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An Inconvenient Truth: a social representation of scientific expertise

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On 30 June 2006 *An Inconvenient Truth* (*AIT*) (Guggenheim, 2006), a climate-change documentary presented and written by leading US Democrat politician Al Gore, was released. The film contains a heady mix of expert scientific evidence, personal stories and normative political statements. An 'oral history', based on interviews with those involved in the creation of the film and celebrating this anniversary, proclaimed: 'Somehow, a film starring a failed presidential candidate and his traveling slideshow triggered a seismic shift in public understanding of climate change' (Armstrong et al., 2016).

It is likely that *AIT* has contributed as much as anything or anyone to making climate-change expertise public. In particular, it brought climate-science expertise, which had steadily accumulated in the preceding decades, into the public realm in a new way: combining scientific data with personal stories and calls for political action. In combining these elements, *AIT* made climate change public by offering a particular social representation of climate change. While primarily appealing to a public that was already interested in, and attentive to, climate change, *AIT* also helped to broaden that audience. The film's intended audience was what one may call its 'convenient' public. On the other hand, the film's very success in speaking to such a public also triggered contestation from what one may call an 'inconvenient' public; that is, from an audience that disputed the film's social representation of climate-change expertise – in some cases the film and/or its producer were framed as 'monstrous'. The film thus became a successful meme and what some saw as a dangerous monster at the same time.

In this chapter we discuss *AIT* as an example of taking climate-change expertise out of the pages of science journals and into the public sphere. We draw on the ideas of John Dewey (1938, 1989) and their elucidation by Mark Brown (2009, and see chapter 9) to show how the notion of expertise is the key to understanding the film's motivation, successes and critics. While the purpose of the documentary was to persuade its audience of the consensual truth imparted by climate-science experts, its effect was to become a lightning rod for disagreeing with, criticising and debating with that expertise. Overall, *AIT* created a dominant representation of climate change, based on expertise that became a touchstone for consent and dissent, action and reaction. This position was enhanced by the joint award of the 2007 Nobel Peace prize to Gore and the Intergovernmental Panel on Climate Change (IPCC).

In the following we shall first provide some background to the film's emergence, highlighting its echoes of Dewey's argument that expert knowledge should be integrated in society (Brown, 2009: 150). We use the concept of social representation (Moscovici, 1988) to show how Gore combined scientific content with a personal and political context in order to provide a meaningful representation of climate-change expertise. We highlight how *AIT* sought to create its own public for scientific expertise, returning climate-science expertise to society as one of the many tools with which citizens make sense of the world and solve problems (Brown, 2009: 160–161). We then show how the very elements that helped *AIT* to establish a dominant social representation of climate change also contributed to the creation of a counter-representation and counterpublic that questioned how *AIT* represented climate-science expertise. With *AIT*'s success in bringing social context to scientific content came inevitable contestation. We conclude with some tentative lessons for science communicators from the *AIT* story.

Background

AIT had a huge cultural and political impact following its release in 2006, winning a host of awards, including the 2007 Academy Award for Best Documentary (IMDb, 2015), helping Gore win a share of a Nobel Peace prize with the IPCC and providing an anchor for intense, prolonged debates about climate change.

The documentary was timely, which helped it to embed itself in global culture and shape both dominant or hegemonic and counter-hegemonic polemical social representations of climate change. A dominant or hegemonic social representation is one that is a coercive and widely shared construction of climate change, while a polemic one is defined as 'one which is generated in the course of social conflict, and characterised by antagonistic relations between groups' (Jaspal et al., 2014). In 2007 the IPCC released its *Fourth Assessment Report*, which marked a step change in the public visibility of climate science. These events represented a political and cultural reinforcement of the emerging scientific consensus and were significant in establishing for the first time a dominant, hegemonic representation of climate change that called for significant personal and political action to address the challenge. *AIT* did not disappear from cultural consciousness after 2007. Gore made sure that future campaigns such as Climate Reality built on its success, seeking to train volunteers as 'Climate Reality Leaders … spreading the word about *the truth* of climate change and the solutions we have today in over 100 countries, making a global challenge a personal issue for citizens on every continent' (Climate Reality, n.d.; emphasis added).

This suggests that *AIT* was a highly successful project, both as a cultural event in itself and as a way of bringing meaning to climate change and momentum to climate-change mitigation. *AIT*'s combination of scientific ideas with personal stories and political activism echoes Dewey's call for 'bare ideas' to have 'imaginative content and emotional appeal' in order to be effective (Dewey, 1989: 115). *AIT* also takes seriously Dewey's notion that scientific expertise is a social product rather than the result of individual scientific brilliance and that science communication marks the return of knowledge to its rightful owners: the public (Brown, 2009: 150). Indeed, *AIT* takes this one step further by seeking to empower its audience to gain the expertise to go out and disseminate locally. Yet, while Dewey points to the seeds of *AIT*'s success, he also shows how the successful communication of scientific knowledge and its social consequences brings more public scrutiny to bear on expertise (Brown, 2009: 159).

A decade later, *AIT* remains an important representation of climate-change expertise. Gore's name continues to be synonymous with public discussions of climate change (Grundmann and Scott, 2014) and *AIT*

continues to act as a salient reference point for climate-change critics (e.g. Booker, 2015; *Daily Mail Comment*, 2015; Turnbull, 2011). In the next section we describe the key elements of this representation.

Representing climate-change expertise

Climate science is an example of the scientific representation of nature that responds to a problematic situation. Communicating this expert knowledge is important as the problematic situation is bound up with social conditions (Brown, 2009: 160). Yet Dewey understands that if this expert knowledge is to gain purchase within societies, it must be communicated aesthetically and imaginatively (Brown, 2009: 150). As discussed above, this provides a rationale for *AIT* but it also shows that *AIT* is a social representation of a scientific representation of nature (namely, the abstract concept of climate change). Hence, concepts from social-representations theory help to show how *AIT* represented climate-science expertise by objectifying climate change through humans (personification) and non-humans (ontologisation) (Jaspal et al., 2014). This constituted an attempt to establish a coherent, hegemonic social representation of climate-science expertise that would gain purchase with the *AIT* audience, inspiring them to take various actions on climate change or to contest such actions (Hollin and Pearce, 2015; Jacobsen, 2011; Jaspal et al., 2014; Nolan, 2010).

According to social-representations theory, a social representation is 'a system of values, ideas and practices' about a given social object (Moscovici, 1973: xiii), as well as 'the elaborating of a social object by the community for the purpose of behaving and communicating' (Moscovici, 1963: 251). Such a representation provides a social group with a shared social reality and common consciousness of a particular social object. The primary function of a social representation is to allow a social group to incorporate 'something unfamiliar and possibly troubling into their own network of categories (Moscovici, 1981: 193). Hegemonic social representations are shared by members of a group; they are coercive and uniform. Polemic representations are generated in the course of social conflict and are characterised by antagonistic relations between groups (Jaspal and Nerlich, 2014: 124–125; Moscovici, 2000: 28).

Objectification is the process whereby unfamiliar and abstract objects are transformed into concrete and objective common-sense realities. Moscovici and Hewstone (1983) postulate three subprocesses associated with objectification; namely, the personification of knowledge, figuration and ontologisation. We focus here on the first and the last. The personification of knowledge links the abstract object to a person or a group, providing the object with a more concrete existence through this association. Ontologisation refers to the process whereby physical characteristics are attributed to a non-physical entity, essentially 'materialising' the immaterial.

We will show that while *AIT* helped to elevate the cultural significance of climate change and contributed to forging and disseminating a hegemonic representation of climate change, it also prompted the emergence of a strengthened polemic-representation counterpublic that placed *AIT*'s representation of climate-science knowledge under intense scrutiny. By highlighting some scientific weaknesses in the film and Gore's role as the face of expertise, the counterpublic sought to establish a counter-hegemonic or polemical social representation of climate change. Here, the monsters lurking under the public face of climate change came to life, most notoriously in an episode of *South Park* where Gore was depicted warning of an implausible, unseen monster called ManBearPig (Parker, 2006; Delingpole, 2010). Monstrous representations continue to this day, with a Breitbart article confusingly describing a new sequel to the film (Cohen and Shenk, 2017) as a 'scientific monstrosity' while referring to climate change as 'a non-science beast' (Williams, 2017).

While scientific knowledge plays an important role in the film, Gore evidently recognised, like Dewey, that public mobilisation requires climate change to be made meaningful, not abstract, by manipulating both cognitions and emotions (Beattie et al., 2011) so that 'enough people lock into the same narrative and connect the dots and feel the danger facing their children' (Bates and Goodell, 2007). The emergence of scientific knowledge about climate change has given rise to 'an impersonal, apolitical, and universal imaginary of climate change' that has taken over from 'normative imaginations of human actors engaging directly with nature' (Jasanoff, 2010: 235). *AIT* attempts to redress this balance by personalising and ontologising climate change. Most obviously, it positions Gore – for better or worse – as the human

face of the climate-change debate (Jaspal et al., 2014: 114). Yet it also contains other attempts at personalisation. In a powerful early section, Gore tells how his young son was almost killed in a car accident, and of the painful days spent at his bedside waiting to see if he would recover. The parallel is drawn between Gore's son and the natural world that we assume to be stable, showing that the things that we take the most for granted can be taken away from us unexpectedly (Murray and Heumann, 2007).

As well as this personalisation of climate or nature, the film seeks to reintroduce the personal into the accumulation of scientific knowledge. Knowledge is given credence not only using charts and numbers, but by the scientists who produced them. Gore refers to palaeoclimatologist Lonnie Thompson as 'my friend' when arguing that Thompson's research shows a striking correlation between atmospheric carbon dioxide concentrations and temperature. Science may achieve its heft through abstraction (Jasanoff, 2010: 234), but Gore reminds his audience that scientific practice is irreducibly human, through his account of his son's accident.

AIT also seeks to mitigate abstraction through the ontologisation of climate change by way of various non-human forms. The film begins with a paean to the central role of nature in Gore's early life, which is subsequently referenced in the story of his son's car accident. This 'environmental nostalgia' makes climate change real by presenting it as an emotional threat to our own memories of living in nature (Murray and Heumann, 2007). Glaciers are used as another material example of what we might lose from climate change. However, this was not without controversy. One supportive climate scientist's review of *AIT* argued that while the general point was well made, the particular examples used in the film were poorly chosen, as they were probably unrelated to temperature change (Steig, 2008). *AIT* ties climate change to the threat of extreme weather, traumatically felt in the USA through Hurricane *Katrina* just prior to the film's release (Nerlich and Jaspal, 2014). While *Katrina* is mentioned prominently in the film, the important role of engineering failures in the devastation it caused are overlooked; a position described by Rayner as 'using bad arguments for good causes' (2006: 6).

Criticisms of some of the specific examples used in *AIT* highlight a broader tension underpinning the ontologisation of climate change;

that is, that local examples of climate-change-related events are likely to be less scientifically certain than global representations of climate (Hollin and Pearce, 2015). This is not to say that *AIT* is entirely unsuccessful on this front; merely that scientific representations and social representations may often come into conflict. Evaluating how these are resolved depends on whether Gore's role in *AIT* is 'as a politician, a lay expert, or a spokesperson for science' (Hulme, 2009: 81), something that remains unclear during the film.

This section has outlined the social representation of climate-science expertise in *AIT*. The next section demonstrates the integral role of the audience in this representation, as Gore returns science to the people (Brown, 2009: 160).

Emergence of a public

Empire magazine's five-star review of *AIT* begins with an inauspicious synopsis: 'On the face of it, this is the least appealing film in history. A failed politico … preaching to the world about global warming with the aid of PowerPoint' (O'Hara, 2015).

Presentation software such as PowerPoint or Keynote[1] appears to be a questionable medium through which to persuade an audience of the seriousness of climate change. Even at the time of *AIT*'s release, such software was becoming notorious for homogeneous, ready-made slide designs resulting in boring corporate presentations (Reynolds, 2005; Tufte, 2003). While Gore's professionally designed slides avoid the template trap, one might wonder why he chose to make such a presentation the focus of the film, rather than the front line of climate change where the physical effects are beginning to be noticed, as subsequent films have done (Orlowski, 2012). In short, *AIT* foregrounded the presentation as that was the tool with which Gore's message would be propagated by his helpers, supporters and acolytes.

Gore makes clear his frustration with inaction on climate policy from the US Congress and the then Bush administration, using this as the basis for a 'bottom-up' approach to spreading his message 'city by city, street by street, house by house'. Gore explains that he has been 'trying to tell this story for a long time' and that he is focused

1 Gore's presentation was developed using Keynote (Reynolds, 2007).

on 'getting people to understand' climate change. Clearly, this is not public education as a good in itself; the intermingling of the positive and the normative points towards the need for the climate-change challenge to prompt particular actions.

AIT ends on an upbeat note, claiming that we already have the technologies available to switch from fossil fuels, and that all that is stopping us is a shortage of political will. The film ends by fading to black, as the text 'Are you ready to change the way you live your life?' appears on the screen, followed by an intermingling of the film's credits with a mixture of tips on reducing personal environmental impacts (e.g. switch to a hybrid car) and bringing about political change (e.g. ask your senators what they are doing about climate change). Viewers were also directed to a supporting website including more details about the film and about climate science, and suggested actions for the audience to undertake ('*An Inconvenient Truth* > take action', 2006). Taken together, the film, website and accompanying book (Gore, 2006) represented a multimedia take on a very traditional linear model of science education, with the idea that presenting members of the public with more scientific information will prompt them to take action. While this is a clear aim of *AIT*, the film also operated at a more sophisticated metalevel.

Gore is the film's sole cast member, but his audience – his intended public – plays an important supporting role throughout. The first faces to appear in the film are those of the attendees at the various presentations of Gore's slideshow around the USA. *AIT*'s main presenta-tion is staged in a way that ensures the audience's faces are often in view, brightly lit and seated in a horseshoe formation. These are not just the faces of people listening to Gore's story, but of those who may retell it to their peers. Soon after the film's release, Gore led a programme of training for people who wanted 'to tell their friends, families and neighbours that human activities are altering global climate and that each person can do something about it' (Haag, 2007). The programme continues today through the Climate Reality Leadership Corps that encourages peer-to-peer communication and 'spreading the word about the truth of climate change' (Climate Reality, n.d.).

In this way, *AIT* went beyond public education to instead aim explicitly at the creation of a climate-change public. For a while Al Gore became known as the high priest spreading an 'environmental

gospel' (Mr Americana, 2015; Nerlich and Koteyko, 2009), a title that also contributed to conjuring up the counterpublic that the film did not intend to create. Overall, then, it was not just the content of the slideshow that was important, it was also the performance of the slideshow that is a central part of the film. The film was intended not only to persuade but to have a much stronger performative force: to create a public that in turn would continue the performance. In Dewey's terms, scientific expertise is reinstated as 'a refinement of commonsense inquiry' rather than 'a foreign way of knowing to be imposed on the common sense of an ignorant public' (Brown, 2009: 160). However, this overt focus on putting scientific expertise back into the hands of society was turned back on *AIT* itself, as a counterpublic questioned the film's representation of climate-science expertise.

Emergence of a counterpublic

The evidence presented thus far suggests that *AIT* was extremely successful, not just as a film in its own right but also in establishing a powerful social representation of climate change, an idea that had been somewhat nebulous up to that point. *AIT* was also successful in creating a public actively engaged in reproducing the representation of climate change by training individuals to give presentations based on *AIT* locally. However, individuals are not merely passive recipients of representations; they actively contribute to the construction of new representations in response (Jaspal et al., 2014: 116). Some of these individuals assumed a much more critical view of *AIT* and Gore.

Scepticism about climate science predated the film's release as an important part of the 'struggles over meaning and values in US climate science and politics' (Lahsen, 2008: 216). While such struggles were continuing, US climate politics pre-*AIT* was broadly characterised by a lack of federal-level progress on legislation to cut greenhouse gases. Congress's comprehensive rejection of the Kyoto Protocol was followed by Gore's loss to George W. Bush in the 2000 presidential election, with the subsequent Bush presidency being noted for a stalemate on climate policy. The success of *AIT* towards the end of the Bush presidency provided a window for reframing the US climate debate (Fletcher, 2009: 807). It also acted as a powerful rallying point for climate critics,

both in the mainstream media and the blogosphere, who were opposed to more stringent action on greenhouse gases.

A struggle ensued over the film's accuracy, and as *AIT* gained greater public visibility a counterpublic emerged that sought to destabilise the apparently coherent meaning of climate change provided by *AIT* and Gore's newfound position as a public expert. This counterpublic was mobilised through the emerging new media of blogs such as *Watts Up With That* (Watts, 2006) and *Climate Audit* (McIntyre, 2006), as well as syndicated columns in the mainstream media (Elsasser and Dunlap, 2013). The movement challenged the links claimed between climate change and material events (Hulme, 2010), and the credibility of Gore himself (Elsasser and Dunlap, 2013).

It is unsurprising that Gore, as a prominent Democratic politician, became a focus of much conservative commentary. A study of conservative op-eds found him to be by the far most discussed topic related to climate change (Elsasser and Dunlap, 2013: 763). Within the sceptical blogosphere, the three blogs found by Sharman (2014) to be the most central – *Watts Up With That*, *Jo Nova* and *Climate Audit* – have all had numerous posts on Al Gore and/or *AIT*. While Sharman notes that these blogs are more likely than mainstream media op-eds to focus on scientific issues, their criticisms of *AIT* and Gore were both scientific (Edelman, 2007; McIntyre, 2007; Nova, 2009b) and personal (McIntyre, 2008; Nova, 2009a; Watts, 2008). Crucially, these commentators had a (small) number of similarly critical climate scientists upon whose knowledge they could draw. Two of these scientists published critiques of *AIT* as part of a series in *GeoJournal* (Legates, 2007; Spencer, 2007).

This network of critical actors was akin to a scientific counterpublic attempting to challenge the hegemonic representation of climate change sought by *AIT*. They were a relatively small number of scientists with connections to other societal actors sharing a concern about the interactions between science, power and politics (Hess, 2010: 631). This is not to say that the counterpublic is any closer to the truth, or freer from external biases, than the dominant public, only that *AIT* and Gore provided important rallying points around which a counterpublic could coalesce (Jaspal et al., 2014). The substance of this counterpublic's criticisms is already well documented in the literature (Koteyko et al., 2013; Lahsen, 2013; Matthews, 2015).

One particular characteristic of these criticisms is focused on here; the way in which critics sought to disassociate the notion of climate-science expertise from the representation provided in *AIT*. Jaspal et al. describe this as the challenging of science 'by appealing to its norms' (2013: 383). They highlight a reader comment on climate-change articles on the *Daily Mail* website that 'distances Al Gore from "science", which is interesting in itself, as he is not actually a scientist' (Jaspal et al., 2013: 395). Of course, Gore does not overtly claim to be a scientist; however, as the linchpin of *AIT* Gore became a cornerstone for the social representation of climate-science expertise. The reader comment claims that 'Gore stood to gain hundreds of millions of dollars' if legislation were passed lowering carbon emissions (Jaspal et al., 2013: 395).

It is indeed the case that two years before *AIT* Gore co-founded an investment management partnership focused on sustainability issues (Generation Investment Management, n.d.), and that one newspaper report claimed that his 'green-tech' investments boosted his net worth from $2 million to $100 million between 2002 and 2012 (Leonnig, 2012). Whether or not these figures are entirely accurate, they highlight the importance of the social context that is given to Dewey's 'bare ideas', and in particular the contested boundary between content and context (Brown, 2009: 159).

Brown (2009: 160) notes that the 'social conflicts associated with genetic engineering do not invalidate the theory of the double helix'. Similarly, the financial interests of Al Gore highlighted in the *Daily Mail* comment do not invalidate the fundamentals of atmospheric physics. However, the comment highlights the fuzzy boundary between content and context in the public sphere, and how a questionable context can bring the content into question and destabilise representations of expertise. Citizens' willingness to accept or challenge climate-science expertise is to some degree dependent on their core values (Kahan et al., 2011). One can't please all the people all the time. However, even assuming that Gore's intentions in making *AIT* were of the best, his financial interest in sustainability investments was not necessarily a firm foundation for his emerging public status as a climate-change expert.

While helping to raise the profile of climate change, *AIT* seems also to have contributed to polarisation and strengthened the voices

of what some may call an 'inconvenient public' keen on publicising 'inconvenient knowledge' related to Gore's presentation of climate science and his own role as the public face of climate change. The use of the film to increase 'public understanding' of climate change was thus at one and the same time a success and a failure, a miracle and a monster.

Conclusion

In this chapter we have outlined the role of *AIT* in creating a strengthened social representation of climate change; making the impersonal personal and the invisible visible. By many measures *AIT* was hugely successful, winning numerous awards, earning Al Gore a share of the Nobel Peace Prize and providing a springboard for a global campaign of public education and activism. Drawing on the work of Brown, we have shown how *AIT*'s focus on creating new audiences for climate-science expertise echoes Dewey's original call for science to be returned to the people as 'a refinement of commonsense inquiry' and not to remain an entirely unfamiliar way of knowing (Brown, 2009: 160). The film also echoes Dewey in providing an aesthetic, emotional communication of expertise, going beyond the persistent deficit model in climate-change communications that assumes that the absence of concern about climate change is the result of a lack of knowledge (Nerlich et al., 2010; Pearce et al., 2015). In many ways *AIT* provides a model for bringing scientific expertise into the public sphere.

However, mistakes were made. In particular, errors on scientific content should have been avoided. As Hulme noted in his study of Gore's questionable comments on Mount Kilimanjaro's glaciers, returning scientific knowledge to the people 'may destabilise knowledge as much as it may legitimise it' and public trust in provisions for quality assurance in evidence are key (Hulme, 2010: 322). This goes for social representations of climate-change expertise as much as it does for scientific representations of nature appearing in the peer-reviewed literature. Whether these mistakes had a significant bearing on public attitudes towards *AIT* is beyond the scope of this chapter. However, what we have shown is how social representations of expertise inevitably bring context to content, and a boundary between the two that is contested. In the case of *AIT*, Gore's position as a Democrat

politician formed part of the film, perhaps making Republican-supporting viewers less receptive to the film's message. Counterpublics may seek to bring in other contexts as a means of contesting social representations. In the example above we show how Gore's financial interests were used as a means of discrediting the scientific content. For scientists, this may seem anathema, but is the kind of issue that requires attention when returning scientific expertise from academia to the broader society.

In its mix of the scientific, personal and political, *AIT* is perhaps best thought of as an ambitious, if flawed, experiment in science communication and in making climate change meaningful. It did so, whether consciously or not, by politicising climate change and reintroducing the human into previously apolitical representations of climate change (Jasanoff, 2010). While agreeing with the need for politics, not science, to bear the load of dealing with climate change, we note that one effect of *AIT* was to turn climate science into 'Al Gore's science', closely tied to a narrow range of policy options that were anathema to US conservatives (Sarewitz, 2011). We also note that if future engagement on climate change is to improve on the experience of *AIT*, those taking part must be open to engaging with publics that might be regarded as inconvenient just as much as with invited and convenient ones. Such engagement can be rewarding or frustrating to various degrees (Hawkins et al., 2014), something we have both personally experienced with diverse publics on the Making Science Public blog that we have edited throughout the duration of the research programme. However, such engagement should continue if there is to be any hope of social representations of scientific expertise becoming a source of moderation rather than polarisation. We cannot, and should not, seek to vanquish the monsters lurking under the public face of science, but we might be able to do a better job of taming them.

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