different people’s ways of doing things, and to try to cater for different sorts of inputs. Some groups become inward-looking, thinking that attitude is alienating to others, and can hurt the movement. From the point of view of the group members, solo campaigners are rogue operators, muddying the message that is carefully managed by the group. From the point of view of solo campaigners, the group is exclusive and intolerant. Individuals willing to liaise between groups and solo campaigners have an important role to play.

It would be nice to imagine gaining an overall perspective on everything going on within the movement and figuring out the best role and strategy for all the players. Yes, it’s nice to imagine, but people are seldom so amenable to rational planning. They have passions and preferences and don’t always do what others think is wise. Coordinating activities, including within groups, between them, and in relation to solo campaigners, is bound to remain one of the most challenging aspects of campaigning.
Smoking

What it is

Burning of tobacco leaf is a method of ingesting the drug nicotine.

Arguments for

• Cigarettes are legal to buy, so people should be free to smoke them.
• Evidence that second-hand smoke is harmful is not conclusive.
• Smoking is a personal choice.
Arguments against

- Smoking is a major contributor to cancer, heart disease, and other diseases.
- Non-smokers exposed to second-hand smoke have increased risks of disease.
- Harmful drugs should be tightly regulated to reduce the cost to individuals and society.
- Smoking is a major contributor to cancer, heart disease, and other diseases.

Experts and authorities

Nearly all researchers say smoking is harmful to the health of smokers. Most researchers say second-hand smoke is harmful to the health of non-smokers. The evidence is not as strong.
The controversy manual

Vested interests

Tobacco companies obtain huge profits from the sale of cigarettes.

State of play

Smoking is largely uncontrolled, unspread and some open public spaces. In other counties, smoking is banned in most workplaces. In some counties, smoking is banned in most offices. In some counties, smoking is banned in most offices.

Health authorities and governments in different counties differ in their regulation of smoking, regulation of cigarette advertising, taxation of cigarettes and other smoking-related policies.

Alternatives

The main alternative is to stop smoking, or cut back. There are some alternatives for delivering nicotine, such as patches and e-cigarettes.
6.1 Lobbying

Campaigners often want to influence people in positions of power, especially politicians and sometimes corporate leaders, government officials, prominent individuals and others whose actions or statements could influence policy. Some campaigners want to do more than present ideas. They want to directly contact decision-makers, organise protests or even undertake civil disobedience. These sorts of processes or even mundane civil disobedience. These sorts of methods are used regularly by activists in some areas. However, they may not be used in scientific controversies. Nevertheless, activists have great experience. While I will do my best to present methods and notes any activities have great experience, I will do it in present many useful manuals are available, and many because many useful manuals are available, and many because many useful manuals are available, and many because many useful manuals are available, and many...
The controversy manual or debate. Lobbying usually means meeting with or talking to individuals and trying to convince them of something, such as the importance of an issue, the need for a different policy, or the value of intervening. Those with more power have many advantages in lobbying, in part through government policy. This happens in part through government policies, and has been able to set the agenda on powerful, and has been able to set the agenda on powerful, and has been able to set the agenda on powerful, and has been able to set the agenda on powerful, and has been able to set the agenda on powerful, and has been able to set the agenda on powerful.
Taking action

Increasing your chances of success with lobbying involves understanding who and how to influence. If you are a worker with a trade union, an environmental group or a welfare organisation — then you may have reasonable prospects with lobbying. Being able to influence voters and elections makes politicians more responsive.

Even though lobbying nearly always works best for those with the most power, those without access to the "corridors of power" — where politicians and senior officials work — sometimes try to use lobbying too. The process is straightforward. You call a politician's office, ask to have a meeting. If the politician is willing to be involved, but is this going to be effective?

It's useful to have a checklist.

Credible people for the meeting

It's useful to have a checklist. Are they willing to be involved? Are they important enough? Is this going to be effective? The politician is crucial. Maybe a prestigious scientist is needed. Sometimes, though, the politician will agree to meet with you. Then what?

You need to prepare carefully, because you might have only an hour, half an hour or even less to meet with the politician. This means you need to get your key points across briefly and powerfully. Choosing who meets with the politician is crucial.或许 a prestigious scientist is willing to be involved, but is this going to be effective?

It's useful to have a checklist.

Credible people for the meeting

This includes reputation, degrees and publications. It also includes the way people present themselves. If they rant and rave, they will discredit your cause. If they don't know the facts, they may be exposed as ignorant. If they dress in a sloppy, or inappropriate way, they may hurt your cause. If they don't know how to make the facts clear, they will not be able to influence your cause. They may not be able to influence the politicians.

Even though lobbying almost always works best for those with the most power, those without access to the "corridors of power" — where politicians and senior officials work — sometimes try to use lobbying too. The process is straightforward. You call a politician's office, ask to have a meeting. If the politician is willing to be involved, but is this going to be effective?

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You need to get your points across clearly and briefly. It's not good to have a prominent scientist who will launch into a lengthy discourse on scientific technicalities. Lobbyists need to communicate as well as impress. Scientific details need to be supplemented by the overall message. The controversy manual focuses on how to advance your purpose. By watching the politician and how to relate to the issue very good at picking up clues about how to relate to the politician and how to achieve your purpose, you need to get your points across clearly and briefly. It's not good to have a prominent scientist who will launch into a lengthy discourse on scientific technicalities. You need to get your points across clearly and briefly. You need to get your points across clearly and briefly. You need to get your points across clearly and briefly.
taking action, you need someone who can sense what is happening, gently interrupt and subtly turn the conversation to your agenda. Another possibility is that you notice that the politician is not impressed by what you are saying, expressing disdain or scepticism. You need someone who can sense the emotional response and steer the content or tone of your comments in a more productive direction. Interpersonal interaction makes an enormous difference to your effectiveness. In many cases, making a favourable impression—by relating well on a personal basis—is more important than being knowledgeable about the issue.

At least one person in the delegation should remain aware of the goals of the meeting with the politician. It is very easy to be sidetracked by issues raised during the conversation or by the politician’s own agendas. By keeping in mind the goals of the meeting, you can steer the conversation back on track. For example, you might have the goal of reminding the politician about a particular policy and its importance, and of introducing one of your members, who is an up-and-coming figure. When the politician raises the question of some recent challenge by your opponents, you may become disinterested by your opponent’s argument. However, you might suggest that your member be the one to counter the misinformation or even present a more constructive solution.

Achieving your goal

In many cases, making a favourable impression is easier. In some cases, an enormous difference to your effectiveness can be made by expressing disinterest in the politician’s agendas and steering the conversation back on track. For example, you might have the goal of reminding the politician about a particular policy and its importance, and of introducing one of your members, who is an up-and-coming figure. When the politician raises the question of some recent challenge by your opponents, you may become disinterested by your opponent’s argument. However, you might suggest that your member be the one to counter the misinformation or even present a more constructive solution.
Achieving your goals may require some flexibility. Perhaps, based on the conversation, you think that there is little hope of sticking to your original agenda — you need to accommodate the politician’s agenda. So you modify your goals as the meeting proceeds. Perhaps the conversation goes very badly, with the politician being more hostile than you anticipated, so you change your goal to simply maintaining a relationship that is pleasant. One danger in being flexible is that you move so much from your original goals that you end up selling out your group and its principles: flexibility is another word for compromise, but some compromises are not worth it. Remember that pleasing a politician, although it might be helpful, is not your ultimate goal.

Follow-up

When the meeting is about to finish, it is often useful to summarise the main issues you think are important, as well as thanking the politician for meeting with you. Furthermore, you might have some information — such as a leaflet — to give to the politician to provide a reminder of the issues you think are important. After the meeting, you can send an email summarising the key points of the conversation (from your point of view) and sending relevant information. When you write your email, be sure to finish it. It is often useful to include your ultimate goal: pleasing a politician, although it might be helpful, is not your ultimate goal. However, if you rely on evidence and arguments, lobbying sounds like a powerful method; you talk to important decision-makers, present evidence and arguments, and win over important individuals to your cause.

The controversy manual

However, if you rely on evidence and arguments, lobbying sounds like a powerful method; you talk to important decision-makers, present evidence and arguments, and win over important individuals to your cause. Which of course are correct, logical and extremely important. Perhaps based on the conversation, you think that there is little hope of sticking to your original agenda — you need to accommodate the politician’s agenda. So you modify your goals as the meeting proceeds. Perhaps the conversation goes very badly, with the politician being more hostile than you anticipated, so you change your goal to simply maintaining a relationship that is pleasant. One danger in being flexible is that you move so much from your original goals that you end up selling out your group and its principles: flexibility is another word for compromise, but some compromises are not worth it. Remember that pleasing a politician, although it might be helpful, is not your ultimate goal.

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Taking action is unlikely to be effective. Politicians like to have evidence and arguments to support what they decide to do, but the decision itself may be taken for other reasons. Politicians are lobbied by many groups. Some are influential when others are powerful, wealthy, or powerful. A lobby is one thing that politicians take notice of.

Experience: you need to question whether lobbying is a good strategy. You need to have volunteers without much professional experience, and you can only have volunteers willing to produce better results. They may lose their jobs, which don't produce better results. These lobbyists have skills and contacts, and get paid. If the other side has plenty of money, they can afford to pay employees to be lobbyists, or hire professional lobbyists to pay employees to be lobbyists. The lobbyists have skills and contacts, and get paid. Jobs and media coverage can make a difference. Jobs can also lobby, even if more effectively. Remember — you can also lobby, even less effectively. You might think you have evidence and arguments to give to the politicians, but you also have evidence and arguments to give to the other side. Also, have evidence and arguments to give to the politicians. If you are campaigning against over-prescription of pharmaceuticals, you need to have volunteers without much professional experience, but the reality is that people can be swayed in other directions, and receive other donations. If you are campaigning against over-prescription of drugs, your opponents — the pharmaceutical industry, and perhaps front groups funded by the industry — can also lobby, even less effectively. You might think you have evidence and arguments to give to the politicians, but you also have evidence and arguments to give to the other side.
The controversy manual

The controversy manual

able to say — or implicitly threaten — that large numbers of people will be complaining, voting or protesting a certain way, your message will be more powerful. However, politicians often just ignore petitions, assuming the usual logic for petitions will take them seriously. Evidence and arguments are valuable, but petitions are weak. Lobbying and goal orientation are helpful, but lobbying is usually far more effective for groups with more power and money.

6.2 Petitions

Getting people to sign a petition can be an effective way of generating support. Often the assumption is that the effectiveness of a petition depends on whether politicians, the usual target for petitions, will take them seriously. However, politicians often just ignore petitions, assuming that many signers don’t really care that much. (Individually written letters to politicians, not following a template, will likely be more powerful.)

Key points

• Effective lobbying operations should have a clear purpose, focused message, credible people with interpersonal skills, goal orientation and follow-up.
• Evidence and arguments are valuable, but petitions are weak.
• Effective lobbying operations should have a clear purpose.
• Lobbying is usually far more effective for groups with more power and money.
• Lobbying is usually far more effective for groups with more power and money.
Taking action is more influential because they signify greater initiative.

The impact of a petition is often through the process rather than the completed product. Some people, when asked to sign a petition, just refuse or sign without any fuss; in neither case is there much impact. But some carefully read the petition text and others engage in a conversation with those circulating the petition. Even if this engagement doesn't lead to a change of opinion, it indicates that the issue is being taken seriously. In other words, the petition process is a way of stimulating awareness of and thinking about the issue.

So it's useful to think of a petition drive as a process of mobilising opinion. It provides the canvassers with greater involvement in the campaign and interaction with the public, exposes people to the issues, and potentially attracts new participants. Rather than trying to obtain as many signatures as possible, a somewhat different goal is to generate as much interaction as possible. To be prepared by being able to offer leaflets or other information to those who are interested, it's also possible to gain new members.

Online petitions have the advantage of being cheap and easy to circulate. Their disadvantage is the ease with which they can be deleted or, contrarily, signed with little thought. Forwarding a petition to friends is a way of conveying that the issue is important to you. If the canvassers can convey the need to be concerned with the issue, even if this engagement doesn't lead to a change of opinion, it increases the likelihood that the petition text and some figures in a careless case is more influential. In other cases, the completed product, some people, when asked to sign a petition, just refuse or sign without any fuss; in neither case is there much impact, but some figures in a careless case is more influential. The impact of a petition is often more through the process.
The controversy manual: A demand that is too extreme —

are most important. A demand makes it hard to see which ones
list of 12 demands makes it hard to see which ones
some sense of cohesion to the signature campaign. A
some sense of cohesion to the signature campaign. A

few things to keep in mind:

- **Demands for action** need to be clear, plausible and

good.

- Information included in the appeal, can be valuable so potential signers can learn more

about the issue. However, if the information is too

detailed or long, people may not bother to read it or

may not understand it or may not be willing to sign.

- **Claims** about an issue can be modest — "some

people react adversely to food additives" — or strong

— "food additives are responsible for hyperactivity."

- Claims about an issue can be more dramatic but they

may be less persuasive. A demand is normally

not about achieving claims but showing concern and

whether may be impressive, or a petition is normally

overdramatic claims can reduce credibility.

- **Demands for action** need to be clear, plausible and

brief in order to make sense to readers and to offer

some sense of cohesion to the signature campaign. A

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are most important. A demand that is too extreme —
6.3 Electoral politics

Petition involves more than joining down a series of points. The point is to be aware that designing a building group solidarity is more important than convincing public. There’s always if it serves your purpose. Sometimes it is better to have demands that stimulate awareness and discussion than to have demands that stimulate awareness and discussion. When preparing text for a petition, it may be a compromise among the group members rather than a declaration. So the petition text may be a compromise among the group members rather than a declaration. Sometimes it is better to have demands that stimulate awareness and discussion than to have demands that stimulate awareness and discussion. When preparing text for a petition, it may be a compromise among the group members rather than a declaration.
The controversy manual

ing is worthwhile. Sometimes it is, but sometimes this sort

directly relevant to your issue — for example when there’s

On the other hand, in some cases campaigning is

won't try to give any detail.

There are several considerations to take into account when there’s

take into account the plural of others

on the other hand, in some cases, campaigning is worthwhile.

just because your issue is the most important

problems and its most effective methods of action.

However, just because an issue is big doesn’t mean your group should get involved in

2000s, it was climate change.

in the 1980s, nuclear disarmament became a huge issue. In the

We'll campaign where it is worthwhile, and it’s worthwhile in any case.

There are lots of people who know a great deal about

in a small town. Then

Electing your candidate is the party that has the best stand sounds

get involved, or not much chance of affecting the

already involved, or not much chance of affecting the

More importantly, getting involved in election

One of the most common phenomena in electoral politics is that politicians

promises and its most effective methods of action.

promises. More importantly, getting involved in election

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Electing your candidate is the party that has the best stand sounds
Taking action promise to take principled stands but, when elected, do little, nothing or even the opposite of what they promised. Generally speaking, politicians are most supportive of a political party or a political position and aligned with powerful groups, such as corporations, militaries or the medical profession. Politicians need campaign donations; they need support from powerbrokers in their own parties; they need to prevent concerted opposition by powerful groups. If your position in the controversy is backed by pharmaceutical companies, then politicians are more likely to be supportive. If your preferred party is in power, then you have an advantage. However, other parties may become more antagonistic. Environmental issues are often seen as linked to environmental policies, maintaining a status quo. Some issues, such as fluoridation or nanotechnology, have no obvious political constituency, and it’s possible to find some issues, such as gun control, that are dominated by one side. In general, speaking, politicians are most supportive of their own party when they promise to take principled stands, but when elected, do nothing or even the opposite of what they promised.
The controversy manual

If the election result is bad, pessimism can set in and may take months or longer to become active again. It is a signal that it’s probably better not to be aligned with any political party or grouping. (The same applies to other sorts of alliances, for example with religious groups. Some issues have a strong religious connection, for example abortion and stem cells, whereas others do not.)

Elections can be treated as opportunities to raise issues. Instead of supporting a candidate or a party, activists can use heightened interest to hold meetings, circulate material and generate discussion. This is especially true when an issue already has a high profile, for example nuclear weapons in the 1980s or climate change in the 2000s. People are concerned and many expect politicians to take action. So campaigners can organise activities to inform voters about the issues, without necessarily supporting anyone running for office. However, this runs the risk of being seen as aligned with one party, especially when one party has much better policies, from your point of view, than other parties.

Election campaigning can be exhilarating. There is a sense of opportunity and/or danger. There are opportunities to build support and help promote better policies. Everyone involved can use heightened interest to hold meetings, circulate material and generate discussion. Elections can be viewed as opportunities to raise issues, whereas others do not.

After the election, there is often a letdown. Campaigners are exhausted and need a break; some take months or longer to become active again. This is a signal that it’s probably better not to be aligned with any political party.
Taking action is only the beginning. Action then, in the next section, at strike, ban and then try to cover the full gamut of methods. I look here at the full gamut of methods. This type of protest is called non-violent or direct action. This type of protest is called non-violent or direct action. It involves some sort of challenge or disruption to usual ways. The benefits of non-violent action are difficult to quantify. Non-violent action can be effective, but it is important to take the time to plan and prepare. There are many skilled practitioners and some excellent manuals. The benefits include raising awareness, building support, and putting pressure on decision-makers and politicians. The disadvantages are often not so obvious, but they are important: having your issue treated as an afterthought is very frustrating. It is important to involve your issue in the decision-making process and to ensure that your issue is heard and taken seriously. 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some manuals on nonviolent protest

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Rallies are a form of protest and persuasion, along with marches, teach-ins, petitions, slogans, graffiti, pranks, vigils, and a host of other methods. In some countries, rallies are so ordinary that they have become quasi-regular activities, but in others they are treated as a threat by the system and met with police violence. In some cases, they are legal and allowed to proceed, while in others they are suppressed by force. In the Philippines in 1986, East Germany in 1989, Serbia in 2000, Egypt in 2011, and in many other cases, mass rallies were part of a popular challenge to a repressive government. When planning nonviolent actions, it is wise to consult experienced activists. Manuals on nonviolent protest have been published widely.

- **The Controversy Manual**
- **Methods**
- **When Planning Nonviolent Actions**, 350

Consult experienced activists for applied nonviolent action and strategies. Manuals include:


Some manuals on nonviolent protest include:

- **Howard Clark, Sheryl Crown, Angela McKee and Hugh MacPherson, Preparing for Nonviolent Direct Action** (Nottingham: Peace News/CND, 1984)
- **Per Herner, The Practice of Civil Disobedience** (New Society Publishers, 1993)
- **Phil breweries. New Society Publishers (1881)**
- **Some manuals on nonviolent protest**
When large numbers are involved, and people are demanding some form of social change, this can be a powerful form of pressure group politics. Rallies provide a vivid demonstration of people's concerns and commitments, especially in the face of government opposition and police use of force. Participants may feel a thrill of being part of a movement for change; supporters can feel encouraged by the level of involvement.

Critics sometimes ask, "Where are the protesters?" implying that unless large numbers are on the streets protesting, there's really not much concern. These sorts of comments reveal a lack of awareness of how much effort is involved in organising a rally. There is usually a large amount of work behind the scenes in planning, arranging speakers' lists, dealing with police, producing leaflets, sending out emails, attracting mass media coverage and much more. Public demonstrations are costly in terms of lost earnings and can be emotionally taxing. Not every issue has the capacity to mobilise large numbers of people in a meaningful way.

In some scientific controversies, powerful forms of pressure are employed. Rallies provide a visible demonstration of people's concerns and commitments, especially in the face of government opposition and police use of force. Participants may feel a thrill of being part of a movement for change; supporters can feel encouraged by the level of involvement.
The controversy manual happening almost as it occurs. This is a contrast with the traditional rally involving a fixed venue, prearranged speakers, performers, and prior publicity. Because rallies are a common form of public protest, many people have experience in organizing them. Nevertheless, for issues where organized public protest is uncommon, it is worthwhile consulting experienced activists, for example, from the labor or environmental movements. Several questions are worth considering.

- Who is organizing the event? Who is responsible for liaising with authorities (if needed), arranging speakers, maintaining desired behavior and arranging media coverage?
- What information is provided? Will there be leaflets, webpages, and social media as sources of information? Who is responsible for the content?
- What sort of people are you trying to attract?
- What sort of image are you trying to portray?
- Who is your audience? Is the event mainly for energizing participants or is it aimed at influencing decision-makers or the general public?
- What happens at the rally? Are there speakers, entertainment, and stalls? Are there organized opportunities for participants to meet each other?
- Are you seeking new members? If so, how will you attract new members? Have there been opportunities for participants to meet each other?

Several questions are worth considering. From the viewpoint of environmental movements, several issues where organized public protest is uncommon, it is worthwhile considering experienced activists’ experience in organizing them. For example, the controversy manual is almost as it occurs. This is a contrast with the traditional rally involving a fixed venue, prearranged performers, and prior publicity.
Taking action

6.5 Strikes, bans and boycotts

If only a handful of people show up, is it only worth involving new people in the issue? Certainly. Events, such as discussion meetings or film screenings, can be better opportunities for involving new people. In our experience, activism can use the formal procedures. Activists can use the power of the audience. Most of the audience’s groups are involved in the rally. There are several speakers. Sometimes locals are prominent in the rally, possibly with a public profile, or who represent an issue, possibly with a public profile. Sometimes locals speak. Sometimes locals speak. Two or several speakers. Sometimes locals speak. Sometimes locals speak. Two or several speakers. Sometimes locals speak. Sometimes locals speak.
The controversy manual

Strikes are most common in the support of wages and conditions, but they can also be taken on controversies. In the Australian debate over nuclear power and uranium mining, trade unions took some of the earliest and most potent actions, including strikes. Another workers' action called a capital strike or divestment: a company refuses to undertake specific jobs, such as loading uranium onto ships.

Employers can also use the strike as a tool. In what is called a capital strike or divestment, a company refuses to undertake specific jobs, such as loading uranium onto ships.

Because other companies might step in and invest instead, divestment is usually only relevant as part of a wider campaign, such as in the anti-apartheid movement in South Africa. For example, the struggle against the former South African government is usually only relevant as part of a wider campaign, such as the anti-apartheid movement. Because other companies might step in and invest instead, divestment is usually only relevant as part of a wider campaign, such as the anti-apartheid movement. Because other companies might step in and invest instead, divestment is usually only relevant as part of a wider campaign, such as the anti-apartheid movement.
A boycott is a refusal to participate in some sort of activity. For example, a consumer boycott is when shoppers refuse to buy certain goods. For instance, the Nestlé boycott due to its promotion of powdered milk, which is linked to water-borne disease, has been successful in reducing sales of powdered milk in some countries. In addition, consumers can influence some companies, such as Nestlé, to stop promoting certain products, especially to poor countries. This boycott is part of a controversy over powdered milk, breastfeeding and poverty. A boycott is a refusal to participate in some sort of activity. For example, a consumer boycott is when shoppers refuse to buy certain goods. For instance, the Nestlé boycott due to its promotion of powdered milk, which is linked to water-borne disease, has been successful in reducing sales of powdered milk in some countries. In addition, consumers can influence some companies, such as Nestlé, to stop promoting certain products, especially to poor countries. This boycott is part of a controversy over powdered milk, breastfeeding and poverty.
Community members are already supportive. Workers are unlikely to take a strong stand unless public opinion is such as family members. In many cases, opponents of the controversial issue are more concerned with other concerns whether community sentiment is influenced by a general change of community sentiment. Community members and the issue. Finally, workers can be convinced by the arguments of community members.

To make boycotts more effective, promotional materials need to be carefully researched and written. Most potential participants will take only a few moments to consider the arguments — after all, few shoppers are willing to spend half an hour studying the arguments about which sorts of oranges to buy (regular versus organically grown; imported versus locally grown) or whether to buy oranges at all. So the information about the issue needs to be clear and relevant. For the campaign to build credibility, the information needs to be solid, able to withstand criticism by those adversely affected by the campaign.

In order to get workers to take action, for example, to refuse to handle certain goods, there are several paths. One is to challenge information to everyone at a workplace, or by circulating information to union membership or other more formally, for example by giving talks at union meetings. Another path is to lobby union officials. Another is to take your message to the union membership or to workers more generally to the union membership or to workers more informally. For example, by giving talks at workplace meetings or to workers more generally to the union membership or to workers more informally. For example, by giving talks at union meetings.

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Actions that destroy or disable machinery or other objects, but do not harm humans, are called sabotage. For example, workers in factories run by the Nazis in occupied Europe sometimes caused breakdowns, slowing production. To avoid reprisals for such actions, they would make the breakdowns look like accidents. Some other sorts of anti-Nazi sabotage were more obvious, such as blowing up railway tracks.

Sabotage against repressive rulers is easy to justify and can have popular support, but in systems of representative government, sabotage can sometimes be counterproductive, because it is easy to demonise saboteurs. Environmental activists, notably those with affinities to Earth First!, have used sabotage to disrupt commercial operations, for example by putting spikes in trees that are to be logged or putting sand in the fuel tanks of tractors. Earth First! activists are extremely careful to avoid any danger to humans or non-human animals. When spikes are used to disable commercial operations, for example by putting spikes in the fuel tanks of tractors, they notify companies about their actions to avoid legal problems, because it is easy to demonise saboteurs. Some environmental activists believe government sabotage can sometimes be counterproductive, because it is easy to demobilise saboteurs and can have popular support, but in systems of representation.

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The controversy manual reduces support for the movement. Sabotage online, for example defacing an opponent's webpage, can't hurt anyone physically. Especially when there is a humorous angle, this sort of action has better prospects of being seen as an acceptable way of striking. Because of the secrecy involved, there are fewer restraints on actions: there is less discussion and less peer pressure to ensure that actions are the most effective. Therefore, there is a greater risk that some supporters will do things that are counterproductive. For this reason, some environmental groups disown tree spiking and other forms of sabotage. Another problem is that sabotage can lead to increased repression. In response to sabotage by organizations, governments have responded with increased government repression. Dissent becomes seen as criminal behaviour, and other groups, not involved in sabotage, may be caught up in police operations against the opponent.
Taking action called "top-down": the people at the top take the initiative, influencing or controlling people with less power. For example, when governments mandate fluoridation, there is little prospect for resistance, except by avoiding drinking water from the tap.

The opposite approach is "bottom-up": build support from all sorts of people — ones not in positions of power, personal connections, and direct action. If many people oppose fluoridation, then usually some of them will be willing to act in various ways to bring about change. The bottom-up approach can also be called grassroots organizing, which means building support among ordinary people, moving door-to-door in local neighborhoods, meeting people where they are, and understanding their specific needs and situations. The bottom-up approach supports people living in communities of discovery, most commonly called communities of shared experience.

figuring out which issues might trigger action, discovering individuals who can become leaders, running workshops in skills for taking action, and advising about how to deal with resistance.

Skills in community organising can be used in scientific controversies. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, held meetings at people’s houses, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation. Opponents of nuclear power, for example, have gone door-to-door with petitions, addressed workplace meetings and neighbourhood groups, put leaflets in people’s mailboxes, and in other ways followed the model of community mobilisation, and in other ways followed the model of community mobilisation.
Taking action

An organiser can leave and do the same sort of organising somewhere else.

An organiser in a scientific controversy seeks the same sorts of goals as an organiser in a poor community, but the context is somewhat different. A climate-change organiser might try to find concerned individuals who can develop their knowledge and skills and take leadership roles, encourage the creation of local groups, foster liaison concerning strategy, and suggest avenues for taking action. This is a process of helping to build a movement.

On some issues, there is a natural constituency. For example, workers who develop mesothelioma or other asbestos-related diseases are an obvious group to become involved because of their numbers are large, the problem is well-known, and most affected are at risk of developing these diseases. On the other hand, although change can be achieved through collective action on the asbestos issue, asbestos-related diseases are but one example of the many groups that become involved in an issue that is of concern to them.

Organising is a different orientation to change than campaigning. Those who think they know the truth often assume everyone will agree with them if only they know the facts — the truth. This leads to lots of effort getting information out, whether by lobbying, advertising, leafleting, speaking, blogging or other means. Organising is based on a somewhat different set of assumptions, learning, sharing, building, organising information on what we know, and articulating the facts — the truth. This leads to lots of effort getting involved with those who already agree with us, and only if they know the facts — the truth.

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Tacking action
In scientific controversies, campaigning is far more common than organising. However, most people familiar with campaigning will realise that organising occurs too, though perhaps not systematically. Indeed, the distinction between campaigning and organising is artificial. An experienced climate campaigner might visit a town and give a public talk and, during the visit, meet local activists and local leaders. The campaigner will realise that organising occurs too.

<table>
<thead>
<tr>
<th>Time frame</th>
<th>Short term</th>
<th>Medium and long term</th>
<th>Key capacity</th>
<th>Knowledge and communication</th>
<th>Encouraging others</th>
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<td>Role of committed</td>
<td>Individuals</td>
<td>Privileges, communication, individual, high</td>
<td>Low</td>
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<td>Encouraging leaders and organisations, giving resources, encouraging, leaders, making leaders, making leaders, helping leaders</td>
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<th>Characteristic of campaigning</th>
<th>Organising</th>
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</tbody>
</table>
Taking action

Policy and practice in desired directions: that is why the rich become richer. To counter groups with vested interests, knowledge and logic are not enough. Mobilising many supporters is a way to have some success. Organising is not glamorous. Organisers normally keep a low profile. Their goal is to help others become skilled and confident enough to take leadership roles. A prominent spokesperson or figurehead gets most of the attention; a good organiser gets results.

6.8 Personal contacts

Think of all the people you know, in all aspects of your life, including family members, friends, co-workers, salespeople and others, with whom you could strike up a conversation. In terms of their jobs, this might include shop assistants, accountants and hairdressers, among others. In terms of their leisure activities, this might include members of sporting clubs or dancing groups. You could then include others with whom you could discuss your issue, whether overpopulation or Gulf War syndrome. Politicians can be influenced via personal contacts. Perhaps you talk to a friend who is a personal trainer; one
The controversy manual of whose clients is a teenager whose best friend is a politician's daughter. If your message starts spreading, the politician will hear about it from the daughter, and that may be more effective than hearing it from you. In other words, by talking to a friend, you may have more influence on them, and they are going to hear about it sooner or later. Every time they see you, they know family and friends. Ever since they see you, they know about an issue: your apparent obsession might alienate them.

There is a downside to telling everyone you know.

Community organizing is a way of taking action closely linked to arguing. I've ignored it here because it's a way of taking action closely linked to arguing.

Tell your friends about an issue related to the point raised in chapter 3. In arguing, I've included it here because it's a way of taking action closely linked to arguing. Telling your friends about an issue relates to the points raised in chapter 3 on arguing. I've included it here because it's a way of taking action closely linked to arguing.

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There is a downside to telling everyone you know about an issue: your apparent obsession might alienate them. You might have more influence than being a lobbyist, so spreading the message among friends by telling each other is effective. If your message spreads, the politician will hear about it from the daughter, and your message is spreading. The teenager's best friend is a teenager whose best friend is a politician.
The relationship

You need to think about what your relationship means to both you and the other person. Is it something deep that you want to last, even if you disagree about cancer therapies? Or is it purely an instrumental relationship, in which you want to win over the other person, even if this wrecks your long-term connection? For many people, maintaining a relationship with family members and friends is more important than any issue. If you turn off everyone close to you because they don't agree with you, before long you'll only talk to people who do agree — and your influence in changing opinions will be much smaller.

Another approach is to bring up your favorite issue casually, or mention that you're involved, without suggesting any need to discuss it. If your friend then expresses interest, you can comment a bit and wait to see if they want to continue. You take your cues from the other person. As soon as you notice they are no longer interested or are feeling uncomfortable, you back off. This sort of softly, softly approach can be more effective with some people, especially if they think you care more about them as a person than about an issue you're promoting. However, this will work only if you are prepared. You must know what you want to say, how you want to say it, and how you want to react if they disagree with you.

The relationship

You need to think about what your relationship means to both you and the other person. Is it something deep that you want to last, even if you disagree about cancer therapies? Or is it purely an instrumental relationship, in which you want to win over the other person, even if this wrecks your long-term connection?
The controversy manual

tives you think are important, encouraging them to think about the issue for themselves.

Chris: "What's the option? I need my phone to do
and phone. Some locals tried to stop it, but couldn't.

Sam: "Just a few blocks away, at the corner of First
and Main."

Chris: "You live too close.

Sam: "It's a worry if using my phone increases
the risk of microwaves — and it goes on all the time.

Chris: "I'll have to tell our little Janice to restrict her
phone use.

Sam: "I d e n t i f y our phones as more vulnerable than ours.

Chris: "I'd be most worried about young kids using
phones, or just carrying one.

Sam: "Do you think we should stop using our
phones?

Chris: "No, but we need to be more careful.

Sam: "I think what the scientists are saying is that
there's a slight increase in the risk. They
aren't sure, but there's a slight increase in the risk.

Chris: "I think what the scientists are saying is that
phones are a real risk. There's a slight increase in
the risk of a brain tumour.

Sam: "It's a bit of a worry if using my phone increases
the risk.

Chris: "Did you hear the latest story about mobile
phones?"

Sam: "Personal! M ore worried about mobile
use.

Chris: "I'll have to tell our little Janice to restrict her
phone use.

Sam: "If I had to choose, I'd be more worried about
close phone towers. That's where you can get a stronger
phone signal.

Chris: "Personally, I'm more worried about mobile
towers."

Sam: "I think the scientists are saying that
there's a slight increase in the risk. They
aren't sure, but there's a slight increase in the risk.

Chris: "I think what the scientists are saying is that
phones are a real risk. There's a slight increase in
the risk of a brain tumour.

Sam: "It's a bit of a worry if using my phone increases
the risk.

Chris: "Did you hear the latest story about mobile
phones?"
Taking action on phones. Surely the government is making sure everything is as safe as possible."

Sam: "The trouble is, there's hardly any independent research into risks or into options for improving safety. So the government regulators rely on industry research.

Chris: "That's a bit suspect. Are you sure? What about research into health and safety? The government regulators rely on industry research into risks of using phones for improving health and safety. There is hardly any independent research into health and safety.

Sam: "The trouble is, there's hardly any independent research into health and safety. Surely the government is making sure everything is as safe as possible."

Openness

Many campaigners are totally convinced they are right, but complete conviction is not the best way to introduce ideas into a conversation. Sam has given Chris an opportunity to participate, to disagree, to question Sam's ideas. Chris has given Sam an opportunity to reflect on his ideas. Sam has given Chris an opportunity to question Sam's ideas. Sam has given Chris an opportunity to reflect on his ideas. Chris has given Sam an opportunity to reflect on his ideas. Chris has given Sam an opportunity to reflect on his ideas.
In polarised controversies, being open can be quite difficult, especially when you confront people with whom you have a strong commitment to your position, otherwise you are hardly likely to persist in the face of concerted opposition. So how can you be open in a conversation if your commitment to a particular viewpoint is so strong? Doesn't apply to you? (In referring to “the campaigner” because surely this necessarily the best way to engage in a conversation.)
Winning the argument

Many people, especially those who know a lot about an issue, have a strong urge to win an argument. They want to have the last word, to show their knowledge or to refute what the other person says.

If you are in a formal debate, with time limits and an adjudicator, then winning the argument is a reasonable goal. But when you're in a conversation, should your goal be to win the argument?

Another approach is to try to make the conversation a mutual exploration in which both of you examine the various perspectives and help each other understand their position and thinking. You can proceed with the goal of understanding the other person's viewpoint rather than simply trying to win. This is not the same as winning in a competitive sense.

When the other person makes a comment you think is foolish, misguided or just plain wrong, it is tempting to provide a fact or argument that takes advantage of this mistake. What does this do to the other person? It depends. Perhaps it makes them more determined to have the last word themselves and to show you are wrong. In other words, you might become even more determined to have the last word because you're no longer so sure you're right.

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What is best depends on your relationship with the other person, the other person's knowledge and interest in the issue. You can proceed with the goal of understanding the other person's position and thinking and helping them understand their own. You can proceed with the goal of understanding the issue, but you can also try to understand the other person's viewpoint.

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The controversy manual and openness, and what each of you hopes to do in the conversation. Winning the argument might be a suitable goal — but it might not be.

To become a more effective, there is no substitute for learning more about the issue, as discussed in section 2.18.

Scenario 1
Chris: “Mobile phones are totally safe. The telecommunications agency has studied all the evidence and found there’s not a single bit of credible evidence to show any danger. Nothing is totally safe.”

Sam (exploring): “What sort of evidence would make you think there might be a risk?”

Chris: “Oh yeah? Nothing is totally safe. The telecom-agency has studied all the evidence and nothing is totally safe.”

Scenario 2
Chris: “Mobile phones are totally safe. The telecommunications agency has studied all the evidence and found there’s not a single bit of credible evidence to show any danger.”

Sam (exploring): “You think there might be a risk?”

Chris: “Oh yeah? Nothing is totally safe.”

By industry-funded scientists’ studies show that a potential risk.

Scenario 1
Chris: “Mobile phones are totally safe. The telecom-agency has studied all the evidence and nothing is totally safe.”

Sam (exploring): “Actually, there are dozens of studies by reputable scientists showing a potential risk.”

Chris: “Oh yeah? Nothing is totally safe.”

Goal — but it might not be.
Another possibility is for two people to role-play
opposite sides, and then analyze the conversations
by having role-plays, with different members taking
the roles of both sides. In your group, you can organize conversation practice
This will give you insight into arguments on both sides.

To learn about the other side's thinking, it can be
point, how could I have responded better?

Learning to analyze your conversations is a vital skill.

Sam can analyze her interaction with Chris. After the
conversation, Sam can write down everything she can
remember about how it proceeded, namely what each of
them said and how they said it. She then writes down what
she learned about Chris's knowledge and perspective. If she didn't learn
much, why not? Is there some way she could learn more
next time? Finally, Sam can write down some things
she might have done differently in the conversation, such
as making different points, asking different questions,
and using a different tone of voice. She can then reflect on how the
conversation might have proceeded differently in the
conversation. Each time, Sam can write down some things
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she learned, and how she learned about Chris's knowledge and perspective. If she didn't learn
much, why not? Is there some way she could learn more
next time? Sam can reflect on how she could improve at this by seeking feedback from others.
The controversy manual conversation with others listening, and then collectively analyse what happened. The main things are to pay attention to what you're doing and saying, reflect on it, try out different approaches and learn from feedback. This sounds elementary but few do it systematically, which means you can get a lot better than you ever imagined possible.

Realising that controversies can last a long time helps to put efforts in perspective. The most that any individual can do is contribute to a larger process. Even very prominent campaigners depend, for their effectiveness, on the contributions of many others behind the scenes.

You see yourself strongly engaged 20 or 30 years later, perhaps with a different role and imagination and impact. Even if you're not personally enhancing an issue you can still contribute by helping others.

6.9 The long haul

Controversies can last a long time. Debates over nuclear power and pesticides started in the 1960s and continue today. Disagreement over fluoridation started in the 1940s; major struggles blossomed in the 1950s and continue today in much the same form. Climate change became a major issue in the 1990s and continues to be debated over nuclear power and pesticides started in the 1960s and continue today.

Quite a few new perspectives in scientific controversy can emerge with new participants taking part in the debate and new angles or views being presented.

When you ever imagined possible, do it systematically, which means you can get a lot better and learn from feedback. This sounds elementary but few do it systematically or in a way that will influence others.

The main things are to pay attention to what you're doing and at the end of the day, assess what happened.
Taking action...
Vaccination

What it is
Individuals are given vaccines to protect against specific infectious diseases. Different types of vaccine products are used to protect against diseases such as polio, measles, whooping cough, and flu.

Arguments for
• Vaccination is responsible for dramatic declines in death and illness from infectious diseases.
• The risks of vaccination are small and far less than the benefits.
• When a sufficiently large proportion of people is immune, disease pathogens have difficulty spreading. A form of community protection called herd immunity.
• Unvaccinated children increase the risk of disease to everyone else.

Vaccination
Arguments against

• Before the advent of mass vaccination, many infectious diseases were already declining in incidence or severity.
• Many parents report adverse effects from vaccination schedules, and there is little evidence that these adverse effects are statistically significant.
• Vaccines are seldom tested for long-term adverse effects.
• Vaccination may be linked to increases in some autoimmune diseases.
• Adverse effects are dismissed as coincidental when there is no plausible alternative explanation.

Experts and authorities

Nearly all researchers and health authorities support vaccination, with an increasing schedule of vaccines as new ones are developed.
The controversy manual

Vested interests

Pharmaceutical companies derive significant profits from the manufacture and sale of vaccines. The medical profession has staked its reputation on the claim that vaccination is one of the greatest public health measures ever developed.

State of play

In most countries, many vaccines are recommended or mandated. Vaccination coverage is usually higher in richer countries. The incidence and impact of infectious diseases can be reduced by safer water supplies, better nutrition and higher standards of living.
Verbal abuse, threats, censorship, harassment, dismissal:

7.1 Attacks

Defending
The controversy manual

conspicuously following them around (stalking), and shouting or chanting derogatory slogans

• Physical assault or danger, including beatings, shootings, bombings, forced psychiatric treatment, murder, and threats of harm to family members

These sound pretty bad, and they are! Harassment can discourage the target from being involved

are at risk of physical assault.

Direct-action campaigners, for example in forestry,

realities of anti-demonstrations, which target a sector;

narratives might target a scientist in charge of a research

scientists are harassed. For example, animal libertarians

common targets for direct harassment. Sometimes

when they are closely identified with policies,

Police and corporate executives, especially

place sanctions.

Employees who take a stand and who work within

Reporters, who cover a story that may be controversial

who appear in the media — is at risk of degradation

example, giving leaks, writing articles, and

Anyone who plays a prominent role in a debate —

and the sort of players involved.

Who is at risk? This depends a lot on the controversy

muscled, and threats of harm to family members,

shouts, bomb threats, local psychological harassment,

Physical assault or danger, including beatings,

Shouting or chanting derogatory slogans, and

The controversy manual
Defending an opponent, then some activists might go further and sabotage the opponent's car, spray graffiti on their house, throw eggs or tomatoes at them, or physically assault them. These sorts of actions are much more likely to be counterproductive: they make the target seem like a martyr. Another form of escalation is attacks on lesser figures. In some cases, attacks on scientists who have developed a reputation for studying cancers linked to pesticide exposure can make a big difference in the way a controversy proceeds, because these are special targets. Because this can make a big difference in how the controversy proceeds, it is worth considering in some detail.

Melvin Reuber was a scientist who had developed a reputation for studying cancers linked to pesticide exposure. He had had glowing reviews of his work at the Fredrick Cancer Research Center until one day in 1981 when his boss hauled him in and castigated him for poor performance. Even worse, his boss's written attack was published in a magazine published by pesticide manufacturers. Melvin Reuber, in distress, resigned. But then, recovering a bit, he sued but, after many years pursuing the case through the courts, he lost.

7.2 Attacks on scientists

Within the system, it is actually your supporter, plan against the low-key role is actually your supporter, but playing a low-key role is actually your supporter, but playing a low-key role in the way a controversy proceeds. It is worth considering in some some detail. Within the system, it is actually your supporter, but playing a low-key role in the way a controversy proceeds. It is worth considering in some detail.
George Waldbott, a doctor and medical researcher, was the most prominent US opponent of fluoridation from the 1950s through the 1970s. Proponents of fluoridation within the American Dental Association attempted to discredit Waldbott through a misleading dossier that was published in the Journal of the American Dental Association and distributed wherever Waldbott appeared.2

Numerous scientists and engineers critical of nuclear power, from many different countries, have faced similar experiences.3

In the course of a debate, attacks on scientists' research and public statements can be predictable and monotonous. In some situations, because it can limit the issue from a debate to a personal attack on the scientist — except for a few dissident scientists. Discrediting these dissident scientists then becomes especially important, because it can limit the issue from a debate to a monologue.

In a debate, a scientist's research and public statements can be criticised. This is predictable and reasonable enough. However, personal attacks on the scientist's ability to speak and research opportunities are a different and often much more serious matter. Attacks are most obvious and most ruthless when most

Defending

- Censorship of publications
- Refusal of permission to speak in public
- Denial of research grants
- Denial of opportunities to do research
- Reprimands
- Deregistration (of doctors and dentists)
- Blocking of publications
- Misconduct charges, investigations and hearings
- Refusals of publications
- Denial of opportunities to do research
- Reprimands
- Blacklisting (coordinated blocking from any job in the field)
- Forced transfers
- Dismissals
- Demotions
Attacks on livelihood include demotion, dismissal and blacklisting, and the threat of any of these. Any scientist who is employed is vulnerable if their employer is linked to vested interests or is susceptible to pressure. A sympathetic boss can make a big difference.

Attacks on opportunities to do research include blocking research grants, refusing ethics approval, assignment to other duties, denying access to research data, and a host of other methods, sometimes subtle. Another way to prevent research is through overload, for example assigning heavy teaching loads to academics. Yet another way is through harassment: pulling punches, withholding research funds, blocking research grants, refusing ethics approval.

Remaining employable because he was an employee in an organisation that could be pressured by pesticide manufacturers, Melvin Reuber was vulnerable. George Waldbott was harder to attack. He had a successful private medical practice, so undermining his livelihood was not easy. Furthermore, he funded his own research, which did not require expensive apparatus. Although some of his submissions to peer-reviewed journals were apparently blocked by pro-fluoridation reviewers, he could usually find other outlets for publication.
Defending places to publish. The most damaging attack was the entry in the American Dental Association’s dossier: pro-fluoridationists aimed directly at Waldbott’s credibility.

Attacks may or may not be effective in discouraging or stifling those directly targeted, but there is a wider and more damaging effect on those who witness the process. Many others may be deterred from being involved or doing relevant research.

If only a very few scientists are willing to do research or speak out on one side of a controversial issue like the health hazards of microwaves, and those few scientists come under heavy attack, this will discourage most others from becoming involved. Those involved are already suffering down from becoming involved. That is why showing down those few scientists is such a crucial issue. If only a very few scientists are willing to do research or speak out on one side of a controversial issue like the health hazards of microwaves, and those few scientists come under heavy attack, this will discourage most others from becoming involved. Those involved are already suffering down from becoming involved. That is why showing down those few scientists is such a crucial issue.

On the other hand, attacks on scientists can be seen as an example of what to expect. 
A good defence involved avoiding being involved or even losing their jobs — most will prefer to avoid being involved or even losing their jobs — being prevented from doing their research or being prevented from doing relevant research. Many others may be deterred from being involved or avoiding being involved. Some who win the process may or may not be effective in discouraging others.
The controversy manual

7.3 Responding to attack

The fundamental rule in effective response is to think before you act: consider options, seek advice and then proceed with the course of action most likely to work for you. Regularly evaluate the situation — especially if you are involved in another issue or your involvement in the debate is minimal. Find a safer place to live, a better place to work, or a new role. Leaving doesn’t necessarily mean giving up. You might find a safer place to live, a better place to work, or a new role. Leaving doesn’t necessarily mean giving up.

There are six main types of options to consider:

1. Leave; exit; get out

Some people, when faced with abuse or attacks or threats, decide to escape. This might mean physically moving to another city or country. In the case of being harassed at work, quitting is often the best option. If abusive language or attacks on your reputation are causing you too much stress, then it might be better to stay out of the public debate.

Leaving might sound like cowardice, but in some cases it is the wisest course of action. If your family is under physical threat, then leaving may be the best way to protect them. If your health is suffering because of abuse, leaving might be the best option. If your family is suffering from the abuse, leaving might be the best course of action. If your family is suffering from the abuse, leaving might be the best course of action.

Leaving might mean moving to another city or country. In the case of being harassed at work, quitting is often the best option. If abusive language or attacks on your reputation are causing you too much stress, then it might be better to stay out of the public debate.

There are six main types of options to consider:

1. Leave; exit; get out
2. Don’t respond; put up with it; ignore the attack

3. Reduce vulnerabilities

Stop their behaviour:
 opponents see that you are not going to do anything to reduce your vulnerabilities, especially weaknesses that are apparent to others. If you are being attacked or could come under attack, it can be useful to limit damage or risk by reducing vulnerabilities.

Defending
The controversy manual statements, whether via blogs, media releases or interviews. Written items can be checked with others. Attacks might be launched if you make a mistake or foolish comment in haste or anger.

Maintaining good behaviour is a way of reducing vulnerabilities. If you're a public figure, it's risky to be involved in seemingly dubious financial arrangements, unusual personal affairs, or participation in strange rituals. If you are prone to yelling abuse, this could be revealed and used against you. Even your appearance, especially if unconventional, could be a point of vulnerability. Maintaining good behaviour is a way of reducing

Tips from Tanya

Having allies is important. The higher their status in the community, the greater the value of their being linked to you in some way. You can think about ways to forge close relationships, memberships or affiliations that will provide protection via association with others who are valued. Take whatever precautions you and your allies deem appropriate.

Tanya is involved with a field considered, by those in the mainstream, as fringe. It is referred to here by the fictional name "xylotherapy." Her advice could apply to people involved with aromatherapy, cold fusion, or a number of other areas.
Don't present yourself as the "expert" even if you are. Instead, let others draw that conclusion and present you that way themselves. Then you can't be ridiculed so easily, especially if you don't have formal qualifications related to the area of the struggle. Instead, refer to and comment judiciously on other people's significant writings that address the issues you think are important. By doing so, you deflect the heat away from yourself and toward a person not directly involved in your struggle, making it more difficult for opponents to discredit your claims. Because those who attack you are often from mainstream groups, they have trouble discrediting above. Because those who attack you are discredited above. Look for people whom your attackers normally speak highly of or would like to be associated with. You gain authority by association. Treating others as the expert can often be confusing. Instead, refer to and comment judiciously on other people's significant writings that address the issues you think are important. Don't present yourself as the "expert" even if you are.
388. The controversy manual

try to find common ground and use that as much as possibly.

4. Complain to authorities; use official processes for
punishing grievances

Complain to authorities seems like an obvious option. After all, the authorities are supposed to intervene to stop the attack and reprimand the attackers. However, when dealing with a powerful opponent, complaining to authorities seems like an obvious option. Whether the authorities are helpful or not, individual or official bodies such as grievance committees or professional associations may be doing as well as they can, but they are not in a position to provide justice. Individuals within official organizations are seldom all that helpful. They may give only the illusion of providing justice. However, when dealing with a powerful opponent, authorities are supposed to intervene to stop the attack and reprimand the attacker. The idea here is to find some individual or official body that will intervene to stop the attack and reprimand the attacker. For workers being harassed by co-workers, this might mean going to the boss or the board of directors. For campaigners being defamed on blogs, it might be possible to complain to the internet service provider. If the attacker is a scientist, it might be possible to complain to the scientist’s boss, or to a professional association. If the attacker is a journalist, it might be possible to complain to the editor or the media watchdog body. Another option is to use the courts, filling a case for defamation. To use the courts, filling a case for defamation is to use the courts, filling a case for defamation.
Defending

- Their processes involve lots of technicalities, so the key issues are obscured.
- Their processes are slow.
- Their power may be limited.
- Their interventions may not solve the problem.

Before seeking support from an authority, it’s worth finding out how others have fared in similar situations. If you are thinking of complaining to the boss’s boss or to a professional association, try to find out who else has done so and what their experiences were. The odds are you can’t obtain the information, in which case this approach is a huge gamble.

There are many whistleblowers believing official channels are the solution to their problems, but their actual experience is that official channels hardly ever work. Unless you have good evidence that a particular procedure has worked for others previously, and that the odds of success are good, it is wise to not rely on official channels.

5. Fight back

With this option, you retaliate using the same methods as your opponents. If they put abusive comments about you on a website, you put equally scathing comments about them on your own website, you disrupt their talks, or you organise to disrupt their talks.

Fighting back can be emotionally satisfying — but it is talk. You organise to disrupt their talks.

Many whistleblowers believe official channels are the solution to their problems, but their actual experience is that official channels hardly ever work. Unless you have evidence that a particular procedure has worked for others previously, and that the odds of success are good, it is wise to not rely on official channels.

The controversy manual
the encounter and judging the sides according to your
behaviours.
If you are on the side with fewer supporters or less
money and power, then fighting back using the opponent's
nasty techniques is usually a mistake. You are in an
unequal battleground, and by playing the opponent's
game you throw away your greatest asset, a reputation for good
behaviour.
Imagine this scenario. You're having an on-air debate
and your opponent starts making nasty comments or even
yelling and pointing fingers. If you start doing the same
thing, then audiences who know little about the issues will
have nothing to choose between the two of you. But if
you remain calm and allow the more abusive, you'll
begin to gain sympathy and possibly even new allies. If you
start doing the same thing, you'll be seen as equally abusive,
and your opponent will be seen as the one who's really
being nasty and abusive.
Powerful opponents often prefer that you respond
aggressively. When you say something nasty, this gives
them the pretext to be nasty themselves — and they have
the numbers and money to be more effective. This is
the same reason why police sometimes use infiltrators to
encourage protest. When you adopt even a bit of your opponent's
evil, observers see two sides behaving badly — fighting, yelling,
being abusive, and more — and don't think so much about which side has
more power.

6. Expose the attack and seek to win allies
When the other side uses methods that others might think
are unfair, a powerful form of response is to expose the
methods to wider audiences — but not respond using the
same methods. This can be called an assertive response:
if you expose your opponent's abusive behaviour, and then
say something that's usually a mistake, you are in a
powerful position. You can use the opponent's
abusive techniques to reveal their true nature, and
show how their tactics are ineffective. If you are on the side with fewer supporters or less
money and power, then fighting back using the opponent's
game may not be a good strategy. But by exposing their
behaviours, you can gain support from others who may not
agree with your opponent's tactics.
Defending is neither passive nor aggressive, but is a principled form of resistance. To formulate this response more effectively, it is useful to understand the process of outrage management, described in section 7.4 below.

A scientist considers her options.

Clem, a junior scientist, works at a government research body and comes up with some findings about the adverse health effects of a chemical. She gives a preliminary draft of her results to her supervisor, who a few days later calls her in and says the findings need to be checked — and that an industry collaborator will not be happy. For Clem, this rings warning bells. She considers her options.

1. Leave. Clem had recently been sounded out for an academic job, which would allow her to continue the research with less pressure. She needs to find out whether the job offer still stands and whether she could use the data from her government post. Otherwise, months of experiments would need to be redone.

2. Acquiesce. Clem meekly repeats all her experiments and finds the same results. Her supervisor gets her to report the findings in a way that minimises awareness of the hazard. She keeps her findings to herself, and finds the same results. Her supervisor gets her to report the findings in a way that minimises awareness of the hazard.

3. Reduce vulnerabilities. Clem makes sure all her requirements to gain access to the academic job are met. She makes sure she has records of ethics approval, performance reviews and leave entitlements. She tries to appear relaxed and unconcerned, and says nothing about her private life.

It is useful to understand the process of outrage management, described in section 7.4 below.
Clem can leave her job — and take the information. She encourages her supervisor to support her. If necessary, she can later speak out. Her findings, and the controversy (research data and information about options) are of interest to the public. She collects more and more information about similar experiences. She checks on environmental groups that might be interested in her findings. She finds out which journals are open to publishing her research. She makes a copy of her original research data, and keeps a copy of her published research. She makes copies of all her research data and keeps a copy of her published research.

4. Complain. Clem considers whether to make a formal complaint to the internal ombudsman. It doesn’t seem like there’s all that much to complain about. But if she waits until later, problems may be much worse. She needs to find out whether anyone else has made a formal complaint and, if so, what happened.

5. Fight back. Clem fiercely resists her supervisor’s request and announces that if there’s a hazard, the public needs to know and industry should stop using the chemical. This outburst was emotionally satisfying, but it may cause grief later. As Clem finds numerous small impediments in her path, she feels frustrated. Clem seeks opinions from others about any similar experiences, and learns that her research is important. She contacts environmental groups that might be interested in the results. She collects more and more information (research data and information about options) so she can later speak out. Her findings, and the controversy (research data and information about options) are of interest to the public. She checks on environmental groups that might be interested in her findings. She finds out which journals are open to publishing her research. She makes a copy of her original research data, and keeps a copy of her published research. She makes copies of all her research data and keeps a copy of her published research.

6. Document and be prepared to expose and challenge the problem. Clem writes a private account of the meeting with her supervisor. Outwardly she conforms, but she seeks opinions from others about any similar experiences. She makes copies of all her research data, and keeps a copy of her published research. She contacts researchers in other organizations studying similar chemicals. She determines their positions. She finds out which journals are open to findings like hers. She checks out environmental groups that might be interested in the results. She collects more and more information (research data and information about options) so she can later speak out. Her findings, and the controversy (research data and information about options) are of interest to the public. She checks on environmental groups that might be interested in her findings. She finds out which journals are open to publishing her research. She makes a copy of her original research data, and keeps a copy of her published research. She makes copies of all her research data and keeps a copy of her published research.
Defending

There is no single correct option for Clem. In some circumstances she might be better off putting up with the difficulties and continuing her research as well as she can. If there's an attractive job on offer, leaving might be better. If there's a recognised and hard-hitting grievance process — unlikely, but conceivable — then this might be the best road. Fighting back is seldom advisable, but there are a few bosses who respect disagreement and independence and, when confronted, will back off and actually be more supportive in future. Finally, the assertive option of documenting, exposing and challenging the problem has promise in some situations.

Clem needs to:

• recognise what is happening
• consider a range of options
• choose a course of action
• consult with experienced people who can be trusted
• learn about the circumstances: learn about individuals (in particular, her boss), processes, precedents, and organisations
• consider a range of options
• recognise what is happening

This isn’t easy, nor does it come naturally to Clem, who prefers to do research rather than engage in organisational politics. It’s all the more important to seek out people who can give wise advice. There are now many people trained to be coaches for business, career planning and making life decisions. Clem might find it useful to find such a coach. Even one unfamiliar with scientific research, a coach will help guide her through the decision-making and making the decisions. Clem should consult with experienced people who can be trusted.

There are now many people trained to be coaches for business, career planning and making life decisions. Clem might find it useful to find such a coach. Even one unfamiliar with scientific research, a coach will help guide her through the decision-making and making the decisions. Clem should consult with experienced people who can be trusted.
Clem clarify her goals, assess the situation, examine options and choose a way forward.

7.4 Outrage management

When opponents attack, they often do something — use abusive language, censor publications, spread rumours, play dirty tricks — that observers see as inappropriate. In fact, observers may be upset, outraged or disgusted by such actions. A criminal conviction for sending lethal homemade bombs through the mail. An emotional reaction to global warming through a billboard advertisement with the words, “I still believe in Global Warming. Do you?”

In 2012, The Heartland Institute, a free-market think tank in the US, put up a billboard advertisement with the words, “I still believe in Global Warming.” This attempt at discrediting global warming through association with a criminal conviction for sending lethal homemade bombs through the mail. The opposition sent these around to its members and posted them on its website. Sal, a prominent campaigner, followed an exchange with an opponent by tweeting some sexist and racist remarks on his personal account. The opposition sent these around to its members and posted them on its website.


Defending

There are five main ways to reduce outrage from an action and thereby reduce the risk of backfire.

• Hide the action.
• Devalue the target.
• Reinterpret what happened.
• Use official channels to give an appearance of justice.
• Intimidate and reward people involved.

In their professional dealings, Scala and her colleagues shared information about Scala's research showing unexpected adverse side-effects. Scala's colleagues initially were concerned about Scala's findings, but eventually, the drug's manufacturer, a large pharmaceutical company, decided to suppress the information. Scala's boss, however, insisted on publishing the research, leading to a public scandal.

There are five main ways to reduce outrage from an action and thereby reduce the risk of backfire.
The controversy manual
they might also lose their jobs. Scala's boss received a lucrative grant from the manufacturer and, later on, high-paying consultancies. These five methods are used regularly by powerful perpetrators of injustice, for example governments, large corporations, and bosses. On the other hand, perpetrators without much power are less able to use these methods.

Imagine trying to frame your boss for embezzlement. You can try to hide your activities, but have little capacity to overtly devalue the boss, reinterpret your actions once they are known, or use official channels to protect yourself or intimidate others. The five methods are used mainly by those with more power.

The five methods are commonly used, but what actually happens varies from case to case. Sometimes an attacker needs only the method of cover-up to reduce outrage, with other methods deployed if cover-up fails. Sometimes attackers are brazen and don't bother to hide or pretend their actions are justified. They believe their reinterpretations, thinking they are invulnerable. Sometimes attackers are brazen and don't bother to hide or pretend their actions are justified. They believe their reinterpretations, thinking they are invulnerable. Sometimes attackers are brazen and don't bother to hide or pretend their actions are justified. They believe their reinterpretations, thinking they are invulnerable. Sometimes attackers are brazen and don't bother to hide or pretend their actions are justified. They believe their reinterpretations, thinking they are invulnerable. Sometimes attackers are brazen and don't bother to hide or pretend their actions are justified. They believe their reinterpretations, thinking they are invulnerable.

Suppose you are giving a talk about kangaroo culling. You can try to hide your activities, but have little capacity to overtly devalue the boss, reinterpret your actions once they are known, or use official channels to protect yourself or intimidate others. The five methods are used mainly by those with more power.

High-paying consultants.
they might also lose their jobs. Scala's boss received a lucrative grant from the manufacturer and, later on,
Consider each of these methods in turn, using the example of a scientist who is harassed and eventually dismissed.

- Resist instantiation and rewards.
- Mobilise support.
- Avoid or dissemble official channels, instead.
- Interpret the action as unfair.
- Validate the content.
- Expose the action.

For each of the five ways to reduce outrage, there is a corresponding way to increase it. If you know what the attackers can do to reduce outrage, you can respond in ways that increase outrage. As well, you can plan your activities so attacks are less likely. If you can plan your activities so attacks are less likely.

If you know what the attackers can do to reduce outrage, you can respond in ways that increase outrage. As well, you can plan your activities so attacks are less likely.
Expose the action

Attackers usually prefer to operate out of the public eye, covering up their actions. The obvious way to challenge this is to expose their actions to wider audiences.

To hide your colleagues’ identities and project them from the spotlight, you need to reveal the evidence, if a reader or viewer isn’t disturbed by the striking words. If a reader or viewer isn’t disturbed by the

unambiguous evidence, the attackers will try to discredit your evidence. The boss might say, “I never sent that email.” If you have signed statements from two colleagues that they received the email, or vouched for it, this provides support.

Unimpeachable evidence is more powerful when it uses images or words that resonate with audiences. In 2004, photos from Abu Ghraib prison in Iraq were published, showing US prison guards torturing and humiliating Iraqi prisoners. This was the ultimate in vividness, causing a cascade of condemnation. Prior to the publication of the photos, reports had been published about abuse at the prison, but these reports had received little attention.

You’re not going to have Abu-Ghraib style photos, but you might have messages from the boss with some données. You’re not going to have Abu-Ghraib style photos, but you might have messages from the boss with some données. Expose your colleagues’ identity and project them from the spotlight.

7 To hide your colleagues’ identities and project them from the spotlight, you need to reveal the evidence, if a reader or viewer isn’t disturbed by the striking words. If a reader or viewer isn’t disturbed by the
Defending evidence, it may be that the material you've chosen isn't vivid enough.

Any need plenty of evidence. A rule of thumb is that you need to have enough evidence as much evidence as you think you'll need. That's because your opponents will try to discredit the evidence, explaining it away as a mistake or misunderstanding. The more evidence you have, the harder it is to dismiss or discredit. Sometimes this means holding back from exposing the problem until the evidence is locked in place. Sometimes this is a defense category of "interpret the action as an injustice," but fits better here in a time sequence.

You need to save multiple copies of your evidence. Imagine your boss coming into your office and destroying or confiscating your computer files. Imagine a break-in at your house and theft of your files. Imagine the most unlikely accidental loss of materials. Imagine a court order demanding surrender of documents. Then prepare for these sorts of contingencies by keeping back-ups in numerous locations, for example with friends nearby and elsewhere or by keeping back-ups in other countries.

After collecting evidence, the next step is to put it into a form that others can comprehend. Sending someone a large file of emails or documents puts a heavy burden on them: how many people would be willing to read through 100 or 1000 pages of text in order to figure out what's going on? Is it valuable to provide an explanation? For example, an overview of the issues, to explain the significance of the evidence and its value. How many people would be willing to read through the evidence to learn about the issue? It is valuable to provide an explanation, for example an overview of the issues, to explain the significance of the evidence and its value.

For these sorts of contingencies by keeping back-ups in other countries.

Defending evidence, it may be that the material you've chosen isn't vivid enough.
The controversy manual is designed to help you understand the events and provide a framework for understanding the documents. When you have an overview ready, along with relevant documents, you are ready to expose the problem. Some possibilities are showing the file to your opponent, giving it to some close friends, sending an email to colleagues, giving it to a journalist, and putting it on a website. How to proceed depends on the circumstances. If your opponent is honourable, and they have made some mistakes, they will likely be open to examining the material with an open mind. Perhaps they will be upset by the behaviour of some of their allies, which might displease you. But examine the material carefully, and perhaps they will be willing to correct some mistakes you've made. Perhaps they will be upset by the behaviour of some of their allies, which might displease you. But examine the material carefully, and perhaps they will be willing to correct some mistakes you've made. Perhaps they will be upset by the behaviour of some of their allies, which might displease you.

Scala, the scientist, put her job at risk by exposing the problem. Therefore, it might be better to wait until obtaining another job, or to consider leaking documents to a journalist or outside group. Tallon, a citizen campaigner, has collected evidence of dirty tricks by opponents. Tallon is retired and relatively safe from reprisals, and so can expose the dirty tricks directly by publishing a media release and posting the materials on the group's website. Why would you ever show the file to your opponent? Doesn't that give your opponent an advantage in being able to respond? There are several circumstances in which it's worth sending your material to your opponents. • They are honourable, and they will correct some mistakes you've made. • They might be upset by the behaviour of some of their allies, which might displease you. But examine the material carefully, and perhaps they will be willing to correct some mistakes you've made. Perhaps they will be upset by the behaviour of some of their allies, which might displease you. But examine the material carefully, and perhaps they will be willing to correct some mistakes you've made.

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Defending

401

anything more. They might not realise that their own behaviour is inappropriate, and be thankful for the feedback.

• They are prone to going to court as a method of attack. By sending documents to them, you give them the opportunity to point out any legal objections, such as false and defamatory statements. If they don't take this opportunity, then their lack of action will look bad if, later, they do sue.

• They are likely to go ballistic with anger, make abusive statements and unwise decisions, and thereby discredit themselves. An abusive boss, for example, might launch into a tirade. If you're prepared (with a covert tape recorder), this might be the opportunity to document the problem much more vividly.

Exposing — or threatening to expose — your opponents' abuse, double standards, dirty tricks and other inappropriate behaviour can be very powerful. Ideally, it will make them regret and rethink their behaviour. On the other hand, they may resolve to discredit you, or explain away what happened. This leads to the next two ways to challenge attacks.

Validate the target

The reputation of the target, namely the person or group under attack, is vitally important in struggles. One of the key ways to justify attacks is to discredit the target. For example, something like "An abusive boss, dirty tricks and double standards..." — this can be very powerful. Ideally, this will make them regret and rethink their behaviour. On the other hand, they may resolve to discredit you. For example, "You're just jealous..." — this can be very powerful. Ideally, this will make them regret and rethink their behaviour. On the other hand, they may resolve to discredit you. For example, "You're just jealous..."

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The opposite of devaluation is "validation," which means maintaining or increasing the status of the target. There are several ways to do this:

- Document good performance and good deeds.
- Be associated with valued individuals and groups.
- Document good performance and good deeds.

These are several ways to do this, which means maintaining or increasing the status of the target.
Defending yourself can think of! It's not easy. And it's unfair. Your opponents are the ones being abusive and sneaky, yet it's you who needs to behave well. This is the way the game is played. The world isn't fair. If you want to be effective, then think about how your behaviour will be interpreted by others. If observers see you behaving honourably in the face of spiteful attacks, more of them will support you. Some of your attackers and their allies provide some plausible explanations. You need to get the message across that what's happening is wrong. It might seem obvious to you, but it may not be obvious to others, especially if you're being attacked — unfairly. If you're seen defending yourself as an injustice, then the idea is powerful.

Interpret the events as an injustice.

Scala was a member of the Society for the Advancement of Science, and had even been an office bearer. Several of her colleagues were respected figures in the field, with profiles in the wider community. She let her supporters speak on her behalf. When interviewed, she was calm and factual. When actions were taken against Scala, her boss said it was standard procedure and that no one was being targeted. When Scala lost her job, her department head said there was standard procedure and that no one was being targeted. When actions were taken against Scala, her boss said it was standard procedure and that no one was being targeted.

There are several ways to communicate the message of unfairness. One is to say that it's unfair, and sometimes this is all that's needed to encourage people to support you. Interpreting the events as an injustice is powerful.
The controversy manual

question the pretext provided. Often it's powerful to use the double standard test, showing that the target has been treated differently from others with the same performance: people will then ask, why has the dissident been singled out for adverse treatment?

Another way to emphasise unfairness is to use frameworks that highlight rights, justice and correct procedures. Attackers may use administrative or economic frameworks, talking about policies and costs. To switch frameworks, you need to talk in terms of free speech, scientific freedom, workers' rights or whatever is appropriate.

When Scala lost her job, her supporters pointed out that ten other scientists in the department, with lower productivity, had not lost theirs. When the department head said the decision was based on financial assessments, Scala's supporters pointed to new appointments in another area and a financial surplus in Scala's unit. When the department head said the decision was based on research direction, Scala's supporters pointed to new appointments in her research area. When the department head said there was no change in the commitment to research in the area, Scala's supporters pointed to new appointments in another area. When the department head said the decision was based on financial assessments, Scala's supporters pointed to new appointments in another area and a financial surplus in Scala's unit.

Reinterpretation includes lying, minimising effects, blaming others and framing. Challenging these can mean exposing lies, showing the full effects of the actions, pinpointing responsibility and framing. These can mean

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Reinterpretation includes lying, minimising effects, blaming others and framing. Challenging these can mean exposing lies, showing the full effects of the actions, pinpointing responsibility and using a frame that highlights injustice.
Avoid or discredit official channels. Instead, mobilise support when under attack. When under attack, many people think automatically of obtaining justice from some authority, such as senior management, courts, professional associations, ombudsmen, journal editors or politicians, depending on the issue. These can work reasonably well if you are more powerful than your opponent, or if you can work reasonably well if you are more powerful than your opponent, or if you can. But if it’s the other side that’s powerful, authorities often give only the illusion of protection from attack. They are slow, expensive, focus on technicalities and seldom provide much relief. In many cases, they are worse than nothing.

Whistleblowers—people who speak out in the public interest—regularly seek relief from agencies, such as ombudsmen, anti-corruption bodies, auditors and courts. Research shows that they report receiving useful assistance in only one out of ten cases, and many times they are worse off than before. Some whistleblowers try one agency after another, being fobbed off time after time.

Scala, when under attack by her boss, wrote to senior management about what was happening. Before long, her boss knew about this and intensified his attack: she had gone outside the line of command. She then went to the ombudsman, but the ombudsman took so long making an assessment that it didn’t help.

Defending Against Official Channels: Instead, Mobilise Support

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Veteran whistleblower adviser Tom Devine, of the Government Accountability Project, has painted a gloomy picture about US whistleblower laws. Despite being periodically strengthened by Congress, the laws have been undermined by the courts. For example, following the passage of the 1994 amendments to the False Claims Act, which gives a monopoly on judicial review of decisions on the merits at the Federal Court of Appeals, whistleblowers lost 74 of 75 decisions between September 2002 and the passage of the 1994 amendments.

If the odds are so bad, why do whistleblowers keep seeking justice? One factor is a cognitive illusion. The chance of success, based on previous cases, may be very small, but each individual whistleblower knows they are right — and therefore assume the outcome will be different. They don’t stop to think that all the other whistleblowers knew they were right, too, yet were unsuccessful. The statistics aren’t treated as relevant, but vivid experience is. The chance of success, based on previous cases, seems different, and therefore the outcome will be different.


Instead of relying on official channels, it is far more effective to build support by talking to colleagues, preparing persuasive documents, tapping into networks, making allies, obtaining media coverage — indeed all the sorts of things that are effective in campaigning about a controversy. Those who influence the debate, such as funding or jobs, it is tempting to take these through “smokescreen” tactics such as campaigns for the environment. However, in countering attacks, some targets need to resist. Sometimes it is better to retaliate in the face of attack.

Resist Intimidation and Rewards

When you come under attack, the stress can be incredible. When your credit is attacked or given up, but often it is better to retaliate.

Resist

When you come under attack, the stress can be incredible. When your credit is attacked or given up, but often it is better to retaliate.

Remind yourself, asking questions like:

- What is my best option?
- How can this attack be turned against the attackers?
- How will this be taken up in the media?
- What are the attackers likely to do in response to my response?
- How will my response help build our campaign?
- How will this be taken up in the media?

Instead of relying on official channels, it is far more
The controversy manual

Scala decided not to contest her dismissal, but instead encouraged publicity about the issues involved, while seeking another job. Her former employer approached her with an offer: they would arrange a redundancy pay-out, but Scala would have to sign an agreement preventing her from speaking out about what had happened. She refused to sign and continued making public comment.

Conclusion

Attacks are often highly distressing. It is tempting to retreat and avoid the conflict, to bite back angrily or to seek intervention by some higher authority. These are understandable responses, but may not be the most effective. The most promising approach is to think through options, seek advice and support, make a decision and take action. The concept of violence has different meanings for different people. Some people refer to anything they don't like as violence, and there are various forms such as emotional violence and structural violence. Here, I mean physical violence. Some people refer to anything they don't like as violence, and there are various forms such as emotional violence and structural violence. Here, I mean physical violence. Some people refer to anything they don't like as violence, and there are various forms such as emotional violence and structural violence. Here, I mean physical violence. 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Defending

Sometimes the media report on a "violent confrontation" when the protesters were entirely peaceful. Only the police were violent.

In most countries, authorities treat the slightest physical violence by campaigners — such as opponents of militarism — as a threat, and do everything they can to discredit the campaigners. (On the other hand, violence by police in the course of doing their duties is treated as legitimate.) Hence you need to realize that violence by your supporters is very likely to be counterproductive, and that your opponents may claim you are violent even if you're not.

According to correspondence inference theory, observers look at your actions and infer your motivations. 12 Al Qaeda's stated goals have been political, for example ending the Israeli occupation of Palestine and getting US troops out of the Middle East. However, most members of the US public did not interpret the 9/11 attacks as actions to end the Israeli occupation of Palestine, and hence assumed that Al Qaeda's stated goals were not political. 13

According to correspondence inference theory, observers look at your actions and infer your motivations. If your opponents misinterpret your actions, you may be misunderstood.


13 Ziauddin Sardar and Merryl Wyn Davies, Why Do People Hate America? (Cambridge: Icon, 2002).
and some nearby cars, and some pedestrians who care. If most participants are young people joining by biking their bikes, these actions send a message about who cares. If methods of protest send a message about underlying goals or connections, it is sensible to think carefully about all aspects of an action. As well as the type of action — rally, strike, sit-in, etc. — these include:

- duration of the event
- sex, age and ethnicity of participants
- numbers of participants
- sex and ethnicity of participants
- dress
- language
- behavior: quiet, disruptive

Correspondence inference theory can apply more widely. When protesters use destructive methods, many observers assume their goal is destruction — and the destruction assumes their goal is destruction. Miscommunication when using violence can apply more widely when protesters use destructive methods, many observers assume their goal is destruction — and the destruction assumes their goal is destruction.
Defending different message than if participants include diverse age groups and everyone cycles in a sensible fashion. Be aware that you're bound to offend some people by anything you do. Some observers find any sort of action objectionable. Even a rally offends them, because it occupies space, or a boycott offends them, because it challenges the supposed sacredness of the free market.

There's another consideration: your own supporters. They are prime recipients of the message implicit in your actions. When you hold a rally, they may feel inspired, validated or reinforced, whether participating or simply knowing about it.

With this framework, what do you want to say? An ideal action stymies opponents, wins over some neutrals and encourages supporters. It's useful to know what the police would like you to do — assuming they are opposed to your group. A do — assuming they are opposed to your group.

With methods of protest send a message, there are multiple audiences, including opponents, neutrals and supporters. An ideal action stymies opponents, wins over some neutrals and encourages supporters. It's useful to know what the police would like you to do — assuming they are opposed to your group.

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There is quite a bit of evidence of the use of agents provocateurs, but absolutely none of police using infiltrators to encourage protesters to use methods such as marches, sit-ins, vigils or boycotts. This suggests that nonviolent actions are far more credible.

Many activists realize that violence can be counterproductive and make strong efforts to minimize the risk, for example by only organizing safe sorts of actions, by counseling against violence and by training members how to remain nonviolent in the face of provocation.

Radical flanks are called "radical flanks." A radical flank is a group seen as outside the mainstream: it is off to the side. ZZZ gives more credibility and influence than the organization as a whole. Radenv positions and actions are seen as so extreme they discredit the movement as a whole. Opponents turn to ZZZ as an alternative. ZZZ underlines ZZZ's credibility and influence.

Radenv demonstrates that there are people seeking radical change. Opponents turn to ZZZ as a safe alternative. ZZZ's credibility and influence are increased.

Suppose you are involved in a mainstream group, the respected ZZZ, and there is another group, Radenv, with the same environmental concerns, but which has more radical goals, such as socialism, or uses stronger methods, such as lock-downs and sabotage. What is the effect of Radenv on the success of environmental campaigns? There are two possible scenarios. Where is the effect of Radenv on the success of environmental campaigns? Suppose you are involved in mainstream environmental campaigns. What is the effect of Radenv on the success of environmental campaigns? There are two possible scenarios.
Defending 413

— the flank — of the rest of the movement. The influence of Radenv on the movement can be positive or negative. Scenario 1 illustrates a positive radical flank effect and scenario 2 a negative radical flank effect.

Radical flanks are quite common in public scientific controversies. In the climate change debate, the IPCC represents the mainstream view that global warming is occurring, is mostly likely caused by human activity, and that serious efforts are needed to reduce greenhouse gases. Some radical flanks propose more extreme measures, such as liberation of animals, an illegal activity, or having more radical goals, such as education and public protest, extreme methods such as liberation animals, in illegal extreme methods such as liberation animals, in illegal.

Radical flanks are normally thought of as using more extreme claims, extreme methods, and having more extreme goals. But in scientific controversies there is another sort of radical flank: extreme claims.

In the climate change debate, the IPCC represents the mainstream view that global warming is occurring, is most likely caused by human activity, and that serious efforts are needed to reduce greenhouse gases. This sounds significant enough, but some campaigners...

Another sort of radical flank: extreme claims. Research facilities are a radical flank. The freedom of experimentation, groups that liberate animals from laboratories, mismanagement of animals, factory farming and in animal liberation movements are radical flanks.

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The controversy manual

go much further, saying that global warming is happening much more rapidly than the IPCC predictions and that a massive mobilisation of resources is needed to drastically cut greenhouse-gas emissions, akin to a wartime emergency. In relation to the IPCC mainstream, such campaigners say that global warming is not as strong as claimed by the IPCC and that extensive measures to cut greenhouse gases are not warranted. More extreme sceptics say that no global warming is occurring and that mainstream climate scientists prevent publication of sceptical findings to maintain their research money, climate change campaigners are trying to undermine their research money, and that mainstream climate scientists present an exaggerated view of the evidence for global warming. To the extent that this "alarmist" position gives more credibility to the IPCC mainstream and pushes action along, these more alarmist campaigners cause a positive radical flank effect. To the extent that they cause decision makers and citizens to become more sceptical, because they think the problem has been exaggerated, they produce a negative radical flank effect. Both these effects can occur at the same time, and it may be difficult to sort out the net effect of a radical flank effect. Both these effects can occur at the same time, and it may be difficult to sort out the net effect of a radical flank effect. They produce a negative radical flank effect because they think the problem has been exaggerated, and that mainstream climate scientists prevent publication of sceptical findings to maintain their research money, and that climate change campaigners are trying to undermine their research money.

Radical flanks can occur on both sides of a debate. The question is not whether a position is right or wrong, but what effect it has on the debate. A radical flank effect can occur whether or not the radical flank has the correct scientific or political position. The question is not whether the position is right or wrong, but what effect it has on the debate.
Defending down civilised society. If sceptics sound too extreme, they may discredit the sceptical position. What should be done about radical flanks? It depends. If you are in the mainstream and have to deal with a radical flank, it may be more reasonable and achievable. So it can be worthwhile to talk to those in the mainstream and see what you can do to help. It depends on the issue, and perhaps move the mainstream a bit. Providing this mainstream position makes it seem less extreme, your efforts may have value in maintaining some connections. Campaigners with more extreme positions often see those in the mainstream as compromisers or sell-outs, who help maintain the system that causes the problem. If there is an emergency, then those who want to move slowly and carefully may seem like part of the problem. If there is a movement, then those who want to move actually help maintain the system that causes the problem. Perhaps there are opportunities to coordinate your actions, or even if you're in a different group, even if you feel obliged to participate, it can be useful to understand. If nothing else, it can be useful to understand. Perhaps you can be used to open lines of communication, namely to talk to members of the more extreme group. Perhaps you can become part of the new mainstream. Alternatively, if the radical flank is more extreme than you — you might tow your position down the track. Perhaps your position can promote the issue, and perhaps move the mainstream a bit. The same applies if you are a member of the radical flank. Perhaps you can become part of the new mainstream.
The controversy manual may be more surveillance than people are aware of, however, there is evidence that monitoring of groups active in controversy over chronic fatigue syndrome or smoking, as well as environmental groups have been subject to surveillance. But there is little evidence of mass action, peace and environmental groups being targeted by police and activists who are seen as threats to the state, including groups planning violence, extremist groups (left-wing or right-wing), and groups capable of mobilizing people. The answer is probably not. Surveillance is most likely by police against those seen as threats to the state, including peace and environmental groups. Some evidence also exists of police monitoring of groups active in controversy over smoking or chronic fatigue syndrome, but there is little evidence of mass action, peace and environmental groups being targeted.

7.7 Surveillance and infiltrators

When you say in a room can be detected through the window, monitored by a laser. Every keystroke is recorded and transmitted. What you say in a room can be listened to on your computer so others can listen to everything you say. Your phone can be turned into a microphone, so surveillance is possible and is becoming easier. Some evidence also exists of police monitoring of groups active in controversy over smoking or chronic fatigue syndrome, but there is little evidence of mass action, peace and environmental groups being targeted.

Many activists imagine their phones are tapped or their emails intercepted. But in most cases, there is less to hide and infiltration is a greater risk from infiltrators: people who support the other side who attend your meetings and report on your plans.

Instead of becoming paranoid about surveillance and infiltration, another approach is to make your group and activities more open. This means there is less to hide and infiltration is a greater risk from infiltrators: people who support the other side who attend your meetings and report on your plans.

Defending
A group was planning a civil disobedience action. It notified the police and invited the police to attend its meetings. (None did.) It forwarded minutes of its meetings to the police. This openness meant the police knew what was being planned and were not afraid of antagonism or violence. On the day of the action, the police were accommodating.

Conclusion

In some controversies, campaigners treat opponents with respect: the issues are debated openly and fairly. That is the ideal. In many controversies, though, all sorts of aggressive methods are used, including personal abuse, complaints to professional bodies, legal actions and physical attack. These sorts of methods can be disturbing and distressing, and cause some people to withdraw. In the worst scenarios, abuse escalates on both sides, and those seeking a middle ground are increasingly marginalised.

The good news is that being prepared, if is sometimes possible to make attacks backfire. The more successful you are in exposing and discrediting attacks, the more you can sometimes make the police feel they are being undermined. The more successful you are in showing that your cause is just, the more unlikely people are to attack in the first place. The likely opponents will be so afraid of attacks that they are less likely to be successful. The more successful they are in doing this, the less likely it is that you will be attacked.

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Being principled

Honesty, courtesy, transparency, citizen participation — many people see these as desirable. They are possible principles of goals for participations in scientific controversies. Honesty, courtesy, transparency, citizen participation — principles.

Principles are worthwhile in themselves, even if they create a more desirable society. Following principles helps create the potential for disaster; violating them gives better results, even if they violate honesty, courtesy, transparency, and citizen participation. Following principles leads to better results, even if they violate honesty, courtesy, transparency, and citizen participation.

Situations in which principles clash can be especially difficult. Although principles are not ironclad guides, it is worthwhile thinking about appropriate behavior. There are several reasons to try to maintain principles.

- Principles are worthwhile in themselves, even if violating them gives better results.
- Following principles leads to better results; violating them creates the potential for disaster.
- Following principles helps create a more desirable society.

The alternative to sticking to principles is doing whatever is required to win and saying "the ends justify the means." Following this approach means compromising principles in which a principle needs to be compromised. Maintaining principles can be difficult, and there are million situations in which principles clash can be especially difficult. Following this approach means compromising principles in which a principle needs to be compromised.

Although principles are not ironclad guides, it is worthwhile thinking about appropriate behavior. There are several reasons to try to maintain principles.
8.1 Being honest

Telling the truth is widely recognised as a virtue; however, telling half truths to make one's views more convincing is a common and accepted practice. In fact, the ability to persuade others is often considered a valuable skill. 

In controversies, there are several potential audiences for lies. One is in public debates. In selling one's position, it is commonplace to spin the evidence to advantage, citing favorable studies and not mentioning unfavorable ones. Emphasizing helpful conclusions and misrepresenting contrary ones is helpful in deceiving your audience.

For example, there are several potential audiences. In controversies, lies can be said to serve certain purposes. In public debates, it is acceptable to spin the evidence to advantage, citing favorable studies and not mentioning unfavorable ones. Emphasizing helpful conclusions and misrepresenting contrary ones is helpful in deceiving your audience.

However, deception does occur. For example, a campaigner might say, "I've never received any industry funding." If evidence of industry funding surfaces, this sort of false claim can be very damaging. In such a situation, dishonesty might help the campaign, but at the risk of being harmful should the truth be revealed.

So it is useful to be aware of information that might be freely available or to be prepared to lie in order to make one's case. In short-term political campaigns, disavowal might help the cause, but in a larger context, the use of false claims can be very damaging. In such situations, lies might be used to advantage, but at the risk of being harmful should the truth be revealed.

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Being principled and a good speaker, and apparently knowledgeable, and who says he has a PhD in microbiology. But it turns out he enrolled in a PhD programme but never completed it. If he becomes a spokesperson for your group, this could be damaging. So could various other things, such as industry funding, membership in a church widely considered to be a cult, a criminal record or an uncontrollable temper.

Fostering honesty among your members makes for a much more solid campaign, especially if the other side is being less honest. And sometimes you make yourself unnecessarily vulnerable. By shying from a confrontation in a meeting or on the process by pretending nothing is wrong, you may encourage honesty on your side and deal with it. This is one way to model the process of openness and honesty and make it easier for others to tell about their mistakes. You don't need to go overboard by telling about all your mistakes or very serious ones — revelations might be small things, such as when you made a mistake in a blog. You don't need to go overboard by telling about all your mistakes, you make it easier for others to tell about theirs.

By telling about your own mistakes, you make it easier to minimise the damage. But how can you encourage honesty of this sort? One way is to model the process of openness and honesty and make it easier for others to tell about their mistakes. You don't need to go overboard by telling about all your mistakes or very serious ones — revelations might be small things, such as when you made a mistake in a blog. You don't need to go overboard by telling about all your mistakes, you make it easier for others to tell about theirs.

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The controversy manual

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The controversy manual.
Being principled.

The idea is to stimulate a discussion, with those who are not the closest to the speaker we've invited to not advocate might say, "But what if the devil's advocate role of being the devil's
think of who in a discussion about organizing a meeting, any arguments that go against what all or nearly all people
argue for or against. The devil's advocate is to stimulate a way to counteract the damaging effects of clinging to beliefs.

When true belief spreads throughout a group, one support.

campaign and it will be harder to build a wider base of
believers, more of whom is likely to admit any weaknesses. Much of the bite of true believers is directed against those within the group who become dominant by true believers. The devil's advocate apparatus is effective by new circumstances or more realistic into attack mode, so the group's arguments become more intense, because the devil's advocate becomes unimportant to go.

It's easy to see how damaging this sort of dynamic
even an effort to drive the decision out of the group. But the devil's advocate role of being the devil's
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active campaigners as volunteers?

The controversy manual

manipulating how many would remain
assess others in the campaign. How many of them are
this themselves — but you might find it revealing to
best salary and conditions. Few individuals would admit to
mercurial campaigner, available for the side that gives the
side if I were paid a large salary. If so, you might be a
related question: Would I be willing to support the other
question is: Would I continue to be active on the issue
For individuals, it is useful to be able to analyse
own dynamics.

own dynamics.

The idea of devil’s advocates seems some distance
in their understanding, but other tools and techniques
and groups need is self-understanding. How can help
from the topic of honesty — and it’s where individuals
chosen out

attack by one behavers and be shielded, discarded or
reach quick consensus, so quickly, may become larger for
these title members, who keep the group from
meaty-sounding members who are de facto devil’s advocates.
advocates. Some groups are lucky enough to have some
advocates. Some groups are lucky enough to have some
This way, no one is likely to start attacking the devil’s
If’s often best to assign the role of devil’s advocate to
choices and examining alternatives.

424 The controversy manual
Being principled

For some campaigners, especially on the side where funds are limited or non-existent, status is far more important. One key question is "Would I continue to be active on the issue if I was no longer welcome in my group?" Some campaigners maintain their self-image through their role: as leader of a group, as valued secretary or treasurer, as reliable behind-the-scenes worker. If this role is taken away, commitment may drop. When internal power-plays bring in a new clique to run the group, longstanding activists may be shunted aside or even expelled from the group. For many campaigners, this is a severe psychological blow and can sour any future connection with the issue.

It is quite common for campaigners to get much of their energy from like-minded people, especially those they work with regularly. So it is understandable that when they are humiliated or rejected by others, they may withdraw from the issue. This can happen in a number of ways, either by losing their role or being excluded from the group.

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Acknowledging your innermost motivations, doubts and fantasies to yourself can be useful, but telling others about them can be risky. You might trust others, but do you really know them well enough? Some things may be better kept to yourself.

In summary, honesty has several dimensions: in campaigning, among campaigners on your side, among close friends, and with yourself. Honesty includes not telling lies and not hiding the truth. You can be honest as a matter of principle or out of pragmatic necessity. For example, a prominent supporter of nuclear power who also worked at the University of New South Wales withdrew his support when he realized that the university had made mistakes in a public statement.

8.2 Supporting free speech

In the early 1980s, when I worked at the Australian National University and was active in the anti-nuclear power movement, a leading opponent of nuclear power sent a letter to the Vice-Chancellor saying I should resign. I wrote to the Vice-Chancellor saying I supported Sir Ernest's right to publish his views. Why did I defend Sir Ernest's right to publish on nuclear power, despite my disagreement with him? I knew that if the university started restricting academic freedom to comment on controversial issues, including those common to controversial issues, including those
I try to stop others from having their say.

If you're on the side with less power and influence, free speech is to your advantage, because you are far more likely to be censored than to be able to censor opponents of opponents. There are several reasons for censorship of opponents. Supporting free speech requires being opposed to censorship.

• Free speech is a worthy goal in itself. It provides unfamiliarity with the issues.

• Free speech allows greater participation in controversies. When they hear, people improve their arguments and some adjust their protest or have different perspectives. Free speech allows more viewpoints to be heard.

• Free speech allows more viewpoints to be heard.

There are limits to free speech. It doesn't mean you have to open your blog to anyone. It doesn't mean providing equal time to opponents. It doesn't mean providing equal time to both sides. It doesn't mean you don't have to stop others from having their say.

There is a lot of rhetoric about free speech, but in practice many people are intolerant of those they disagree with. In practice there are limits to free speech.
In controversies, a common slogan is that „people are entitled to their own opinions but not to their own facts.” This is misleading, because facts are disputed, facts are interpreted according to paradigms, and there is more to controversies than facts. In controversies, a common slogan is that „people are entitled to their own opinions but not to their own facts.” This is misleading, because facts are disputed, facts are interpreted according to paradigms, and there is more to controversies than facts.
Many organisations — such as government bodies — provide the sort of details about their backgrounds, operations, and finances that would mean providing details about who made donations, sources of funding and all recipients of expenditures. This is a way of minimising corruption. If transparency is a synonym for openness, transparency is also an honest indiscretion. A scandal, then, is less about transparency and more about financial processes and practices being open to public inspection. If transparency is closely related to honesty, a scandal involves a lack of transparency about financial matters.

8.3 Being open

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For these reasons, transparency is worthwhile for groups with nothing to hide. By being open, they set a standard others cannot achieve. There is no formula for working out the ideal level of transparency.

Taking a personal risk by being involved

Maybe no, if you have members who are

Anyone? Maybe, if your group is small, or if everyone is

Should your membership list be open for inspection by

Confidentiality and privacy are values needed to

Transparency is a worthwhile goal, but it can be

and can enable groups to cocrn

false impression of participation, this is a lack of openness

cliché makes important decisions, while members give a

Other opponents cannot achieve.

For these reasons, transparency is worthwhile for
8.4 Being courteous

For some campaigners, it can be very tempting to treat opponents with contempt: to call them names, not greet them or shake hands in meetings, to use sarcasm, to shout abuse. After all, the opponents are a tiny minority, and many means and tactics show how partisan behavior. For many, controversy is an essential part of the process. Many people not directly involved in the parties, namely the people not directly involved in the parties, are less likely to be hostile towards you than you are towards them, because they are less likely to be hostile towards you.

There are several audiences for your attitudes and behavior: the opponents themselves, the other side (whether you are directly involved or not), or the people not directly involved. The first is the opponents themselves. If you are nasty, they are less likely to listen to you and less likely to take you seriously. The chance that leading opponents will change their minds is minuscule, but discourteous behavior can make them more determined. As well as the opponents you insult directly, others on the opposing side will notice as well. If you are nasty, you are more likely to be hostile to other opponents, and they will be more likely to be hostile to you.

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The controversy manual

techniques. (On the other hand, some people think abuse is deserved or just funny, and treat it as a kind of sport.) Then there are the people on your own side. In being abusive towards opponents, you may alienate some supporters who dislike nastiness. On the other hand, you demonstrate a style of campaigning that others may mimic—they may join in the abuse. It can be useful to ask yourself, "What sorts of attitudes and behaviors by opponents are most likely to encourage opponents to treat our views seriously?" If you are like most people, you will value respect over abuse. Then turn this question around: "If you are like most people, you will value respect over abuse, then what sorts of attitudes and behaviors by opponents are most likely to encourage opponents to treat our views seriously?" The best test is by those without a prior commitment.

8.5 Fostering deliberation

Imagine this way of resolving a controversy. A panel of citizens is created by randomly selecting 12 people. To obtain a demographic balance, the number of places is set 6 men and 6 women. Individuals chosen randomly from each group are asked to deliberate on the issue in advance for particular categories, for example 6 men and 6 women. Then a demographic balance, the number of places is set 6 men and 6 women. Individuals chosen randomly from each group are asked to deliberate on the issue in advance for particular categories, for example 6 men and 6 women. Individuals chosen randomly from each group are asked to deliberate on the issue in advance for particular categories, for example 6 men and 6 women. Individuals chosen randomly from each group are asked to deliberate on the issue in advance for particular categories, for example 6 men and 6 women. Individuals chosen randomly from each group are asked to deliberate on the issue in advance for particular categories, for example 6 men and 6 women. Individuals chosen randomly from each group are asked to deliberate on the issue in advance for particular categories, for example 6 men and 6 women.
always independent, in the same way as members of a category are invited to join the panel until the category is filled. The panel meets for several days or a week, addressing a specific task or question, such as “How should food additives be regulated?” Led by neutral facilitators, the panelists read documents about the issue, hear from experts and partisan groups on all sides of the question, and then discuss the evidence, questioning those presenting evidence and viewpoints, and finally attempting to arrive at an agreed position. The panel is then used by policy-makers as the basis for action.

These sorts of panels are called citizen juries or policy juries. They are analogous to court juries except they address policy issues, typically the most difficult or contentious ones, and then new sets of panels to address recommendations and then new sets of panels to address the issues. These sorts of panels are called citizen juries or policy juries. This is a lot of responsibility for just 12 people.
The controversy manual
court jury. (To ensure independence, a screening process
can be used.) Because the jury members are
limited in time, there is much less opportunity for lobbying
than there is in legislatures. To ensure independence, a screening process
is used.

The combination of independence and deliberation is
powerful: it has the best chance of producing recommendations
reached by those who have studied the results of hundreds
of juries. This, at least, is the conclusion

4 I thank Lyn Carson for helpful comments about deliberation.
Being principled of citizen juries, and related processes of citizen participation, in numerous countries. Independence and deliberation are usually absent from public controversies. Most of the "discussion" in the public sphere is partisan comment, with the aim of convincing people or getting a desirable outcome, rather than encouraging public deliberation. The aim of most public sphere is persuasion, not discussion. Most of the "conversations" in the public sphere are not conversations, but rather propaganda. Independence and deliberation are usually absent from public conversations, and related processes of citizen participation.
The controversy manual

The companies did not think their arguments would be effective with an independent panel carefully evaluating evidence and options. The companies have been highly influential in blocking container deposit legislation in most Australian states, using lobbying and other insider techniques.6

Citizen juries, and related processes for public participation, involve quite a different mindset than the usual processes of campaigning. Campaigners use connections, lobbying, advertisements, slogans, rallies and a host of other techniques, many of which involve urging people to take sides. Deliberation, in contrast, involves careful study, reflection and calm discussion. It encourages a different approach to decision making.

In 2007 and 2008, the Bioethics Council in New Zealand ran an extensive set of deliberative forums on pre-birth testing for genetic and other disorders, a contentious issue closely linked to the issue of abortion. The process had a positive impact on participants. The resulting report stated:

Conclusions. The resulting report stated:

Deliberation can make a difference in seemingly intractable debates. Encouraging careful study, reflection and calm discussion, support for opposing a decision, with the incentive of reaching a consensus, results in people who provide evidence, reflect on their own positions, and are more willing to compromise. Deliberation involves quite a different mindset than the usual techniques of campaigning, such as connections, slogans, rallies and other methods.

Being principled

At these deliberative events we heard something more than we had heard in previous dialogue events organised by the Bioethics Council. In the past, we certainly heard viewpoints challenged and enlarged as people interacted with one another. But the deliberative process added another dimension, as people considered a variety of possible responses. As they did so, they negotiated to produce policy directions the group could share, or identified key policy issues for decision-making.

When the government closed down the Bioethics Council, many leading church figures wrote in protest. Anglican, Catholic, Methodist and Presbyterian churches acted together on this political issue — not a common occurrence — suggesting the high value they placed on the Council’s deliberative processes.

Campaigners who believe in greater citizen participation can try to orient their efforts to foster greater deliberation. Instead of advertising campaigns, more effort could be placed on encouraging discussions with people who normally do not engage in them. Campaigns that try to inform the public about the issues can try to orient their efforts to foster greater deliberation.

I thank Simon Wright for information about this issue.


The controversy manual presenting just one side of the debate, more effort could be put into developing materials that seriously address opponent views, knowing that readers will be carefully considering material from both sides.

Deliberation rather than debate — that is radical indeed. This might be unachievable but should it be a goal? Some controversies are so polarised when laws or policies are involved. The water supply is either fluoride or not. There is no middle ground.

In some controversies, the choice seems stark: their side either wins or loses. There is no middle ground. The arguments remain on the agenda. Alternatives seem not to have shifted. In countries where fluoride was introduced in the 1950s, the arguments are much the same as they were in the 1990s. In countries where fluoride has been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s.

Some controversies are so polarised that they have middle ground. When laws or policies are involved. The water supply is either fluoride or not. There is no middle ground. The arguments remain on the agenda. Alternatives seem not to have shifted. In countries where fluoride was introduced in the 1950s, the arguments are much the same as they were in the 1990s. In countries where fluoride has been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s and been debated ever since it was proposed in the 1940s.

8.6 Seeking solutions

Campaigns often focus on specific goals. Most controversies can address opponents' views seriously, allowing for more balanced material to be developed. Materials that address opponents' views seriously and honestly could be presented just one side of the debate, more effort could be put into developing materials that seriously address opponent views, knowing that readers will be carefully considering material from both sides.
Each side wants victory over the opponent and will not
risk the outcome. Such an outcome involves a sort of lock-in:
versus, such as fluoridation, involves a sort of lock-in:
one risk losing. The most intense and long-lasting contro-
versies, such as fluoridation, involve a sort of lock-in:
for a minority. The most intense and long-lasting contro-
versies, such as fluoridation, involve a sort of lock-in:
one side is seen as winning or losing, even though there are
hundreds of strategies over power plants across the globe.

The outcome for that particular plant

Some campaigners push for such solutions, but they
need for ablation.
Promoting better birth control would reduce the
need for abortion.

Promoting better health by reducing poverty and
centre violence would reduce the need for violence.

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consider alternative ways of achieving their ostensible goals. For example, many opponents of abortion also oppose sex education and easy access to contraceptive devices. You personally might prefer a solution outside the spectrum, but what choice do you have if opponents refuse to think the same way?

1. You can avoid the controversy altogether, seeing it as unproductive. You can try to position yourself outside the battle lines and seek a win-win solution.

2. You can engage with the controversy but remain alert to opportunities to step outside the battle lines after opposition has stepped outside the main fronts of the controversy. You can actively seek dialogue with individuals on both sides of the controversy who are willing to consider unconventional options.

3. Fom an alternative perspective, seeking alternative solutions is likely to be a waste of time and energy, and may not solve the root causes of opposition. You can try to position yourself outside the main game and see if the issue remains.

4. You can try to position yourself outside the controversy, but still make contributions to the debate.

5. You can avoid the controversy altogether, seeing it as unproductive.

There is no right or wrong choice here. It is important to be aware that there are options. The dynamics of polarised controversies push people to be either all in or all out, in other words to choose option 1 or option 5. The intermediate options are challenging and can be uncomfortable.
If you’ve been involved with a controversy for years, presenting the arguments over and over and running into the same objections and obstacles, you may begin to wonder whether it’s all worth it. If you’ve been criticized unfairly, perhaps accused of fraud, or experienced threats and reprisals, you may decide what you’re achieving is not worth the personal cost — and that’s assuming you can see some results from your efforts.

Furthermore, perhaps the controversy is trapped in a downward spiral of misrepresentation and abuse, with opponents shouting you down for supposed mistakes and transgressions — and the opponents feeling exactly the same way as you. You think you’re being unfairly treated, and so do they. The prospects for deliberation seem remote. Anyone who tries to take an intermediate position is likely to be attacked by one side and captured by the other, or sometimes attacked by both sides, or simply ignored.

There’s another answer in the form of a question: “Is there another way?” If there is, you may want to think about whether there’s a different way to think about the controversy, such as promoting good diet or responsible government. If so, you can rededicate yourself to the debate.

There’s another answer, one answer is a yes, certainly, and you start asking yourself, “Is it worth all the effort?” One answer is “Yes, certainly,” and you start asking yourself, “Is it worth all the effort?” And so on. The prospects for deliberation seem remote. Anyone who tries to take an intermediate position is likely to be attacked by one side and captured by the other, or sometimes attacked by both sides, or simply ignored.

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But some results from your efforts.

Having principles
The controversy manual

getting out of the debate and putting your energies into some other activity that achieves some of the same goals, but lets the opponents run rampant on the issue? Perhaps, if you're too worn out, this is irrelevant; you just need to get away from it all. On the other hand, maybe a different approach will offer a new prospect for doing something worthwhile. If you're too worn out, this is irrelevant; you just need to get away or the debate and put your energies into something else. Perhaps, some other activity that achieves some of the same goals, but lets the opponents run rampant on the issue?
Appendix 1

My background

I've been involved with scientific controversies for a long time. In 1972, while doing my PhD in theoretical physics at the University of Sydney, I was introduced to the controversy over the effects of exhausts from supersonic transport aircraft on stratospheric ozone. My first book, published a year later, was built around a facet of this controversy.

After finishing my PhD, in 1976 I obtained a job as a research assistant at the Australian National University, mainly doing mathematical modelling. Soon after arriving in Canberra I joined the local Friends of the Earth group. At the time, FOE's main issue was uranium mining and nuclear power. I didn't have a great knowledge of nuclear physics, but I knew enough about the key issues concerning nuclear power: reactor accidents, radioactive waste, energy needs, economics, and organised rallies. We wrote leaflets, gave talks, held information stalls and organised rallies.

I've been involved with scientific controversies for a long time. My first book, published in 1972, while doing my PhD in theoretical physics at the University of Sydney, I was introduced to the controversy over the effects of exhausts from supersonic transport aircraft on stratospheric ozone. My book was built around a facet of this controversy.

who came up against Sir Philip or Sir Ernest? Doing this provided information for other anti-nuclear campaigners.

Nuclear Knights, a booklet by Brian Martin, provided views about nuclear power, nuclear weapons and the newspapers often echoed their views, and for a long time, many of their articles as I could and obtained numerous newspaper columns about Sir Philip and Sir Ernest. I collected articles of the arguments of Sir Philip and Sir Ernest.

Before long, I planned a bigger project: an analysis of their arguments. As a technical expert was considerably less ordinary, even with my PhD, my standing in applied mathematics, so even with my PhD, my standing was considered less. But on one-year contracts at the Australian National University, I was working at the same time, writing for the Canberra Times, Professor of Nuclear Physics at the Australian Atomic Energy Commission, and chairman of the committee on nuclear energy, and former director of the Australian National University.

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Before some involvement with the nuclear power debate, clarity about values. Some time, the key issues were straightforward, some clear about values. Given some clear about values. Some time, the key issues were straightforward, and more recently, the discussion turned to the economics of nuclear power. As the situation is clear about values. Some time, the key issues were straightforward, and more recently, the discussion turned to the economics of nuclear power.
My background project gave me greater insight into the role of expertise in controversies, in particular the influence of people’s occupations and social positions on their views and the ways arguments can be adapted to circumstances.

About the same time I was working on Nuclear Knights, I started gathering information about what I called “suppression of dissent.” Jeremy Evans, who taught environmental studies at the ANU, was in danger of being denied tenure, despite an excellent teaching performance and research output. Today, nearly everyone supports protection of the environment, at least rhetorically, but in 1980 this was considered radical, especially among scientists. Jeremy was targeted because of his key role in the Human Sciences Program, which presented challenging views about environmental issues to undergraduates. Connor’s views about the ANU, who laughed at him, “suppression of dissent.” Jeremy Evans, who laughed at him, I started gathering information about what I called “suppression of dissent.” I started gathering information about what I called “suppression of dissent.” Jeremy’s tenure case was just one example. A number of other environmental researchers and teachers, in Australia and New Zealand, were encountering attacks, such as being censored, being denied tenure or being threatened with dismissal. Jeremy’s case was just one example. A number of other environmental researchers and teachers, in Australia and New Zealand, were encountering attacks, such as being censored, being denied tenure or being threatened with dismissal. Jeremy’s case was just one example. A number of other environmental researchers and teachers, in Australia and New Zealand, were encountering attacks, such as being censored, being denied tenure or being threatened with dismissal.
As a result of this experience, I started looking into suppression of dissent in a number of areas. For example, I found examples in a dozen countries of attacks on scientists and engineers critical of nuclear power.

After my short-term appointments in applied mathematics came to an end, in 1986 I obtained a lectureship in the Department of Science and Technology Studies at the University of Wollongong. This meant I could devote all my time to research into social science topics — including controversy studies. I studied arguments on both sides, interviewed leading Australian proponents and opponents of nuclear power, wrote articles about pesticides, and wrote a book about the controversy, Scientific Knowledge in Controversy: The Social Dynamics of the Fluoridation Debate (Albany, NY: State University of New York Press, 1991).
My background is in science and I was unable to get his articles about this published. I agreed to publish one of the articles in a working paper series at the University of Wollongong because I believed his ideas, whether right or wrong, deserved attention. Two decades later, I am still following the debate over the origin of AIDS and occasionally writing articles on it. 6

The origin-of-AIDS debate is different from most of the others that I've been involved with: there is no social movement supporting or opposing theories in this area. My role in the origin-of-AIDS debate also has been somewhat different than with other controversies: by publishing Pascal's paper and subsequently by writing articles, I intervened in the debate, not as a partisan on one side but as a social scientist making a judgement that one theory was not being treated fairly under organised attack by a pro-vaccination citizens' group. In 2010, I became involved in the Australian vaccination debate, not having a strong view about vaccination, my main concern under organised attack by a pro-vaccination citizens' group critical of standard vaccination policy was to defend the right of critics to be able to speak freely about the role has been to defend the right of critics to be able to speak freely about the role of vested interests. In 2010, I became involved in the Australian vaccination debate and occasionally writing articles on it. My role in the origin-of-AIDS debate also has been somewhat different from most of the others that I've been involved with: there is no social movement supporting or opposing theories in this area.

as a result, I also came under attack by the pro-vaccinationists.7

Being involved in controversies can be exciting and a great way to learn about issues and campaigning. However, I try to remind myself that the issues debated most strenuously are not always the most important ones.

7 Brian Martin, "Defending vaccination: understanding the attack on the Australian Vaccination Network," Living Wisdom, No. 8, 2011.
Appendix 2

Scholarly studies of controversies

There are two main types of writing about controversies. The first, typically voluminous, is writing on the issues under debate, for example writing about genetic engineering, its benefits, possible hazards, economics, morality and much else. Some of this writing is by partisans, some by journalists and some by other commentators. I have drawn on this material, which is plentiful, for examining some of the key players and controversies, examining the key players, the way arguments are deployed, and so forth. If you want to learn about controversies, some academic analyses can be helpful; they can provide informative overviews of the arguments, the key players and the issues at stake. But these two types of writing can also always be demarcated for understanding and engagement in public debate.

1 These two types of writing can't always be demarcated: for example, some academic analyses are highly partisan and some commentary by journalists provide insightful analysis.

2 Useful collections include Daniel Lee Kleinman, Karen A. Cloud-Hansen, Christina Matta and Jo Handelsman (eds), Controversies in Science and Technology: From Evolution to Energy (New Rochelle, NY: Mary Ann Liebert, 2010); Daniel Lee Kleinman, Karen A. Cloud-Hansen and Jo Handelsman (eds), Controversies in Science and Technology: From Climate to Chromosomes (New Rochelle, NY: Mary Ann Liebert, 2009); Daniel Lee Kleinman, Karen A. Cloud-Hansen and Jo Handelsman (eds), Controversies in Science and Technology: From Climate to Chromosomes (New Rochelle, NY: Mary Ann Liebert, 2008).
However, if you are involved in a controversy and know a fair bit about it, and are looking for insights about how to be more effective, then academic analyses seldom have much to offer. It is a familiar experience for activists to be disappointed with scholarly treatments. Social movement scholar James Jasper sums up very nicely:

Getting Your Way: Strategic Dilemmas in the Social Sciences and Humanities. In part it is due to the other-things-social scientists and humanities, in part to the non-academic, indeed to anyone outside the publishing world. Journals, for example, which is expected in scholarly journals but off-putting, is expected of academic journals and participants. In part, this is because of academic journals and participants. In part, this is because of academic journals and participants. In part, this is because of academic journals and participants. My own experience of reading and re-reading many scholarly analyses my assessment is that

Having studied scientific controversies for several decades

I have

Nothing is gained by such a scholarly approach. It is

My research on social movements has shown me just how

The controversy manual
Scholarly studies of controversies are seldom all that helpful to participants. The orientation of academic work is often seen as popularly unappealing to controversy participants, yet scholars typically seek to learn about controversies, for example why they occur, why they persist and how they are resolved, but this is not particularly useful to participants, who know very well that the controversy is occurring and want to know what to do. Scholars, however, seldom provide how-to information. Sometimes this is because they don’t know or because they have little experience as participants. Scholars usually write within the academic frameworks of their disciplines and are concerned with publishing in accessible language, and as such, their work is not necessarily comprehensible to those outside the field of their research. The upshot is that there is some valuable material in books and articles produced by scholars but, to be taken up by participants, it often needs to be mined for practical insights and translated into accessible language. This doesn’t happen very often. Campaigners are too busy to do it. Furthermore, even after scholars’ work is translated into an accessible style, there may be little of practical value. A few academic studies are useful to activists. These papers are eagerly circulated to others, who, study by study, learn about and participate in controversies. Because scholars are often grouped as though they are separate from those who have direct experience of the controversies, but a big factor is that scholars don’t know how to help. Sometimes this is because they don’t know or because they have little experience as participants. Scholars, however, seldom provide how-to information or advice on how to address the controversies or what to do. The controversy is occurring and there is little that can be done to resolve it. The few who have learned about controversies often do not share this knowledge with others, and the participation of academics in controversy is minimal. Social science studies of scientific controversies are seldom all that helpful to participants.
The controversy manual

Mathieu Albert has studied the pressures on academics to produce work aimed either at their peers — for example papers in scholarly journals, usually of little interest to wider audiences — or at people outside the academy, for example contributions to public debate. In a study of economists and sociologists at two Canadian universities, Albert found that over a period of couple of decades, there was greater emphasis on publishing work aimed at peers. If aspiring academics put a lot of effort into writing for audiences outside their discipline, they are less likely to obtain tenure.

This trend is despite concerns about the commercialisation of universities. Social researchers need to move away from the view that the dynamics of controversies are largely determined by social structures and processes, such as class structure, social hierarchy, and the knowledge economy. In controversies, participants make choices, and the choices they make can influence the evolution of debate and, in some cases, outcomes. This is the element of strategy that Jasper lamented as virtually absent from scholarly studies of social movements. Some researchers, to understand controversies, become personally involved. They might have a particular research agenda or just feel they need to do something about a pressing social issue. If aspiring academics put a lot of effort into writing for audiences outside their discipline, they are less likely to obtain tenure. This trend is despite concerns about the commercialisation of universities.
Getting involved in controversies provides a deeper and different sort of insight. By being a participant, a researcher affects the controversy being studied — and this disturbance is theoretically interesting in itself.5

By studying the controversy directly, a participant provides a deeper and different sort of insight. By being a participant, a researcher provides a deeper and different sort of insight.
Are you projecting?

Have you ever known someone who makes nasty comments about others — and who regularly complains about other people being nasty? Or someone with obvious prejudices who claims to be unbiased — and obsesses over other people being biased? Sometimes when you do things like this, you are projecting.

Projection is a psychological process in which a person denies things about themselves and instead “projects” those things onto others, namely sees them in others.

Projection is a particular hazard in polarised controversies. Here, I use other sorts of examples. If you’re familiar with particular controversies, you will see the relevance of these ideas.

Consider a family with lots of problems: abusive language, lack of respect, flouting of rules. Sometimes the blame is shifted onto a single member of the family, the "black sheep." The rest of the family blames the black sheep. But the black sheep is shunned because of the terrible things. Projection is usually an unconscious process.

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Are you projecting?

455

criminal, and blamed for bringing down the group — with everyone else absolved from responsibility.

Projection is a key psychological process in wartime. The enemy is painted as pure evil, while the home side is conceived as entirely virtuous. Governments use propaganda to help everyone join in this projection process.

Many men have homosexual impulses, but they can be frightening and dangerous to acknowledge consciously, especially in a rigidly heterosexual context. So instead of recognising these impulses, they are projected onto gay men — and excusing someone who is different. The group ends up defending its common values and denying its capacity for doing bad things.

Those who are relatively powerless — people with disabilities, ethnic minorities, refugees, foreigners, dissidents and criminals, among others — are prime recipients of projection. However, projection can also be aimed at powerful people. For example, some people blame politicians for all the problems in society and avoid thinking about their own responsibility.

Why?

Projection can serve to unify communities. By attacking and expelling someone who is different, the group endorses its common values and denies its capacity for doing bad things. In earlier periods in human evolution, projection and scapegoating might have had survival value. In a situation of scarcity, internal dissension could be disastrous. The group needed to be unified to maintain food and other necessities. People who are different or dangerous to acknowledge are attacked and expelled from the community. By excluding them, the community can serve to unify the group.

In a situation of scarcity, the group needs to be aware of and accept this reality. The group needs to be aware of its own responsibility for all the problems in society. However, projection can also be used to avoid thinking about one's own responsibility. Projection can serve to unify the group at the expense of acknowledging one's own responsibility.
The controversy manual

harnessing a wide variety of perspectives and skills to deal
with large complex problems such as running large
organisations, dealing with environmental breakdown and
preventing war. Previously, the main threats were
environmental: predators, lack of food, harsh
conditions. Today, the main threats are created by humans
themselves. Projection can be dangerous because it
focuses attention on the wrong source of danger.

Symptoms

How can you tell whether projection is occurring? Perhaps
the black sheep really is the source of the family’s
problems. Perhaps the enemy really is evil.

There is no single test for projection, but there are a
number of hints.

There is a dichotomy between good and evil (called
“splitting”: others are treated as either entirely good
or entirely bad, with no shades of grey. There is no
acknowledgment of the other’s humanity or good
intentions. The self is treated the same way — usually
inflated. The self is treated as entirely good, the other
as entirely evil.

There is excessive hatred of the other. Loathing is
typically visceral, without a satisfactory rational
foundation.

Problems are attributed to individuals, not to social
systems, organizations or processes. In short, evil is
personalized.

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foundation.

Problems are attributed to individuals, not to social
systems, organizations or processes. In short, evil is
personalized.
Are you projecting?

• Vengeance is sought. There is little rational assessment of how to deal with problems, including whether punishment of the other is effective.

Projection of virtues

It's also possible to deny good things about oneself, instead projecting them onto others.

In many cases, the family black sheep or workplace scapegoat actually believes what others say about them. Instead of projecting their positive attributes, they may deny their own virtues, projecting them onto the group.

Bosses and national leaders are prime recipients of projection of virtues. Submissive employees may put all blame on the group. They may deny their own virtues, projecting them onto the leader. The greater the autonomy and confidence on the leader, the greater is the projection of virtues. Submissive employees may put all blame on the group.

For themselves, the laws of physics and several are denied and feel powerless and thus receptive to

The legal system is often assumed to work perfectly to deliver justice. The law is assumed to be ideal. Individuals project their incapacity for fairness onto the law, reserving for themselves the flaws of bias and serving of the self.
Experts of all kinds — especially medical experts — can be recipients of projection of virtues. Some say the concept of God is a projection. Humans take what is good about themselves and project it onto a supreme being, who is separate from themselves and who will take care of them.

The danger in projecting virtues is that an individual's or group's own capacities are denied and wither through non-use, while the recipient of the projection is allowed to have exceptional power, a possible source of corruption.

Introjection
Introjection is when you accept views about yourself that others place onto you. Usually this is an unconscious process. Introjection occurs when an office scapegoat accepts the negative views of co-workers or when citizens accept their leader's view that they must be obedient.

Introjection is the opposite of projection. The two processes often operate hand in hand, for example with cult members projecting their autonomy onto their leader and accepting the leader's view that they must be obedient. The leader's assumption of control over the group's own capacities is denied and whatever strengths the group has are suppressed. This leaves the individual with a sense of powerlessness and no sense of who is in control. Humans often say they have good intentions and project them onto themselves. The concept of God as a projection of virtues.

Overcoming projection
The first and most important step in overcoming undue projection is recognizing that it is occurring. Suppose a person has a deep-seated hatred of the prime minister. Recognizing that this hate is a possible projection might lead to reflection that the problem stems from deep-seated hatred of the prime minister. The problem is to recognize that it is occurring. Suppose the projection is to recognize that it is occurring.

Overcoming projection
Are you projecting?

After recognising projection, the next step is to reduce its impact by changing one's way of thinking or behaving. Instead of assuming that problems are always caused by individuals — invariably someone else — we can look for causes based in relationships, in organisational structures and in social processes. Rather than assuming that exploitation is caused by evil capitalists, we can look at how systems lead to exploitation — and how victims can help themselves. Hence, personal change becomes easier to deal with others when one’s own behaviour changes.

What next? Or what else? Working together in groups to develop balanced, respectful relationships — without projection — is helpful. With this foundation and some preparation, it becomes easier to deal with others without projection. It becomes easier to develop balanced, respectful relationships — without projecting onto each other. How can we develop these relationships?

1 For a stimulating analysis of the psychological dynamics of oppression, using the ideas of projection and introjection, see Philip Lichtenberg, *Undoing the Clinch of Oppression* (Cleveland, OH: Gestalt Institute of Cleveland Press, 1994, 2nd edition).
Index
Index

Climategate, 261–262

confirmation bias, 254

confirmation model, 29–30

correspondent inference theory, 409

debunking, 201–203

debate, 24–26

discussion, 22–24

diversity, 37–38

discrimination, 323

discussion, 144–146

defining, 22–24

defining, 22–24

decision-making, 25–27

delay, 201–202

discussion, 144–146

decision-making, 25–27

defining, 22–24

defining, 22–24

decision-making, 179–203

debunking, 201–203

deception, 63, see also fraud;

debate, 24–26

discussion, 22–24

diversity, 37–38

discrimination, 323

discussion, 144–146

defining, 22–24

defining, 22–24

decision-making, 25–27

delay, 201–202

discussion, 144–146

defining, 22–24

defining, 22–24

decision-making, 179–203

debunking, 201–203

deception, 63, see also fraud;
The controversy manual
exposure of injustice, 398–401. See also openness facts, 76. See also evidence fake groups. See front groups
framing, 164–170
free speech, 426–428, 447–448. See also censorship
Friel, Howard, 292–293
front groups, 236–237, 319–322
genetic engineering. See GMOs
genetic screening, 436–437
Gilbert, Nigel, 204–206
GMOs (genetically modified organisms), 4, 91–92, 156–157, 258–260, 438
Goldsmith, Peter, 49–61, 66
Gore, Al, 225, 269
gotcha attack, 220–222
grand narratives, 191–192
groups, 109–110, 301–331; decision-making in, 314–316; front, 236–237; functioning of, 309–314; names of, 317–318; and networks, 302–309; newcomers in, 323–325; powerful, 336–337, 341 (see also interest, vested); scientists in, 310–314; setting up, 301–302; solo, 318; working in, 310–331. See also core
Hansen, James, 67, 314; The Lomborg Deception, 292–293, 333–334; The Great Global Warming Hoax, 96–100, 347; Inconvenient Truth, 336–337, 358
Heartland Institute, 394
hidden research, 46–47. See also censorship
honesty, 420–426. See also lying
human rights, 25
Hurricane Katrina, 106
ideology, 135–137, 193
images, 4, 244–245
impression management, 64. See also front groups; outrage management
infiltrators, 416–418
inoculation, 236–240
interest, 90–100; conflicts of, 94–96; vested, 91–94, 110–111, 119–120, 275–276
introjection, 458
IPCC (Intergovernmental Panel on Climate Change), 18, 66–67, 172, 203, 222, 274–275, 413–414
Jasper, James, 450
Johnson, Harold, 48–61, 65–66
journalism, 60–61, 169. See also framing
learning about an issue, 140–149, 370–372
left-wing, 96–100, 347
lobbying, 336–342, 358
Lomborg, Bjørn, 291–293
The Lomborg Deception, 292–293
public opinion, 276–277
communication: motivations, 29–30
psychological, 108–109, See also
professional, 29–31, 32, 252–253
psychics, 253
participants, 72, 116–120. See also
campaigners
Pasteurisation, 113–114
personal contacts, 363–372
pesticides, 379
petitions, 342–345
physicians, 215
political economy of science, 194
political parties, 347–348
politicians, 363–364. See also
electoral politics; lobbying
politics, 311–312. See also
interest, vested
principles, 17, 419–442. See also
ethics
privacy, 157, 167, 430
projection, 422, 454–459
proof, onus of, 65–70, 199–200
prostate cancer, 232
pseudoscience, 206–207
psychology, 108–109. See also
commitment; emotions; motivations
Ptolemaic model, 29–30
public opinion, 35–36, 104, 160
nuclear weapons disposal, 211–213
lying by omission, 254–255; and
radioactive waste disposal, 211–213
nuclear weapons, 35–36, 104, 160
nuclear winter, 160
nuclear weapons, 35–36, 104, 160
radioactive waste disposal, 211–213
psychological, 108–109, See also
professional, 29–31, 32, 252–253
psychics, 253
participants, 72, 116–120. See also
campaigners
Pasteurisation, 113–114
personal contacts, 363–372
pesticides, 379
petitions, 342–345
physicians, 215
political economy of science, 194
political parties, 347–348
politicians, 363–364. See also
electoral politics; lobbying
politics, 311–312. See also
interest, vested
principles, 17, 419–442. See also
ethics
privacy, 157, 167, 430
projection, 422, 454–459
proof, onus of, 65–70, 199–200
prostate cancer, 232
pseudoscience, 206–207
psychology, 108–109. See also
commitment; emotions; motivations
Ptolemaic model, 29–30
public opinion, 35–36, 104, 160
nuclear weapons disposal, 211–213
lying by omission, 254–255; and
464 The Controversy Manual

publications of scientists, 209–210. See also
corporations, 209–210. See also

scientists, 74–75. See also

emotions, 33–115

publications of, 64. See also

emotions, 33–115


See also

journals, scientific

radical flanks, 412–416

radical politics, 96–100

rallies, 349–353, 408–409

Rasmussen report, 38

rationality, 247–248.

See also

emotions

reading, 140–144

repertoires, 204–208

reputation, 401–403.

See also

credentials; defamation

research: bias in, 47–64; hidden, 46–47.

See also

science; scientists

responding: to arguments, 170–179; to

attack, 384–394

results, 56–58

Reuber, Melvin, 379, 382

revolving door, 336

right-wing, 96–100, 347

Ringwood, Ted, 211–213

risks, 23–27

robustness, 158–159, 163–164

sabotage, 357–358

Sagan, Carl, 80, 160

science, 22–23; junk, 207; non-, 206–207; normal, 29–30; post-normal, 31; pseudo, 207; undone, 42–46.

See also

research; scientists

scientific papers, 262–265

scientists, 74–90; arrogance of, 81–85; attacks on, 379–384, 391–394, 445–446; career situation of, 89–90; and emotions, 247; in groups, 310–314; political naiveté of, 85–89; publications of, 209–210; as solo campaigners, 330.

See also

experts; science

Scientology, 234–235

selective use: of evidence, 52–53; of

results, 56–58; of uncertainties, 53–55

shaming, 326–329

simplifying, 263–264

The Skeptical Environmentalist, 291–293


social construction of knowledge, 192–194

social media, 281–283.

See also

online forums

solar power, 42

solo: going, 329–331; group, 318

solutions, 438–442.

See also

controversies, resolving

sponsorship, 63–64

SSK (sociology of scientific knowledge), 192–193

SSTs (suspension transformation set), 196–197

symmetry, 137–139

sympathisers, 72–73

talent, 81–85

talks, 268–269

task functions, 325–326

technical assumptions, 50–51. See also

assumptions

technical assumptions, 50–51. See also

technical assumptions, 50–51. See also

technical assumptions, 50–51. See also
technology, 22–23; entrenched, 100–103
terrorism, 128, 195–198
Three Mile Island, 39–40
Titterton, Ernest, 426–427, 444
transparency. See openness
transport systems, 102–103. See also SSTs
true believers, 255–256, 422–425
truth, 70–71, 76–77
uncertainties, 53–55, 159–160, 264
undone science, 44–46, 62, 69
volunteers, 222
violence: in mass media, 128; physical, 408–412. See also nuclear weapons
violence in mass media, 128; physical, 408–412
vaccine, 158, 163, 188–189, 240–243
validation, 401–403
values, 158, 163, 188–189, 240–243
vested interest. See interest, vested
Waldron, George, 180, 382–383
Walder, Andrew, 182–183
Ward and others, 33–35, 150–160, 264
writing, 14, 148–149; by academics, 449–452
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