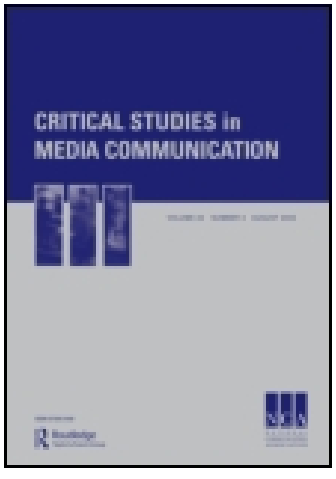


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# Decades Away or The Day After Tomorrow?: Rhetoric, Film, and the Global Warming Debate

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# Decades Away or *The Day After Tomorrow*?: Rhetoric, Film, and the Global Warming Debate

Ron Von Burg



*In the summer of 2004, scientists and environmental advocates engaged the film,* The Day After Tomorrow, *in an effort to raise awareness of global warming as a serious environmental threat. The popular fictional film creates a dilemma for scientists and environmental advocates who highlight the dangers of global warming; while the film's underlying message has scientific merit, the cinematic depictions of such dangers push the boundaries of scientific credibility. This article examines how scientists and skeptics treat the film as a rhetorical resource to articulate claims about global warming science often obscured in existing public discussions of climate change. I argue that the rhetorical strategies used by both sides of the global warming debate demonstrate the opportunities and limitations of popular culture in situated public scientific discourses.*

*Keywords: Rhetoric of science; Science fiction; The Day After Tomorrow; Film; Global warming*

In 2004, many scientists, largely frustrated by efforts to illustrate to publics and politicians the dangers of human-induced global warming, adopted an uncharacteristic rhetorical gesture to promote global warming awareness, employing *The Day After Tomorrow* (*TDAT*) to dramatize the harms of global warming. As a tent-pole summer release illustrating a broader environmental concern, many scientists, albeit hesitantly, reference the film in hopes that the increased attention could translate into meaningful discussion over global warming. Gretchen Cook-Anderson, a National Aeronautics and Space Administration (NASA) spokeswoman, notes, "whether its premise is valid or not, or possible or not, the very fact it's about climate change

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could help to spur debate and dialogue" (quoted in Barollier, 2004). Likewise, geochemist and science advisor to *TDAT*, Michael Molitor, suggests that the movie "is going to do more for the issue of climate change than anything I've done in my whole life" (quoted in Booth, 2004). While these endorsements suggest the film can highlight the dangers of climate change, global warming skeptics suggest that these same endorsements are evidence of the epistemic shortcomings in generally accepted climate change science.[1] Such countervailing discourses can invite public confusion as to the current state of scientific knowledge.

The distillation of complex scientific arguments into a publicly digestible form underscores a central difficulty in advancing public understandings of science, an effort to promote a public scientific literacy that nurtures better public deliberations on scientific and technological matters.[2] Science communication scholars often lament that efforts to popularize science, at best, dilute legitimate scientific information and results in sophomoric understandings of science or, perhaps even worse, advance scientific misunderstandings that harm credible research findings (Corbett & Durfee, 2004; Nelkin, 1987; Silverstone, 1991; Wynne, 1995). It is particularly important for publics to have adequate understandings of climate change science to ensure that subsequent deliberations properly balance the risks of global warming with the social, political, and economic implications of anti-global warming measures. However, more knowledge of "the science" does not guarantee understanding, let alone resolution, of any given scientific debate (Evans & Priest, 1995; Gregory & Miller, 1998; Wynne, 1992). Because science popularization may promote awareness, but not necessarily understanding, of a scientific matter, lay publics may face difficulties recognizing arguments with scientific merit, gauging the credibility of the scientific interlocutors engaged in the debate, and adjudicating the scientific arguments that inform public policy deliberations and priorities. The ability to secure credibility is particularly salient for public debates on climate change, where scientists and skeptics dispute the long-term scope and magnitude of global warming, and the more immediate and tangible economic implications of addressing climate change. How lay publics adjudicate this scientific debate is complicated further by how climate change discourses circulate in public arenas.

The tendency for embroidered rhetoric in media coverage of global warming, for example, provides skeptics with discursive fodder to label scientists as alarmists who lack the critical distance of credible scientific argument.[3] Specifically, the public scientific discourse surrounding *TDAT* highlights the dilemma scientists face in "getting the word out." On the one hand, a spectacular, fictional film that envisages the dangers of global warming provides a dramatic exordium well-suited to focus public and media attention on issues of climate change. On the other hand, these more dramatic portrayals of climate change amplify the skeptical claim that global warming arguments rely on alarmist rhetorics to occlude failings in climate science.

This investigation directs critical focus on the discursive intersections of film and public scientific argument by identifying how *TDAT* functions as a rhetorical resource to frame public discourses on global warming. As Hilgartner (1990) suggests, lay public understandings of science and science popularization have an "upstream effect," where

public discussions of science can affect knowledge production through the shaping of research agendas. Hence, the study of a film and certain reception discourses about the film can serve as a useful way to consider a public's role in defining the meaning and function of science in society. I suggest that an analysis of the rhetorical interplay between scientists and skeptics regarding *TDAT* suggests new approaches in examining the role popular culture plays in shaping the rhetorical dynamics of public scientific discourse. As Ceccarelli (2001b) argues, the examination of a text's reception reveals a series of rhetorical dimensions unavailable in criticisms of a single text. Ceccarelli (2001a) advises critics "make connections between text and intertext, uncovering fragments of reception that indicate how audiences interpreted the primary text and the fragments of production that indicate how authors both reproduced and altered the institutional and cultural resources available to them" (p. 326). While there are a few social scientific investigations on how *TDAT* shapes public understandings of global warming (Hart & Leiserowitz, 2009; Leiserowitz, 2004; Lowe, 2006; Lowe et al., 2006), this essay adopts a more rhetorical approach by focusing on the scientific interlocutors who function as epistemic intermediaries, helping non-scientific audiences, through the film, comprehend the technical elements of the global warming debate.

I suggest this type of analysis reveals a series of rhetorical dynamics that demonstrate how popular culture artifacts can shape discourses on public scientific credibility and legitimate scientific argument. Specifically, I argue that scientific responses to *TDAT* serve as a type of proxy for broader public debates over climate change, where skeptics and scientists tussle over the rhetorical commonplaces that promote claims of scientific credibility. Whereas global warming skeptics identify *TDAT* as evidence of the unscientific alarmism that plagues climate change science, global warming scientists defend the film as "not untrue"—illustrative of the figure of speech *litotes*—in an effort to maintain both public scientific credibility and embrace the dramatic elements of the film to promote the dangers of global warming.[4] In developing this argument, I provide an overview of extant scholarship that examines the discursive dimensions of film and popular depictions of science, follow with a discussion of the scientific and political responses to *TDAT*, and conclude with suggestions as to how this investigation can advance communication scholarship that considers the relationship between popular culture and scientific discourses.

## Science, Rhetoric, and Film

Scholarly attention to the popular depictions of science is uniquely important given how scientific knowledge is developed in democratic societies (Hilgartner, 1990; Latour, 2002). For scientists, films can serve as a conduit for cultivating public understandings of science (Frank, 2003; Kirby, 2003a). Biologist, turned science-communication scholar, David Kirby (2003b) suggests that scientific consultancy for popular fictional films have demonstrable effects on public understandings of science.[5] He notes that films can function as "'virtual witnessing technologies' that depict natural phenomena in such a way as to convince the audience that the representations accurately display the natural world" (Kirby, 2003b, p. 234). These

cinematic portrayals of scientific knowledge function as alliance builders, where the images and narratives influence how individuals understand and accept, or reject, scientific knowledge. However, when these discourses generated from cinematic portrayals of science move from theater to public discussions, there must be specific acknowledgement of their contributions to situated public discourses.

Investigating all dimensions of a scientific controversy reveals how a popular culture resource can animate overlooked rhetorical commonplaces, pools of common discourses or arguments where interlocutors "go" to generate persuasion. Goodnight (2005) argues that "[t]he production, performance, and reception of science and technology from positions of provider and user form the hub of modern communication controversy" (p. 29). Goodnight suggests that popular culture is a key dimension to the intersections of public and scientific discursive arenas. Likewise, Lyne (2005) notes that "the way culture and science swap tropes and strategies back and forth makes it impossible to draw a neat distinction between them" (p. 41). This tropological fluidity illuminates difficulties for academics attempting to arrest the rhetorical dynamics of any given debate. However, such fluidity both expands and problematizes the discursive options available to scientific interlocutors in drawing distinctions between viable scientific arguments and their charlatan counterparts.

Gieryn (1999) argues that, as scientific controversies enter into public realms, the *ethos* of science is not necessarily called into question. Rather, "as each side brings science to the battle in defense of its claims, the link in principle between science and the truth or reliability is sustained—even as some supposed facts and interpretations get canceled out as unscientific, false, or risky" (p. 3). Taylor (1996) adds texture to Gieryn's claims by suggesting the boundaries of science—rhetorical constructions of what separates legitimate and credible science from its impostors—are discursive products of science in action. Like Gieryn, Taylor argues that rhetorics of demarcation occur in localized and situated moments of scientific controversy, where the practices of scientists help articulate the boundaries between science and non- or pseudo-sciences "to sustain their (perhaps well-earned) position of epistemic authority and to maintain a variety of professional resources" (p. 5).[6]

In public scientific controversies, these boundaries are often maintained by interlocutors who successfully employ the discourses of accepted scientific norms. As Jasanoff (1987) argues, "much of the authority of science in the twentieth century rests as well on its success in persuading decision-makers and the public that the Mertonian norms present an accurate picture of the way science 'really works.' Unlike politics, science is 'disinterested' and 'objective' and, unlike religion, it is 'skeptical'" (p. 196). Prelli (1997) suggests the Mertonian norms that guide legitimate scientific research also function as rhetorical commonplaces for cultivating scientific credibility for non-scientific audiences.[7] Hence, such discourses of 'disinterestedness' and 'organized skepticism,' both Mertonian norms of credible scientific inquiry, function as commonplaces to justify the merits of various scientific claims to non-scientific audiences. As scientific controversies migrate into public discourses, the side that best represents the tropes of disinterestedness and skepticism, for example, typically prevails.

However, Corbett and Durfee (2004) argue that journalistic efforts to adhere to conventions of balanced reporting provide warming skeptics with public attention that is often incongruous with the consideration they receive in the scientific community. Even though both sides marshal the *ethos* of scientific integrity, the authority of the skeptical arguments becomes amplified within non-scientific public spheres beyond their credibility within various scientific communities. This creates a public image of a scientific controversy where one does not truly exist (Boykoff & Boykoff, 2004), producing what Paroske (2009) calls an "epistemological filibuster," a rhetorical strategy in which skeptics amplify uncertainty and repeat calls for further study to thwart policy action. While there is evidence of a diminished biasing effect of balance (Boykoff, 2007), media coverage of global warming generally gravitates toward the controversial and dramatic elements of climate science, rendering non-scientific publics either uncertain of the scientific knowledge or skeptical that their action could avert a climate crisis (Leiserowitz, 2006; Lowe, 2006).

The scientific community's engagement with *TDAT* attempts to negotiate such rhetorical pitfalls by gesturing toward the dramatic consequences of climate change and highlighting the non-scientific, political dimensions of the public scientific debate that undermine the need for action. *The Day After Tomorrow* relies on powerful visuals of dramatic weather events to communicate the urgency and danger of global warming. However, usage of *TDAT* as a rhetorical device to promote public awareness on climate change invites skeptics to suggest that scientific endorsements of the film are indicative of shortcomings in global warming science. These criticisms possess rhetorical cachet considering many depictions of meteorological destruction in the film have little direct association with global warming (i.e. tornadoes ravaging Los Angeles). As a result, the rhetoric around *TDAT* reflects a type of scientific boundary work where interlocutors attempt to highlight metaphoric connections between the film's diegetic and narrative elements to the broader discourses of global warming, all while seeking to maintain scientific credibility.



## *The Day After Tomorrow*: A Question of Relevance

On Memorial Day weekend of 2004, *TDAT* opened with a great deal of attention from scientists and environmental activists. *The Day After Tomorrow* possessed all the trappings of a blockbuster: an easily accessible storyline, spectacular special effects, bankable cinematic talent, and an extremely large filming and marketing budget. Despite the ostensible desire to fill seats at cineplexes, the filmmakers' aspired for the popcorn flick to be eye candy with a message: the dangers of global warming are real and continued denial can only result in disaster (Sibbald, 2004). *The Day After Tomorrow* hit theaters months before the 2004 Presidential election. Pundits and strategists believed that global warming policies were weaknesses in President George W. Bush's re-election drive (Brooks, 2004; Cohen, 2004). The inattention to environmental concerns was magnified by the Bush Administration's frosty relationship with science (Mooney, 2005; Shulman, 2006; Waxman, 2003), especially when scientific findings challenged pro-business policies.

*The Day After Tomorrow* engages both the public global warming debate and the Bush Administration's reluctance to act on climate change in two distinct ways. First, the advertising campaign for *TDAT* highlights its scientific significance and its intention to interrogate existing climate policy. The film's website sets the tone with the tagline: "There's more truth than hype." The promotional website cites numerous prestigious science journals, such as *Nature*, *Geophysical Research Letters*, and *Science*, articulating the likelihood of global warming, abrupt climate change, and a new ice age. The promotional materials embrace fully the political and environmental message, citing scientific studies on the signs of global warming, even evidence of warming not depicted in the film.

Second, the film's narrative highlights the political and non-scientific frustrations scientists face in public debates on global warming. *The Day After Tomorrow* follows the story of Jack Hall (Dennis Quaid), a National Oceanic and Atmospheric Administration (NOAA) paleoclimatologist, who advances a climate change theory that suggests continued global warming could initiate a cooling cycle, rapidly plunging the Northern Hemisphere into a new ice age. Although a self-admittedly remote possibility, Hall's theory possesses enough credibility for him to be invited to an international conference on global climate policy. Hall provides a warning that a warming-induced ice age would be inevitable if global consumption patterns and emission rates fail to abate. Hall's most vocal critic is the Vice President of the United States (Kenneth Walsh), who shares an unmistakable and quite intentional likeness to Dick Cheney. The Vice President asserts that enough scientific uncertainty remains to warrant rejection of environmental legislation that could harm economic growth. The narrative unfolds with continued nonchalance from the White House until the effects of rapid climate change are too large to ignore.

In addition to numerous scientific interviews regarding the veracity of the film and the several scientific websites parsing its factual and fictional elements, there was robust debate within the scientific community as to whether any sympathetic appeal to the film advanced or thwarted public understandings of climate change. The debate over the efficacy of *TDAT* in climate change discourses reveals a series of exigencies for rhetorical interventions from interlocutors with disparate interests. While the film's release presents an opportunity to raise public awareness about the dangers of global warming, it also raises concerns that using a scientifically questionable film to discuss climate change risks, trivializing global warming and undermining the public credibility of climate scientists. Conversely, for global warming skeptics, the film offers a chance to deride global warming claims as far-fetched and reactionary, suggesting that the film reflects a broader failure in climate science.

## *The Day After Tomorrow and the Public Arguments on Global Warming*

Capitalizing on the publicity of the film, the National Resource Defense Council, Greenpeace, the Union of Concerned Scientists, National Snow and Ice Data Center, the Pew Center on Global Climate Change, and the Woods Hole Oceanographic

Institution all created websites to answer questions about the science in the film and the reality of global warming (Griscom, 2004). On the days leading up to the film's release, many major newspapers featured stories on the global warming debate that used *TDAT* as a qualified attention-getting device (Bowles, 2004; Bowles & Vergano, 2004; Bridges, 2004; Coren, 2004; Hager, 2004; Sennott, 2004; Vancheri, 2004).

The very basic scientific premise of *TDAT* finds support in generally accepted science. Even though *TDAT* shows global warming occurring at an absurd rate, the film depicts the melting of polar ice caps, the possibility of increased storm intensity, and erratic weather patterns, all scientifically valid, potential consequences of global climate change. While abrupt climate change theories do not fall within the scientific mainstream, these scenarios are more dramatic and compelling than the slow, methodical advance of global warming.[8] Thus, *TDAT* reveals an uneasy confluence of acceptable, albeit more theoretical, science with the typical trappings of a big-budget Hollywood disaster film—a likeable protagonist, a riveting plot, and eye-popping special effects. In the parlance of sociologist Scott Frank (2003), the film's dramatic truths—the entertaining and dramatized version of a scientific truth—invite some possible tensions with its veritable truths—the scientifically-valid details—potentially obfuscating the scientific message the movie attempts to articulate. Although the film can encourage publics to act against the threat of global warming (Nisbet, 2004), the rhetorical task for scientific interlocutors is eschewing the scientifically-suspect elements of the film from the legitimate scientific message that climate change requires immediate attention.

### *The Skeptical Response: The Fiction is the Science*

There are three general scientific camps regarding *TDAT* and its impact on public debates over global warming: scientists who believe the film hurts efforts to advance public understanding of global warming, the skeptics who use the film to indict global warming science, and the interlocutors who suggest the film publicizes effectively the significance of global warming and the need for immediate action. Several scientists sympathetic to global warming dangers argue that the film has no place in public discourses on climate change. Their fundamental apprehension centers on how the film might affect an audience's understandings of climate science. Janet Sawin, a climate and energy program director at the Worldwatch Institute, illustrates this trepidation when she argues that "there is some concern that what the movie shows is so extreme that people will say, 'Oh, that could never happen, so I'm not going to worry about it.' That blows a very serious issue out of proportion and could cause people who are skeptical to become even more skeptical" (quoted in Lovgren, 2004). Likewise, popular science writer Bill McKibben (2004) suggests that "[i]t's always been hard to get people to take global warming serious because it happens too slowly." But McKibben contends that while the film may focus attention on global warming and properly illustrates some of its effects, the depiction of its most dramatic consequences might set expectations too high. He notes that "if the reason we're supposed to worry about global warming is that it will first send a tidal

wave over the Statue of Liberty and then lock it forever in an ice cube, anything less will seem . . . not so bad" (McKibben, 2004). In other words, the most sensationalist depictions of global warming that emphasize the devastation of climate change are also the most scientifically suspect. This stretching of scientific fidelity risks destabilizing the metaphoric relationship between the cataclysmic weather depicted in *TDAT* and the actual manifestations of climate change.

Additionally, some fear that the overt political message of the film corrupts climate science as politically motivated and not adhering to the "objectivity" good science requires (Bowles, 2004). These fears are evident in the rhetoric skeptics use to dismiss the film as liberal propaganda. Paul Driessen (2004) argues that *TDAT* "breaks new ground in combining horror, propaganda and manipulation of history and science to serve political agendas." Driessen recasts global warming scientists as doing everything in their power to promote a "fright night" scenario, employing irrational scare tactics that oversell the potential impacts of global warming. Moreover, David Rothbard of the libertarian-leaning Committee for a Constructive Tomorrow exploits Al Gore's guarded endorsement of the film, noting "[s]ince Al Gore had such success peddling science fiction as reality in his book *Earth in the Balance*, it's no surprise he's all ozoned-up about a global warming movie with similar fantasy-as-fact foundations" (quoted in Morano, 2004). These skeptical discourses suggest that the film traffics in erroneous science, and any defense for such cinematic science, let alone full throated endorsement, demonstrates a complicity in unserious science. This confluence of rhetorics of irrationality and rhetorics of politicization offered by skeptics attempt to characterize climate change science as fundamentally flawed.

The most sustained and critical review of the film comes from Patrick Michaels, an outspoken skeptic from the CATO institute. Michaels' two editorials in *USA Today* and *The Washington Post*, both written before the film's release, typify the skeptical arguments. Troubled by what he sees as the film's abuse of science to serve political ends, Michaels begins his *USA Today* editorial noting "as a scientist, I bristle when lies dressed up as 'science' are used to influence political discourse" (Michaels, 2004b). In both articles, Michaels mobilizes the tropes of objectivity by contrasting his position with the alarmist and overly political message of the film in an attempt to secure the *ethos* of a disinterested, hence credible, scientist.

Michaels cites two primary scientific arguments that run counter to the science depicted in the film. He argues that, unlike the claims made by the film, tornadoes and hurricanes are becoming less intense, instead of more powerful as a result of warming. Likewise, he argues that there could never be a shutdown of the ocean circulation system that would result in a rapid and massive ice age. For each argument, Michaels cites a single scientist whom he introduces as the most knowledgeable in his or her area of specialty, one who speaks with the "sober distance" of an objective scientist. In contrast, any exaggerated depiction of global warming by groups attempting to bring attention to global warming indicts the scientific rationality of their subsequent arguments.

Michaels' indictments of global warming science become magnified when the film is used to advance more overtly political arguments. Michaels suggests that a

Hollywood film should be dismissed outright because it peddles inherently fictional, liberal propaganda. According to Michaels, the embrace of *TDAT* by liberal groups (e.g. MoveOn.org) to make arguments against current environmental policies is evidence of a desperate political tactic to advance a problematic science policy. Michaels substantiates this point by elevating the role of the film as driving policy, creating a veritable straw person argument that positions support of anti-global warming efforts as merely a product of Hollywood hysteria.[9] His argument suggests that, as a blanket norm, fictional films should never be used to influence public science policy deliberations. Therefore, like some form of rhetorical transitive property, Michaels intimates that any position advocated in *TDAT* becomes scientifically suspect by virtue of the film's fictional status.

Moreover, Michaels argues, "[l]et's not forget that the planet is warmer than it was when the Little Ice Age ended in the 19th Century, and that people have had something (not everything) to do with that. But what Gore and the movie do is exaggerate this largely benign truth into a fictional apocalypse" (Michaels, 2004a). By conceding that there is evidence of warming (warmer than it was after an ice age), Michaels pre-empts counter-arguments that his views fall outside of the scientific consensus that the Earth is warming. But by arguing that the effects are negligible, he suggests that any argument that accepts the dramatization of the effects of global warming, especially ones that are scientifically suspect, are wholly irrational.

In the end, Michaels' rhetorical strategy exploits apparent contradictions by climate scientists to validate his assertions that warming science lacks credibility; he identifies scientific support for the film as indicative of what he labels as bad science. He argues that these contradictions are evidence of political motivations that invariably undermine good science. By pointing out that his own arguments do not fall prey to such contradictions or motivations, Michaels positions his observations as inherently more scientific, in that they emerge from publicly recognized scientific norms of objectivity and disinterestedness. However, the rhetorical weight for the skeptical criticisms derives from the implied norms of various media conventions and not from the merits of scientific argument alone. Perceived mass media predilection for the dramatic and the sensational—norms that are in stark contrast with scientific argument—offer skeptics a compelling red herring to indict global warming science.

### *The Sympathetic Response: The Real Fiction is not the Film*

Scientists sympathetic to the film are hesitant to dismiss the film *carte blanche* as wholly fictitious, preferring to place aspects of the film on a fact/fiction spectrum. Within this fact versus fiction idiom, scientists judiciously identify how the film reflects some scientific accuracy. This is particularly evident in the websites published by various scientific organizations (National Snow and Ice Data Center, Woods Hole Oceanographic Institute) and environmental advocacy groups (Greenpeace International, National Resources Defense Council, Union of Concerned Scientists) that address the scientific plausibility of the events depicted in the film. These websites focus on dissecting, like the skeptical arguments, the scientific merits of each

individual environmental phenomenon present in the film. For example, the Woods Hole Oceanographic Institute (2004) and the National Snow and Ice Data Center (2004) websites feature answers to a series of possible movie-goer questions, such as the likelihood and rate of abrupt climate change and the plausibility of sea level rise. While these websites are unequivocal in stating that the film is a Hollywood fantasy depicting events that are either scientifically implausible (continent-sized, flash freezing storms), or ridiculously accelerated (abrupt climate change occurring in days rather than decades), they direct attention to evidence of a broader, scientific reality on climate change. Notably, the National Snow and Ice Data Center (2004) introduces their website stating:

> The motion picture *The Day After Tomorrow* may leave many viewers with questions about climate change. In the movie, recent events on earth's ice sheets and hypothetical future events based on what is known about how climate, oceans and ice sheets interact, are woven into an exciting but fictitious story about a future climate disaster. The kind of disaster portrayed in the movie is impossible, but the patterns described by the movie have a distant basis in real concepts being discussed by climate scientists, oceanographers and glaciologists.

Unlike the skeptics, these websites offer both correctives to the misguided science as well as a reiteration of the existence and likelihood of global warming effects. This is in contrast to skeptics granting primacy to the text's fictionalized status when framing the causes and effects of climate change.

The environmental advocacy group websites are more assertive with their defense of *TDAT* in three notable ways. First, Greenpeace International (2004) observes that "the film has run into entirely justifiable criticism for exaggerating the speed at which cataclysmic changes might happen to the world's climate . . . but most agree [on] an underlying premise: extreme weather events are already on the rise, and global warming can be expected to make them more frequent and more severe." This posture suggests that the film's scientific shortcomings lie primarily with exaggerating the pace of climate change, not in its fictionalized depiction of the climate change effects or the realistic possibility of abrupt climate change.

Second, whereas skeptical arguments cast any endorsement of the film as indicative of a broad epistemic shortcoming in climate science, Greenpeace International uses the film's fictional qualities to indict the skeptical arguments by noting that "[i]t's interesting to note whose angry about this film." It then summarily lists skeptics, including Patrick Michaels, whose funding is provided by big oil companies, such as ExxonMobil, suggesting an ulterior motive for such vitriol directed at a fictional film. Greenpeace's retort serves as a direct indictment to Michaels' credibility as an objective, non-political scientist.

Third, Greenpeace International positions the film as a viable contributor to the public discourse; it notes "[i]t's one thing to dismiss the film as fiction. It's quite another to deny the fact of the problem it's trying to illustrate. Fiction is a legitimate part of civilization's radar, and has a valid place in shaping democratic debate." The Union of Concerned Scientists' (2004) website echoes a similar sentiment, suggesting

that the "dramatic, virtually instantaneous and widespread cooling envisioned in the film is fiction. But like all good science fiction, the film is premised on several important scientific facts." All told, each website affirms that the film possesses a kernel of truth: global warming is occurring and its effects could be rather devastating, even if clearly not on the scale or speed of climate change depicted in *TDAT*.

Furthermore, scientists sympathetic to the film are deliberate in calling attention to the dramatizations of climate change as typical Hollywood. Heidi Cullen, of Climate Central, argues "some of the events in the movie we're beginning to see already. But of course everything is condensed and dramatized" (quoted in Bowles & Vergano, 2004). Geoff Jenkins, a climatologist at the Hadley Centre for Climate Prediction and Research (which is depicted in the film), provides a guarded account of the film when he states, "it's a movie and we shouldn't get too po-faced about it. Hollywood's not going to make money out of a bunch of scientists discussing uncertainties" (quoted in Kirby, 2004).

The rhetorical strategy evident in most appraisals of the film renders transparent both the narrative demands of a Hollywood blockbuster and the aspects of *TDAT* that are "just a movie," while attempting to protect their scientific credibility and amplifying the significance of global warming. Specifically, scientists simultaneously dismiss the rapidity of global warming consequences as unscientific flights of creative fancy while maintaining that certain events depicted in the film, from melting ice sheets to powerful hurricanes, illustrate dangerous climate changes. This reframing of what constitutes abrupt climate change, from the 'Hollywoodized' few days to the more scientifically valid few decades, functions as *litotes*, a figure of speech that affirms through the negation of its opposite (i.e. "the film is not scientifically invalid"). Such a posture cultivates a scientific *ethos* of objectivity that enables scientists to establish metaphoric connections between the events in the film with the actual consequences of global warming. The friction between skeptics and global warming scientists centers on the tropes and the commonplaces of "objectivity" and "disinterestedness," qualities of legitimate scientific argument, in an effort to cultivate credibility. However, this distant embrace of the film by global warming scientists attempts to resolve the normative disconnection between scientific and mass mediated treatments of global warming by displacing equivocations of scientific uncertainty onto the conventions of a Hollywood film.

This rhetorical dynamic is most evident in the overtly political discourses around the film. Unlike the scientists who believe *TDAT* is a tricky referent in promoting public attention to global warming, MoveOn.org, the liberal organization geared toward preventing a Bush reelection, embraces *TDAT's* timely release as an opportunity to criticize the Bush administration's environmental policies. MoveOn.org's global warming campaign is particularly notable because *TDAT* serves as its clear centerpiece. In promoting their anti-Bush global warming campaign, MoveOn.org employed two main strategies.

First, the MoveOn.org campaign, as evident on their website, asks concerned citizens to pass out fliers on global warming during the weekend of the film's release.

The one-page flier, "Global Warming Isn't Just a Movie. It's Your Future," notes that "glaciers at the North Pole are melting. Sea levels are rising. Storms are intensifying." The flier concedes that "the abrupt climate crisis in *TDAT* is over the top. A full-blown ice age could not happen. But global warming could bring dangerously cold temperatures in some areas, while others suffer severe storms, extreme heat, floods, droughts, and water shortages." The solution: vote against Bush. MoveOn.org's rhetorical strategy attempts to separate the visual force of the film from its problematic science. Although there are numerous indicators of the effects of global warming, the flier identifies those events depicted in the film (melting polar ice caps, sea levels rising, ultra-violent storms) as scientifically valid effects of global warming. The flier makes clear concessions that the film is "over the top" with its depiction of runaway and rapid ice age, but there is no suggestion that the film should be disregarded completely (MoveOn.org, 2004).

Second, MoveOn.org sponsored a public rally to coincide with the film's New York premier where keynote speaker Al Gore condemns the Bush administration for irresponsible and environmentally hostile climate stewardship policies. Gore's global warming speech for a MoveOn.org "town hall" identifies the "real fiction" as George W. Bush's climate policy and his refusal to appreciate legitimate scientific evidence of climate change. By using the "fiction" trope to describe the Administration's lack of appreciation for global warming science, Gore shifts the interrogations away from the scientifically suspect film, thus leaving intact the rhetorical force of the film as illustrative of climate change. Unlike the interviewed scientists who articulate qualified appraisals of the film, Gore positions the arguments in and around the film as matters of politics, not science, suggesting that *TDAT* is the film that "Bush does not want you to see."

This argument possesses some cachet for Gore and MoveOn.org, given the Bush Administration's two main responses to *TDAT*. First, an internal memo sent out to employees at NASA Goddard Space Administration instructing scientists not to speak with reporters about the film illustrates broader concerns that the executive branch often silences inconvenient scientific arguments (Revkin, 2004). The memo suggests that scientists could not discuss the film with reporters because the producers did not sign a promotional agreement with NASA (Cowing, 2004). After facing external pressure, NASA superiors relented, noting their position is not to silence scientific discussion but an adherence to legal obligations. The internal memo from Glenn Mahone (2004) suggests that "NASA expects that as colleagues, we will speak our minds, regardless of whether those views work to the advantage of the agency or not . . . [and] this direction [to not speak to reporters] should not be interpreted as an attempt to keep scientists from speaking out on the issue of climate change. We encourage our researchers to openly answer all appropriate questions regarding the science explored in the movie."

Second, to coincide with the release of the film, NOAA developed a website that investigates the scientific validity of abrupt climate change. Mark McCaffrey, NOAA's science communication coordinator and the site's lead author, believes the film provides an opportunity to educate people on global warming by distilling the factual

from the fictionalized science depicted in the film. After receiving permission from NOAA administrators to go live with the site, McCaffrey was told to put the website "indefinitely on hold—with no further explanation" (Griscom, 2004). After the media attention following the film's release, NOAA became flooded with inquiries about the rumored site, until McCaffrey was allowed to post it. Like the NASA scientists, the silencing of NOAA scientists highlights actions that are typical of an anti-science trend in the Administration to curb climate change discourses that run counter to existing policies.

The governmental responses to both NASA and NOAA scientists reveal a compelling dynamic regarding the potential for a fictional film to illuminate nontraditional arguments in normal public scientific discourses. The initial silencing of scientific commentary reflects the film's narrative arc, an obstructionist government deliberately ignoring scientific evidence, and substantiates the argument advanced by Gore and MoveOn.org that the Bush Administration is not operating in the spirit of scientific openness. Even though there have been numerous critiques of the Bush Administration's relation to climate science, it is the film's fictional quality that uniquely magnifies the claim that skeptics, like the Bush Administration, are ignoring or silencing credible scientific evidence of global warming. Thus, the same qualities that make *TDAT* attractive for media stories on global warming enable a series of discourses that both move beyond, as well as interrogate, scientific arguments.



## Conclusion: The Rhetorical Force of Facts and Fictions

As is the case with many summer blockbusters, the sensationalism of *TDAT* can distract from insightful scientific commentary. However, the rhetoric surrounding *TDAT* demonstrates that a fictional film can help shape public scientific discourses productively. Studies suggest that the release of *TDAT* increased public awareness of climate change and functioned as a "teachable moment" (Hart & Leiserowitz, 2009; Leiserowitz. 2004). This essay demonstrates that the scientific commentary surrounding the film reveals more than just a "teachable moment." Olson and Goodnight (1994) argue that nontraditional forms of argument in public controversies challenge the norms of accepted argumentation and thus open up new discursive landscapes. I argue that the scientific discourse around *TDAT* reveals how certain rhetorical commonplaces used to articulate publicly credible science shape new avenues of rhetorical invention. Specifically, this essay suggests that the dialectical tension between the aesthetic dimensions of global warming—the dramatic and narrative elements of the film—and the epistemic underpinnings of such depictions can become a location for debating the broader contours of what is considered to be credible climate science. For warming skeptics, the scientific endorsements of *TDAT* are indicative of the desperate and alarmist discourses inherent to global warming science. For environmentally concerned advocates, the film offers a template to illustrate both the dangers of global warming and the non-scientific discourses that affect scientific arguments. Scientists sympathetic to the film

frame the scientifically suspect demonstrations of global warming effects as products of "Hollywoodization" while endorsing the scientifically legitimate premise of global warming as a real, destructive phenomenon that requires serious attention. These assessments of the film's scientific veracity and its potential to magnify the dangers of climate change, hence, become inventional resources to both challenge and advance claims of scientific credibility. By moving beyond an examination of the cinematic text, this essay demonstrates how responses to a film are part of the continual struggle to secure scientific credibility.

Notably, I suggest that climate change scientists adopt a rhetorical strategy that frames *TDAT* as "not untrue," similar to the figure of speech, *litotes*. Such a rhetorical gesture provides the flexibility to embrace the film by taking issue with specific depictions of environmental phenomena without indicting the underlying premise. By adopting a posture that suggests the film is "'not untrue" and offering correctives to the scientifically invalid aspects of the film, scientists attempt to marshal the rhetorical residue of the film's visual and narrative effect without sacrificing credibility. Because skeptics argue that more research on global warming is necessary to decrease perceived uncertainty before undertaking costly policy measures, any equivocation from scientists that illustrates some level of scientific uncertainty becomes evidence for further study and delay in policy action. This use of *litotes*, however, enables scientists to displace questions of uncertainty onto the conventions of a Hollywood film by suggesting the dramatics should not mask the larger truth that global warming is a real danger. The *litotes* figuration provides scientists a critical distance that recasts criticisms of the film back onto the skeptics by exposing the attacks against the film, and by extension global warming science, as having a broader, non-scientific agenda. In other words, the antipathy from skeptics toward the fictional *TDAT* is more of an indictment of the skeptics than climate change science. Furthermore, the *litotes* figuration enables scientists to marshal the increased public attention to global warming and endorse the underlying validity of the film without sacrificing a public *ethos* of dispassionate objectivity. As a result, these interlocutors attempt to secure metaphoric connections between the cinematic depictions of climate change and the scientifically valid dangers of global warming. This rhetorical strategy, however, is uniquely germane to scientific discourses around a fictional film, and is not readily available in discussions about scientific documentaries such as *An Inconvenient Truth*.

Mellor (2009) argues that global warming documentaries are inherently hamstrung by questions of accuracy because they rely on simulations, demonstrations of events that have not yet happened. Therefore, a film like *An Inconvenient Truth* will not pass scientific muster in many of its depicted metonymic connections (e.g. Hurricane Katrina as directly caused by global warming). Yet, "read metaphorically, as a figure of similarity rather than congruity, the images serve to demonstrate what the climate-changed future might be *like*, with extreme weather events *similar* to Katrina. As visual metonymy, this scene makes a claim that cannot be justified. As metaphor, it tells a truth that is compatible with the IPCC consensus" (p. 147, emphasis in original). While *An Inconvenient Truth* may offer a metaphoric truth about global

warming, its documentary status increases the burdens for scientists to defend publicly the epistemic legitimacy of the film's scientific claims. However, when scientists employ the fictional *TDAT* as a rhetorical resource to trumpet the dangers of global warming, there is greater rhetorical flexibility to distance themselves from the film's epistemic claims, through *litotes*, without sacrificing their scientific credibility or losing the dramatic elements of the film. Successes in combating global warming, from the Bush Administration's eventual recognition of anthropogenic global warming to Al Gore's Nobel Peace Prize, do not suggest that the advocates' usage of any individual film, including *TDAT*, constitutes a wholesale shift in understanding global warming in relation to other social and political considerations. However, it does demonstrate the possibility of a popular text to help direct public scientific discourses. A scientific interlocutor's ability to connect rhetorically the popular depictions of science with the scientifically credible commentary provides an organizing discursive structure to contextualize future events without being undermined by the fictional nature of the film. As a result, the images of the film possess a rhetorical force that gives global warming a "presentness" that is often unavailable to "factual" public scientific discourses on global warming.

This critical approach of examining the text and its reception highlights arguments and discourses that are often unavailable or overlooked in traditional analysis of scientific discourses. To wit, it is the film's *fictional* status, and its framing as not untrue, that enables scientists and environmental advocacy groups to articulate arguments about governmental resistance to scientifically sound public discourses on climate change. This reverses the skeptical argument that scientific endorsements of the film reflect shortcomings in climate science. As a result, the commonplaces skeptics employ to dismiss *TDAT* as evidence of illegitimate science become problematic as we examine the broader usage of the film as a rhetorical resource to train attention on the dangers of climate change. Science communication scholars suggest that the scientific community is ineffectual at articulating the urgent need to combat climate change, because global warming unfolds slowly and is often seen as a distant, impersonal problem (Moser & Dilling, 2004). Scientific commentary on *TDAT* attempts to address this concern by capitalizing on the sensational aspects of the film, and the subsequent media attention, to articulate the seriousness of global warming and possible, dramatic weather events indicative of climate change. Science rhetors attempt to connect metaphorically intensive weather events (such as powerful hurricanes) and climatic shifts with the existence of global warming. As a result, certain violent weather experiences are not written off as the product of an unfortunate and random natural disaster, rather they are compelling metaphors of the possible destructiveness of global warming.

By incorporating discourses such as those found in *TDAT*, not traditionally associated with rational, deliberative rhetorics, skeptics and scientists introduce arguments that possess a rhetorical force that is not solely predicated on the publicly accepted norms of scientific argument. The argumentative interaction between skeptics and scientists over *TDAT* reveals dimensions of the global warming debate, from visualizing global warming consequences to silencing scientific commentary,

that are not readily apparent in traditional public scientific argument. Consequently, scientists with the credibility of the consensus can use their rhetorical performances to rearticulate the landscape of acceptable rhetorics within deliberative spheres, even if they are not, in this case, considered properly scientific. To that end, I believe this examination offers guidance for both the scientific interlocutor who engages in public scientific debates and the rhetorical critic who analyzes such discourses. For the scientist, this essay highlights rhetorical strategies that enable engagement with fictional texts in an effort to publicize a scientific matter while preserving scientific credibility. For the rhetorical critic, this essay identifies how an intertextual, rhetorical analysis of scientific commentary shaped and selected by the discursive practices evident in media coverage of global warming reveals new sites of critical intervention to understand better the elasticity of public scientific controversies.



## Notes

[1] For further discussion of generally accepted climate science, see the Intergovernmental Panel on Climate Change (2007), which demonstrates climate change is a real, human-caused occurrence with harmful consequences, especially if there is no abatement in the production of greenhouse gases.

[2] This demonstrates a larger concern among scientists about public understandings of science. There is relative consensus among scientists and science scholars that public understanding of science improves public policy deliberations that invoke scientific argument. However, there are disagreements over the extent to which publics lack adequate understandings of science and the solutions necessary to address such shortcomings (Gregory & Miller, 1998; Wynne, 1992, 1995). In this public discussion over global warming and *TDAT*, both scientists and skeptics take for granted the value of public understanding of science, despite disagreements over how a popular science fiction film fits into that effort.

[3] I offer the term "embroidered rhetoric" to describe popular coverage of climate change that tends to accent the most dramatic, though scientifically valid, elements of global warming.

[4] The figure of *litotes* is not indicative of an epistemic effort to promote public understanding of climate change science, per se; rather, characterizing the film as "not untrue" attempts to understate the fictionalizations of science without sacrificing the credibility of global warming science or the benefits of heightened public awareness stemming from a fictional film. The author would like to thank Eli Brennan for suggesting the figure of *litotes* as way to describe such rhetorical dynamics.

[5] Kirby suggests there are three ways fictional films can affect science. First, films are a form of science popularization that helps secure the necessary resources for specific lines of research. Kirby contends that "popularization is akin to promotional activities of scientists, especially with regard to obtaining funding or other support for research" (p. 242). Second, Kirby argues that fictional films can actually "shape scientific knowledge itself" (p. 246). Kirby notes that films serve as a dramatic and accessible medium that contextualizes the importance of scientific knowledge in non-technical terms. Third, Kirby argues that fictional films help foment scientific consensus on particular scientific issues that unfold in public arenas, helping bring closure to scientific controversies.

[6] Both Gieryn and Taylor suggest that understanding the credibility of science lies with its ability to maintain its epistemic authority in non-scientific venues. This is a product of "boundary work," a series of rhetorical techniques used by scientific interlocutors to distinguish, for non-scientific audiences, science from pseudo- and non-science. While this essay does not make claims as to whether or not rhetorical boundary work is the proper way

to understand science as an epistemic enterprise, I do suggest the rhetoric of boundary work illuminates how scientific rhetors mobilize various commonplaces and rhetorical resources to articulate scientific credibility.

[7] Mertonian norms, advanced by sociologist of science Robert Merton, articulate a set of universally accepted methodological and rhetorical dimensions of scientific practice. Adherence to these scientific norms, or CUDOS (Communalism, Universalism, Disinterestedness, and Organized Skepticism), are fundamental to good scientific research. For further discussion of Mertonian norms, see Merton (1973) and Ziman (2000).

[8] Beyond these visual depictions, there are numerous climate change theories that predict global warming would disrupt the oceanic cycle resulting in varying levels of climatic disruption (Ton, 2004; Weaver & Hillaire-Marcel, 2004) and that such abrupt changes (measured in decades as opposed to weeks, as depicted in the film) could destabilize the climate and invite a new ice age (Alley et al., 2003; Calvin, 1998). Even an October 2003 Department of Defense report suggests that there is scientific possibility, albeit remote, of rapid climate change, and the United States should take active measures to prepare for any risks associated with such dramatic climate shifts (Schwartz & Randall, 2003).

[9] Michaels (2004a) claims that there was a similar dynamic with *The China Syndrome* and anti-nuclear energy efforts in the wake of the Three Mile Island accident.

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