

AN INCONVENIENT TRUTH

Science and Argumentation in the Expository Documentary Film

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As the fifth most commercially successful documentary in the history of cinema, *An Inconvenient Truth* (2006) raises important questions about the role of screen media in the development of public discourses about the science and politics of global warming, and also about how cinema can represent such a complex and elusive subject. Stephen Rust has shown how the film employed ‘melodramatic affect to present a persuasive argument on global warming’, and thereby made a significant intervention in debates over climate change in the United States (Rust 2013: 202). Rust’s emphasis on the emotional appeal of the film has rightly been a feature of much of the critical writing it has garnered. Drawing on Aristotelian theories of rhetoric, Mark Minster (2010: 29, 37) similarly attributes the film’s effectiveness as ecocinema to its attempt to persuade its audience less by ‘logos’, or an appeal to evidence and logical reasoning, than by ‘ethos’, an appeal to ‘the character and authority of the speaker’, and ‘pathos’, an appeal to the emotions of the audience. The graphs that Gore presents in the film, for example:

operate less for the sake of logos than for the sake of ethos – they tell us at least as much about Gore’s credibility as they do about the chemical composition of the earth’s atmosphere. The content of these graphs, in other words, is scientific. But what the graphs *mean* in the context of the film, the film’s ultimate argument, is that Gore himself has mastered much of the science that has already been done, long before we arrived, and can authoritatively mediate that science for us. (Ibid.: 30)

Yet Minster’s rhetorical analysis begs the question as to whether the audience should accept Gore as an authority figure. The scientific accuracy of his claims about global warming is vital to this question, which can only be answered at the very level of ‘logos’ that Minster tends to downplay. This chapter is thus concerned with shifting the critical emphasis away from the pathos of the film to its logos. Accordingly, it augments screen studies with argumentation theory and science studies

in order to analyse both the ways in which Gore presents his scientific claims in the film and their subsequent reception in the United States and Britain.

Like Minster, Felicity Mellor also argues that the criterion of scientific accuracy is not the most important way to judge the effectiveness of *An Inconvenient Truth* as a documentary about global warming. Indeed, disputes over the accuracy of the film, she writes, led to ‘an almost endless regress’, which ‘opened up room for more and more debate rather than closing down debate into a final judgement’ (Mellor 2009: 5). Keeping the debate open by disputing the accuracy of the film thus provided support for climate change sceptics arguing against the need for political action to mitigate global warming. As Mellor observes in her article’s title, there is therefore a ‘politics of accuracy’ within which the reception of the film should be placed.

This chapter explores further the key point made by Mellor: that the figural nature of the expository documentary film inevitably leads to ambiguities in interpretation. Documentary filmmaker and theorist Michael Chanan (2008: 129) makes a similar point in distinguishing between the problems of representing different types of ‘invisibility’ in documentary film. His analysis also sheds useful light on the textual ambiguities produced when there is an attempt to represent the science of global warming on film. He points out that physical causes, such as the wind, can be shown in film through ‘the visible signs of their effects’. However, social processes are invisible and consequently much harder to represent:

Sometimes their effects are very visible – like slums and hovels and shanty-towns – but the process as such is not a physical object, nor indeed a singular thing, but more like history, which refuses to present itself promptly in front of the camera but remains an absent cause; with the consequence that the signs of those effects are at best amorphous, ambiguous, and open to interpretation. (Ibid.)

Yet when it comes to global warming, the very distinction between physical and social causation is itself uncertain and open to debate. Scientific research is investigating the extent to which global warming is natural or anthropogenic, or a combination of the two. In this sense, it is questionable whether the visual signifiers that Al Gore presents in *An Inconvenient Truth*, such as the ‘hockey stick’ graph, Hurricane Katrina, and the retreating glaciers on Mt Kilimanjaro, are even signifiers of anthropogenic global warming at all, as he claims. These images may be effective as cinematic rhetoric, as Minster (2010: 30) argues, but the history of the film’s reception also shows that they are contested evidence for anthropogenic global warming.

As Bill Nichols (2008: 37) writes, it is the voice in documentary film that usually plays the key role in ‘shaping and focusing the polysemous quality of sound and image’. However, Gore’s verbal commentary in *An Inconvenient Truth* tends to add to the ambiguities of meaning. As journalist Andrew Revkin (2006: 7) wrote in his review of the film: ‘In a lawyerly way, [Gore] often chooses his words to avoid making direct causal links that most scientists say are impossible to substantiate, but uses imagery and implication to convey that humans are fiddling with planet-scale forces’. As we shall see, by using language that works by implication, rather than making his meaning more explicit, Gore’s commentary tends in places to obfuscate some of the key scientific issues discussed in the film.

This chapter proposes that argumentation theory, by seeking to clarify the grounds and warrants of knowledge claims and their rhetorical expression in words, is a useful tool in analysing the way in which scientific claims are made both by *An Inconvenient Truth* itself and in its subsequent reception. Although these claims are complex and detailed, and ultimately beyond the competence of nonspecialists, they can at least be classified into different types of argumentation, and judged strong, weak or fallacious accordingly. By concentrating on the nuances of language used to formulate such arguments, argumentation theory can thus reveal the rhetorical strategies employed both by Gore himself and by the film’s supporters and detractors.

In his study of the *ad verecundiam*, or argument from authority, Douglas Walton notes how such appeals to expertise are time-bound. In parliamentary or congressional debates, for example, ‘there may be severe constraints on how much time can be spent on backing up a claim or giving extensive documentation to support the backing of an argument’ (Walton 1997: 140). In these cases, appeals to expert authority may be relatively weak and incomplete, but not necessarily fallacious (ibid.: 143). Applying argumentation theory to environmental discourses, political theorist Maarten Hajer similarly notes that time constraints particularly affect appeals to expert opinion in scientific debates, when science is being used as a basis for public policy (Hajer 1995: 62). In documentary film, of course, time constraints are even more pressing. Rational argumentation in public discourse is thus never ideal or perfect. As a logician, Walton seeks ‘objective logical criteria’ to distinguish between justifiable and fallacious arguments, while also attending to the messy pragmatics of argumentation in actual situations (ibid.: xiii).

Given that contemporary science is so specialised, it is impossible even for trained scientists to be expert in all aspects of climate science.

Of necessity, therefore, the search for authority by nonspecialists will always be prematurely arrested. Hajer's notion of 'storylines' accounts for how people make cognitive commitments within the messiness and uncertainty of real-life situations. Arguments 'can convince because of some property they have – e.g. plausibility – that countervailing ideas lack, but one has to reckon that in such cases plausibility is the product of persuasion which is not a purely cognitive process' (Hajer 1995: 60). This point is particularly relevant when scientific knowledge forms the basis of policy decisions. Hajer (*ibid.*: 62) gives as an example the acid rain controversy of the early 1980s, noting that the sheer complexity of the subject necessitated an interpretative process of what he calls 'discursive closure', according to which 'complex research work is often reduced to a visual representation or a catchy one-liner'. This act of translation is necessarily 'accompanied by a loss of meaning', which erases the uncertainty and conditionality of the knowledge claims involved (*ibid.*). Storylines therefore imply 'arbitrary confinements' and 'often conclude debates that are still open' (*ibid.*: 5).

Hajer argues that this premature epistemological closure is a necessary precondition for action in the public sphere. In the ongoing debate over global warming, the Intergovernmental Panel on Climate Change is the main site of such epistemological arrest, in that many nonspecialists choose its reports as their primary source of authority. Indeed, the IPCC's Third Assessment Report in 2001 formed the basis for the narrative of scientific consensus and epistemological certainty over the theory of anthropogenic global warming that was central to the claims made by *An Inconvenient Truth* (Houghton et. al 2001). As a surprise hit in the summer of 2006, the film itself reinforced this 'storyline', which subsequently came to dominate the framing of global warming in public discourses in this period. In response, so-called sceptics continue to argue that this scientific consensus is false, and has merely been enforced by the IPCC and its supporters to censor dissident and unorthodox scientific views.

Writing about *An Inconvenient Truth* in *The Politically Incorrect Guide to Global Warming* (2007), lawyer Christopher Horner, Senior Fellow at the libertarian Competitive Enterprise Institute, thus accused Al Gore of being guilty of both 'sins of omission', that is, of ignoring counterarguments, and 'sins of commission', or what he called 'flat-out misrepresentation', in the latter's attempt to assert the consensus position. 'Gore's movie', according to Horner (*ibid.*: 214), 'presents only evidence, largely anecdotal, favourable to his political agenda. He often presents it in misleading ways not only ignoring but occasionally editing out evidence belying his alarm, even when it conclusively puts

the lie to it.' Horner (ibid.: 222–23) points out, for example, that Gore omits to mention two papers published in 2004 that counter the claim that global warming is responsible for the melting of the Snows of Kilimanjaro. 'Revealing this truth', Horner (ibid.: 223) writes, 'requires time-consuming and distracting explanation, unlikely to advance Gore's Man-as-Agent-of-Doom hypothesis, and certainly not his anti-energy zeal'.

Horner's comments raise important questions about the time constraints that the film medium itself places on the communication of complex information in what Bill Nichols (1991: 34ff) calls 'expository' documentaries, such as *An Inconvenient Truth*. Like all media, including books, the expository documentary film has formal limits as a knowledge-producing medium. The evidence Gore presents in his film is necessarily selective, then, because of the nature of the filmic medium itself. But when does necessary simplification become misleading oversimplification? Some science documentaries, such as in BBC television's long-running *Horizon* series (1964 to present day), often establish a narrative of investigation, in which the film enacts a journey of discovery from ignorance to knowledge, and objections and alternative hypotheses are overcome in the pursuit of reliable scientific knowledge (Corner 2000: 145). Of necessity, however, *An Inconvenient Truth* presents Gore's pre-formulated slideshow on global warming, and so tends to gloss over problems and counterarguments. Indeed, comparing the film with the book that accompanied its release demonstrates the ways in which Gore adapted his presentation for cinema. In the book, Gore (2006: 65, 78) makes brief references to opposing views on the so-called Medieval Warming Period, for example. In the film, however, presumably for entertainment purposes, he adopts a mocking, comic voice on the phrase 'Medieval Warming Period' to suggest the pomposity or dogmatism of his opponents. Returning to Walton's study of the *ad verecundiam* argument will allow us to investigate the linguistic bases of Gore's use of polemic at such moments.

Walton (1997: 228) defines the appeal to expert opinion as, 'a kind of defeasible, presumptive reasoning that shifts burden of proof in reasoned dialogue'. When used validly, the respondent can ask critical questions of the appeal, on matters of credibility, trustworthiness, consistency and evidence (ibid.: 223). Walton thus distinguishes between *ad verecundiam* arguments that are 'fallacious' and those that are merely 'presumptively weak or unjustified': a fallacy occurs when 'what is basically a presumptive and defeasible type of argument is presented in an absolutistic and final manner in a dialogue' (ibid.: 230). An example of this is the 'dogmatic' appeal to authority, in which an argument is

put forward 'to appear to make it unchallengeable (not open to critical questioning)' (ibid.: 239). By presenting an argument in this way, the speaker is trying to silence his or her opponent prematurely. Walton cites argumentation theorist Snoeck Henkemans' work on 'dialogical clues', including the use of linguistic qualifiers such as 'certainly', 'necessarily', 'beyond doubt' and 'obviously', which speakers use in an attempt, as Walton (ibid.: 259) puts it, to 'preempt or block the asking of one or more of the appropriate critical questions'. This analysis of *ad verecundiam* arguments has an important bearing on *An Inconvenient Truth*, in that on occasions Gore's rhetoric lapses into a fallacious use of expert argument, as defined by Walton.

In a key speech in the film, Gore criticises what he calls the popular 'misconception' that there is disagreement among scientists over global warming: 'I've seen scientists who were persecuted, ridiculed, deprived of jobs, income, simply because the facts they discovered led them to an inconvenient truth that they insisted on telling'. This is the classical, empiricist view of science: scientists go where the facts lead them, and this knowledge is the basis for discovering truths about the real world. This rhetoric of scientific truth was taken up by journalists, as the word 'Truth' (with a capital 'T') in the film's title gave them a source of punning headlines. *Variety* (Higgins 2006: np) went with 'Paramount tells the "Truth"', while the *Los Angeles Times* (Welkos 2006: np) worked up the martial associations: 'Gore arrives in Cannes armed with the "Truth"'. David Edelstein in the *New Yorker* (Edelstein 2006: np) took the implication further into hyperbole: 'By all means, see the film, and watch who attacks it and on what grounds. Only a brainwashed audience (and its brainwashers) could portray anything Gore says about global warming as even remotely controversial'.

Gore's emphasis on scientific certainty, consensus and truth in *An Inconvenient Truth* may be explained by the film's social and political context. In an interview with *Grist* magazine in May 2006, Gore justified his desire to make a film about the science of anthropogenic global warming, rather than its social or political aspects, as a necessary intervention at a time when the American public was still in denial over the subject (Roberts 2006: 3). The film thus explicitly addressed an American audience ('we as Americans'), and attempted to establish the theory of anthropogenic global warming as a scientific fact.

Gore's narrative of scientific certainty was also a response to specific political developments in the United States at the time. In a memo leaked to an environmental organisation in March 2003, Republican Party consultant Frank Luntz appeared to advise activists deliberately to exploit the uncertainties in the science of global warming for their

own political ends. 'Should the public come to believe that the scientific issues are settled', Luntz (2002: 7) wrote, 'their views about global warming will change accordingly. Therefore, *you need to continue to make the lack of scientific certainty a primary issue in the debate*, and defer to scientists and other experts in the field' (Burkeman 2003: 1; emphasis in original). As BBC environmental journalist Roger Harrabin wrote in 2007, this right-wing political campaign explains why Gore made his film a 'polemic', in which, as he put it, 'assumptions became assertions and worst-case scenarios became the norm' (Harrabin 2007: 2). 'The sceptics', he continued, 'knew that they did not need to win the battle of climate facts, they just needed to keep doubt alive'; Gore's film was a response to 'that often cynical campaign, attempting to put climate change beyond doubt and remove ambiguity from presentation of the scientific facts' (ibid.: 2–3). In doing so, Gore simplified the equivocations and uncertainties in the IPCC's Third Assessment Report of 2001.

Two topics in particular demonstrate the way in which Gore's rhetoric of scientific certainty went beyond the findings of the IPCC's Third Assessment Report: the 'hockey stick' graph and glacial melting. The hockey-stick graph played a central role in popularising the narrative of scientific certainty after the report's publication in 2001. The IPCC's First Assessment Report in 1990 had suggested that temperatures were higher in the Medieval Warming Period than today (Houghton et al. 1990: 202). However, the Third Assessment Report included a graph labelled 'Millennial Northern Hemisphere (NH) temperature reconstruction (blue) and instrumental data (red) from AD1000 to 1999', from a 1999 paper by Michael E. Mann, Raymond S. Bradley and Malcolm K. Hughes, which showed a correlation between global temperatures and carbon dioxide in the atmosphere, and demonstrated that the pre-industrial era was not warmer than today (Houghton et al. 2001: 134). The 2001 report thus played down the significance of the Medieval Warming Period, while the sharply rising blade of the 'hockey stick' graph appeared to demonstrate that the twentieth-century warming period is historically unprecedented. In doing so, the graph provided support for the hypothesis that industrial emissions are accountable for recent temperature rises. The hockey-stick graph was given prominence in the Summary for Policy Makers section of the IPCC report, and subsequently became a much promoted icon of the case for anthropogenic climate change (ibid.: 3).

The vocabulary of the Third Assessment Report is noticeably provisional and measured in its presentation of the hockey-stick data, as the following extract shows: 'New analyses of proxy data for the Northern Hemisphere indicate that the increase in temperature in the twentieth

century is likely to have been the largest of any century during the past thousand years' (ibid.: 2). 'Likely' is defined as a 'sixty-six to ninety per cent chance'. This 'judgmental estimate of confidence' thus acknowledges uncertainties in the paleoclimate research (ibid.). In *An Inconvenient Truth*, in contrast, Gore exceeds the claims made in the IPCC Report by omitting its nuances and emphasising certainty rather than probability. He begins by acknowledging the complexity of the science involved in correlating global temperature with atmospheric carbon dioxide. 'The relationship is actually very complicated', he says, 'but there is one relationship that is far more powerful than all the others, and it is this: when there is more carbon dioxide, the temperature gets warmer, because it traps more heat from the Sun inside'. Having thus acknowledged that the science is complicated, Gore goes on to state unequivocally that the hockey-stick graph is uncontroversial:

There is not a single part of this graph – no fact, date, or number – that is controversial in any way or in dispute by anybody. To the extent that there is a controversy at all, it is that a few people in some of the less responsible coal, oil, and utility companies say, 'So what? That's not going to cause any problem'. But if we allow this to happen, it would be deeply and unforgivably immoral. It would condemn coming generations to a catastrophically diminished future.

In this speech, Gore brings together three typical ways in which he frames global warming in the film: as a moral rather than a political issue, as a dangerously apocalyptic future and as scientifically certain. The latter claim is of most concern here. Gore's emphasis on the certainty of the science appears somewhat disingenuous, in that to say that nothing in the hockey-stick graph is 'controversial' or 'in dispute' at the very least ignores the ongoing criticisms of the graph, which statisticians Steve McIntyre and Ross McKittrick had been airing extensively in the Climate Audit blog since 2004.

McIntyre's criticisms of the hockey-stick graph have focused on the statistical techniques used to generate the apparently unprecedented twentieth-century increase in global temperatures (McIntyre 2008). In a move typical of the political Right, Christopher Horner (2007: 221) took these criticisms as proof that the graph is 'thoroughly discredited'. However, such conclusions both distort McIntyre's work and overstate the scientific arguments against anthropogenic global warming by exaggerating certainty in the opposite direction to Gore. Dessler and Parson point out that arguments for global warming do not rely solely on the validity of a single graph. They observe that sceptics state 'that recent criticisms have destroyed the hockey-stick plot – and, since the

entire scientific case for global warming is built on the hockey-stick plot, that these criticisms show that global warming is a scientific fraud. This argument completely misrepresents the true state of knowledge about past climate variability and the origin of recent warming' (Dessler and Parson 2006: 140). Moreover, in an ongoing dispute, McIntyre's statistical work continues to be countered extensively and in detail on the Real Climate blog.

In departing from the tone of provisionality in the IPCC's Third Assessment Report, Gore may have been influenced by NASA scientist James Hansen (2005: 1), whose early use of the 'tipping point' metaphor indicated his belief that the IPCC was underestimating the urgency of the need for mitigation policies against anthropogenic global warming. *An Inconvenient Truth* adopted the notion of abrupt climate change that has been a feature of Hansen's work, according to which, because the Earth's climate is a chaotic, nonlinear system, sudden jumps from one state to another are possible.

The notion of abrupt climate change reinvigorated the apocalyptic mode in debates on global warming by introducing a new conception of time into such discourses. Environmental scientist Mike Hulme (2009: 201–2) writes that, 'the time-delayed, ambiguous, remote and often abstract nature of the risks of climate change does not generally evoke strong visceral reactions in the lay public'. That the 'time-delayed' nature of climate change is a problem in communicating its risks to the public may explain the emphasis on an accelerated timescale in *An Inconvenient Truth* and its attendant publicity material. For example, Jeff Skoll, CEO of Participant Productions, the film's production company, said of Gore's slideshow on global warming that it 'presented the urgency of what's going to happen not in the next twenty to fifty years, but in the next five to ten years' (Thompson 2006b: 29). This sense of imminent and sudden catastrophe allowed for the promotion of the documentary film as a hybrid of popular melodramatic genres such as disaster science fiction, horror and the thriller. The trailer and poster used the tagline, 'The scariest movie you'll ever see', while the first advertisement for the film, published in the *Los Angeles Times* on 21 May 2006, read: 'It Grabs You Like A Thriller with an Ending that will Haunt your Dreams'. Eugenia Peretz's review from *Vanity Fair* was given prominence: 'Should be seen by everyone who cares whether or not the human race will still exist in fifty years' (*Los Angeles Times* 2006, E1).

The second of Gore's scientific claims that I will consider, on glacial melting, shares this tone of sudden and imminent apocalypse. Gore says in the film: 'If Greenland broke up and melted, or if half

of Greenland and half of West Antarctica broke up and melted, this is what would happen to the sea level in Florida. This is what would happen in the San Francisco Bay. A lot of people live in these areas. The Netherlands, the Low Countries: absolute devastation'. Although he does not explicitly mention a specific timescale here, Gore uses the present tense, rather than the future, to describe the impact of rising sea levels. He repeats this grammatical emphasis in his subsequent references to the current populations of Beijing, Shanghai and Calcutta, and then in his references to two traumatic events in recent American history: 'Here is Manhattan. This is the World Trade Centre memorial site. After the horrible events of 9/11 we said never again. This is what would happen to Manhattan. They can measure this precisely, just as scientists could predict precisely how much water would breach the levee in New Orleans'.

In contrast to Gore's 'storyline' of glacial melting, the IPCC Third Assessment Report made both the timescale and the probabilistic nature of projected glacial melting explicit: 'Ice sheet models project that a local warming of larger than 3°C, if sustained for millennia, would lead to virtually a complete melting of the Greenland ice sheet with a resulting sea level rise of about seven metres' (Houghton et al., 2001: 17). In *An Inconvenient Truth*, Gore retained the reference to the size of sea-level rise, but crucially ignored the reference to 'millennia'.

These ambiguities became a source of disagreement in the debate over global warming that surrounded the British court case brought against the film in October 2007. Judge Barton used the IPCC Report as his basis for ruling that Gore had exaggerated the timescale of possible sea-level rises from anthropogenic climate change. 'It is common ground', he said, 'that if indeed Greenland melted, it would release this amount of water, but *only* after, and over, millennia, so that the Armageddon scenario he predicts, insofar as it suggests that sea level rises of seven metres might occur in the immediate future, is not in line with the scientific consensus' (Dimmock 2007: 8).

However, whereas the Judge heard in Gore's words an implication about the 'immediate future', Gavin Schmidt, a climate modeller at the NASA Goddard Institute for Space Studies, and Michael Mann, coauthor of the hockey-stick graph, apparently heard no reference to timescale at all in Gore's words. Replying to the Judge's ruling on the Real Climate blog, they wrote that, in the film, 'no timescale for (the sea-level rise) was specified'. Confirming the amount of sea-level rise mentioned by Gore, they commented that the 'rate at which this is likely to happen is however highly uncertain as we have discussed previously' (Schmidt and Mann 2007). However, by not directly addressing the reference to

millennia in the IPCC report, Schmidt and Mann avoided the point of contention altogether, thereby making their defence of Gore's claims a weak one.

Roger Harrabin (2007: 2) observed in an article on Judge Barton's ruling that more recent scientific findings, released after the film, suggested that the timescale for the melting of Arctic ice may be shorter than the IPCC stated in its 2001 report, so that Gore's implication of imminent sea-level rise may be scientifically defensible after all. Nevertheless, Gore's failure to differentiate explicitly between certainty and probability, or between worst-case scenarios and mid or low-range predictions, renders problematic the way he communicates the issue of glacial melting in the film. The content of Gore's message was not as certain and incontrovertible as he implied, and his choice of words opened up the film to subsequent criticism. The disagreement over semantics between the Judge and the climate scientists was a consequence of the vagueness and evasiveness of Gore's language, in that, by omitting a clear and unambiguous reference to the timescale of glacial melting, he confused and ultimately misled his audience on this issue.

One of the ironies in the controversy over anthropogenic global warming is that the notion of scientific consensus, which has been a target of sustained attack from the political Right because it underpins many calls for global warming mitigation policies – including those made by *An Inconvenient Truth*, has itself been subject to criticism within academic science studies, which identifies itself with the political Left. Writing in *The Postmodern Condition* in 1979, Lyotard argued that legitimation in science proceeds through 'dissension' rather than through a goal of universal consensus. Consensus 'is a horizon that is never reached' (1984: 61). Developing Thomas Kuhn's notion of revolutionary paradigm shifts in science, Lyotard (*ibid.*) asserted that, 'someone always comes along to disturb the order of "reason"'.

In *Science in Action*, Bruno Latour (1987: 4) also questioned the notion of consensus in science, arguing that science studies should focus on 'science in the making' rather than on 'ready made science'. By 2004, however, Latour acknowledged that the global warming debate had begun to pose challenges to this approach. Responding to Frank Luntz's memo to Republican activists, mentioned earlier, Latour's essay in *Critical Inquiry* displayed a rare moment of methodological self-doubt: perhaps his own interest in emphasising epistemological uncertainty was not necessarily politically progressive after all. As Latour (2004a: 2) put it, Luntz was presiding over an 'artificially maintained scientific controversy' for political reasons, and was inadvertently using an argument familiar to left-wing science studies about the social construction

of consensus to further his own conservative political agenda. In the controversy over global warming, wrote Latour (*ibid.*), 'dangerous extremists are using the very same argument of social construction to destroy hard-won evidence that could save our lives'. Latour thus asked of himself: 'Why does it burn my tongue to say that global warming is a fact whether you like it or not? Why can't I simply say that the argument is closed for good?'

Latour took up the issue again in *Politics of Nature* (2004b: 111), noting, like Maarten Hajer, that there is a practical 'requirement of closure' in all scientific investigations. Wishing to avoid what he believes to be the dogmatic and authoritarian implications of empirical arguments from 'matters of fact', Latour proposed an alternative notion of 'matters of concern', in which the social processes involved in the construction of facts are openly acknowledged. This approach has particular implications for the science of global warming: '[W]e can wait for the sciences to come up with additional proofs that will put an end to the uncertainties, or we can consider uncertainty as an inevitable ingredient of crises in the environment and in public health. The second attitude has the advantage of replacing something that is not open to discussion with something that can be debated' (*ibid.*: 63). Replacing 'matters of fact' with 'matters of concern' is for him the best way to 'fight against the artificial continuation of scientific controversies' such as global warming (*ibid.*: 278).

The critique of scientific consensus in Lyotard and Latour, outlined here, is only partly valid, however, and risks dogmatic oversimplification. As philosopher Stephen Toulmin (1976: 181) observes, consensus 'frequently' exists in science, and, far from being impossible or undesirable, is a necessary part of the progressive accumulation of scientific knowledge, which is always provisional and subject to revision. As he puts it, 'this shared ground, point of view, and basic concepts form the joint body of "common sense" that permits the scientists concerned to carry on a mutually intelligible debate' (*ibid.*). Critical realist philosophers such as Toulmin have thus addressed questions of scientific epistemology with greater clarity and plausibility than Latour and Lyotard, by retaining critically reflexive concepts such as 'fact' and 'objectivity' that poststructuralist philosophy tends to reject. Extending critical realism to the study of documentary film, Carl Plantinga (1997) concludes that critically maligned notions of 'reality', 'truth' and 'objectivity' are necessary and defensible concepts. His argument is based on a critique of the limitations of poststructuralist thinking: 'If there exist no truths and no facts of the matter, then we have no basis for disputing the claims or perspective of any nonfiction film, and no basis for choosing

one moral or political representation over another, aside from the sheer narcissistic faith that our beliefs or methods are superior' (Plantinga 1997: 219–20). Plantinga's proposal of a notion of "'approximate truth", always fallible, partial at best, finally inadequate, and subject to revision', thus avoids the philosophical problems encountered by Latour and Lyotard, and is an insightful way of approaching the claims to 'Truth' constructed by Gore in his documentary film (*ibid.*).

Ultimately, the disputes over the public presentation of the science of global warming explored in this chapter thus involve wider questions about the validity of Enlightenment notions of rationality and science. Reason emerges from its posthumanist critiques as culturally situated, physically embodied and temporal. At their best, such critiques have led not to an abandonment of reason and rationality, but to their critical evaluation. Indeed, rational criteria, such as those critically explored by Walton and Hajer's use of argumentation theory, are vital if a viewer is to decide whether to trust *An Inconvenient Truth* or *The Great Global Warming Swindle* (2007), or neither.

By 2009, the hockey-stick graph was no longer the centrepiece of global warming advocacy, and the importance of consensus and certainty in climate science was being questioned in the pointedly titled *Why We Disagree About Climate Change*, in which Mike Hulme tries to establish a role for science beyond the apparent need for consensus. 'We disagree about science', he writes, 'because we have different understandings of the relationship of scientific evidence to other things: to what we may regard as ultimate "truth", to the ways in which we relate uncertainty to risk, and to what we believe to be the legitimate role of knowledge in policy making' (2009: 106). Significantly, Hulme's book does not attempt to resolve either the scientific or the political arguments about climate change once and for all.

The challenge for documentary films about global warming is that the methods and findings of climate science are understood and communicated to the public as effectively as possible. This will involve an understanding of science as probability rather than as certainty. Writing at the end of the so-called Science Wars in American academia in the late 1990s, Jane Gregory and Steve Miller (2001: 71) concluded that:

[T]he key to the relationship between science and the public is trust, and that trust is established through the negotiation of a mutual understanding, rather than through statements of authority or of facts. Among other things, that means that while science has every right to defend its role as a provider of 'reliable knowledge' in our society, scientists need to make clear that one of the key features of science is its inherent provisionality.

They add that this is especially true of areas of ‘science-in-the-making’ such as climate science. Despite the film’s many strong points, and its vital role in putting the subject of global warming onto the political agenda in the United States, this lesson could be applied to Gore’s presentation of the case for anthropogenic global warming in *An Inconvenient Truth*. Analysis of the reception of the film demonstrates that the formal limitations inherent in audiovisual communication can play a large part in keeping interpretation of a documentary film open and contested. Yet the filmmakers themselves made choices in form and content that shaped and partly determined that interpretative process.

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