*An Inconvenient Truth*: Effects and Reactions

On May 24, 2006, Paramount Classics released the documentary film *An Inconvenient Truth*, directed by Davis Guggenheim. It is about former United States Vice President Al Gore’s campaign to educate people all over the world about global warming via a comprehensive slide show paired with his lecturing. The documentary was a critical and box-office success here in the United States, winning two Academy Awards for Best Documentary Feature and Best Original Song. It is also the fourth-highest grossing documentary in the United States (Nolan, 2010). Worldwide, *An Inconvenient Truth* has grossed $49,756,507 to date. Since its release, there has been much dispute over the film from its accuracy in the scientific eye to the effects it has on education and knowledge of the general public. With that said, *An Inconvenient Truth* has, without a doubt, made a significant and profound impact on the world nonetheless.

Gore’s goal in making this documentary was to educate the public on the dangers of rapid global warming and to get the audience to act presently and proactively, because our world cannot afford to put off the issue any longer. The reviews from the Institute of Australian Geographers’ conference in Melbourne in July, 2007 recognize that *An Inconvenient Truth* was a tipping point in advancing mainstream societal understanding of climate change. The film’s proponent and narrator, Al Gore, champions the need for combating climate change, fundamentally shifting societal perceptions of the phenomena that collectively constitute this environmental crisis (Barnett et al., 2009). In *An Inconvenient Truth* Gore evokes a state of emergency; a planetarian scale of response, rule, and regulation, and an ethics of individual and collective action for ‘doing something’ (Luke, 2008). In fact, the film relies almost exclusively on events that have already taken place to make its case. All of the statements in Gore’s main argument are in the present tense which has the cumulative effect of making global warming immediate for the audience (Nielsen-Gammon, 2007). Criticisms of *An Inconvenient Truth* include that the film is dated and its message obvious, that it is emotionally cloying, too American, and too individualist in its recommendations for action (Barnett et al., 2009). *An Inconvenient Truth* also plays to a deeply embeddedAmerican belief in the importance ofpersonal responsibility on the one hand and mistrust of ‘big government’ on the other (Barnett et al., 2009).The audience is being encouraged to overestimate the absolute magnitude of future anthropogenic climate change beyond currently accepted science by a factor of five (Nielsen-Gammon, 2007). To certain critics, this observation is perhaps the most serious underlying flaw in *An Inconvenient Truth* because it is such an influential documentary and therefore it should be influencing audiences appropriately without undermining or exaggerating what is at stake.

Awareness of global warming among the wider community in the US was exceptionally low before *An Inconvenient Truth* was made. However, in less than two years after its release, climate change has become widely accepted as the most important immediate challenge facing life on Earth (Barnett et al., 2009). By the middle of 2007, a year after its American commercial debut, the film had been released in 30 countries on three continents. Gore captivated his audience not only through powerful images and statements, but also through inserting his personal life into the presentation. He talks about when his son nearly died and related it to global warming; thus, global warming comes to be framed as a threat to children, the earth and, by extension, ‘civilization’ (Rohloff, 2011). Its overt political messages are muted, and its moral content amplified – in keeping both with Gore’s personal values but also with the need to present a message that deflects otherwise inevitable criticism of political partisanship (Barnett et al., 2009). The film has undoubtedly succeeded in creating a huge sympathetic audience for Gore within the US and other wealthy countries of the world (Barnett et al., 2009). *An Inconvenient Truth* also received endorsements from seniorpolitical leaders. For example, the German EnvironmentMinister Gabriel authorized 6,000 DVDcopies to be bought and distributed to schools;and by government edict, copies were to be distributedto every secondary school in the UnitedKingdom (Barnett et al., 2009). The UK government wanted to be seen to be taking global climate change seriously, and it clearly proved an irresistible temptation to demonstrate these credentials by promoting the film in schools. Also, the film has been incorporated into the fourth and sixth grade science curriculum in Scotland, and in Norway and Sweden *An Inconvenient Truth* is a required viewing for students. In Spain and British Columbia, teachers have access to the documentary for classroom use (Nolan, 2010). However, some people do not believe that Gore’s *An Inconvenient Truth* should be used in schools as a means to attain public understanding because some fear that teachers would simply show the video as a piece of propaganda and that young people would receive it in this way (Lambert, 2008). Ultimately, *An Inconvenient Truth* is no longer simply a film about a slide show, but one part of an extensive, multi-media awareness raising strategy which has become increasingly global in scope (Barnett et al., 2009).

*An Inconvenient Truth* was released in cinemas across Australia on September 14, 2006. By October 3, a Lowy Institute poll found that the issue of global warming had become a major concern for most Australians, who saw it as a bigger priority for the country than terrorism (Smith & Hargoves, 2006). Media monitoring and analysis company, Media Monitors, reports that on most days, articles about climate change in Australian newspapers significantly outnumber those on any other environmental issue (Smith & Hargoves, 2006).In the two months after its release, different members of the Federal Cabinet in Australia, such as Alexander Downer, were reported as now accepting the scientific reality of human-induced climate change (Smith & Hargoves, 2006). The Federal Government has now initiated a landmark inquiry into emissions trading. And at the state government level, the South Australian and Victorian Governments have recently committed to 60% reductions in greenhouse gas emissions by 2050, a significant undertaking (Smith & Hargoves, 2006). This is a major step in the right direction in Gore’s eyes, because even the US hasn’t initiated any policies or goals on the same level as this yet.*An Inconvenient Truth* also had an effect on religion in Australia. Sixteen Australian faith communities representing the world’s great religious traditions launched the publication “Common belief: Australia’s faith communities on climate change,” in which leaders of each faith community affirm that action on climate change is a moral imperative (Smith & Hargoves, 2006). This is proof of how *An Inconvenient Truth* was convincing and powerful enough to have serious effects on Australian society.

There has been some speculation that there is a negative correlation between being informed about global warming and concern. That is, people who reported being more informed about global warming were less concerned. Dr. Paul M. Kellstedt, a professor at Texas A&M University, conducted two studies to see whether or not this statement was in fact true. The primary purpose of the research was to evaluate the effectiveness of *An Inconvenient Truth* in terms of how well it accomplished its apparent goals of increasing knowledge and concern, and changing global warming related behaviors. Based on previous research on information campaigns, it was predicted that watching *An Inconvenient Truth* would increase knowledge about the causes of global warming. With respect to concern for global warming, the correlational study by Kellstedt and colleagues done in 2008 would suggest that providing information should lead to a decrease in concern. However, Kellstedt et al. measured the relationship between participants’ perceived level of informedness and concern for global warming, and not their objective knowledge of global warming. Thus, the study provides an experimental test of whether providing information about global warming causes an increase or a decrease (or no change) in concern (Nolan, 2010).

Two studies were conducted to evaluate the movie and test the aforementioned predictions. In Study 1, a group of volunteer moviegoers were surveyed either before or after watching *An Inconvenient Truth* to see if watching the movie had an effect on their knowledge, motivation, and behavioral intentions. In Study 2, a sample of university students were recruited to watch the movie. The purpose of Study 2 was to see if the movie would also have an impact on individuals who might not otherwise choose to see the movie and to look at changes in behavior over time.

Study 1 found that those who surveyed after watching the film scored marginally higher on the global warming knowledge scale (*M* = 10.59, *SD* = 1.81) as opposed to those who surveyed before watching (*M* = 9.75, *SD* = 1.29). This study also showed that 98% of people correctly believed that pollution from business and industry was a major cause of global warming, and 85% of people believed that use of coal and oil by utilities was a major contributor. However, many people underestimated the contribution of individual behaviors. For example, only 43% of people believed that heating and cooling their homes was a major contributor to global warming (Nolan, 2010).

There was a restricted range on the measure of how likely it is that global temperatures will increase, with none of the moviegoers responding with a score less than 4. Those who took the survey after seeing the movie showed a small, but significant, increase in their belief that global temperatures will increase in the next 50 years. It appears that seeing the movie increased participants’ already high perception that global temperatures will increase in the next 50 years (see Table 1). After seeing the movie, people were also slightly more motivated to reduce greenhouse gases; however, this difference was only marginally significant (Nolan, 2010).

After watching *An Inconvenient Truth*, 60% of respondents planned to decrease the amount they drove, compared to only 26% surveyed before the movie. Thus, Study 1 confirmed that watching the film did have a direct and immediate effect on knowledge and behavioral intentions of individuals who had already made the decision to watch it. However, *An Inconvenient Truth* has been proposed as an educational tool and it is likely that many classroom viewers will be neutral or averse to reducing global warming. Thus, the purpose of Study 2 was to see if the film would also have an impact on individuals who might not otherwise choose to see the movie. Another goal in Study 2 was to see if the positive effects of viewing the movie persisted over time. Study 2 also provides an experimental test of the disputed relationship between global warming knowledge and concern (Nolan, 2010).

Participants in the second study were 27 students at the University of Arkansas participating for course credit. The average age was 21 years old, and all participants owned a vehicle. As expected, students were less knowledgeable, less motivated about global warming, and less convinced that global temperatures would increase in the next 50 years, compared to the community moviegoers in Study 1 (see Table 1). Upon arrival to the study site, participants were randomly assigned to one of three conditions: before, after, or control. Participants in the before condition were seated in the room where the movie was to be shown and completed the 45-item paper and pencil survey before the movie started. Those in the after condition completed the same survey after the movie was finished. Participants in the control condition did not complete a survey on the day that they watched the movie. Participants in each session watched the movie together (approximately 96 minutes). At the end of the movie participants were debriefed and reminded that they would be receiving a link to an online follow-up survey via e-mail in 1 month. The content of the follow-up survey at Time 2 was the same as the initial survey at Time 1 with one difference, the behavioral intention items were rephrased in the past tense. In Study 2, knowledge was measured with the same scale used in Study 1 and scored the same way. As in Study 1, participants were also asked about the likelihood that the Earth’s temperature would increase and their motivation to reduce greenhouse gas emissions. In addition, a single item was used to assess participants’ concern about global warming, with responses ranging from 1 = *not at all* to 7 = *strongly concerned*, and worry about global warming, with responses ranging from 1 = *not* *at all* to 7 = *a great deal* (see Table 1) (Nolan, 2010).

Consistent with the findings in Study 1, participants who completed the survey after watching *An Inconvenient Truth* were more knowledgeable about the causes of global warming (*M* = 9.75, *SD* = 1.28) compared to those who took the survey before watching the movie (*M* = 8.70, *SD* = 1.16). As in Study 1, participants in the after condition scored significantly higher on the aggregate measure of behavioral intentions (*M* = 5.06, *SD* = 0.96) compared to those in the before condition (*M* = 3.74, *SD* = 1.37). Inspection of the means for the individual items (see Table 2) showed that the greatest differences between the before and after conditions were on the items “contacting your senator,” “talk to your family and friends,” and “check your tire pressure.” Providing information about the harmful effects of global warming led to an increase in willingness to reduce greenhouse gases (Nolan, 2010).

In summary, the results of two experiments suggest that *An Inconvenient Truth* does accomplish its goals of increasing knowledge and concern about global warming, and willingness to reduce greenhouse gases. As predicted, after seeing the documentary, participants in both studies were more knowledgeable about the causes of global warming. According to the results of Study 2, knowledge increased slightly in the 1 month after participants watched it. It is possible that viewing the film informed the concept of global warming and made the issue more prominent to participants in the days following participation in the experiment. This increased awareness may have made the participants more sensitive and familiar with global warming information in the news and other media (Nolan, 2010).

Shifting gears in the scientific world, *An Inconvenient Truth* has also had its fair share of criticism by scientists who claim that Gore’s science is not accurate. Criticisms of Gore’s work in the film have come from conservative groups and prominent skeptics of global warming and also from rank-and-file scientists. A few see natural variation as more central to global warming than heat-trapping gases. Many appear to occupy a middle ground in the climate debate, seeing human activity as a serious threat but challenging what they call the extremism of both skeptics and zealots (Broad, 2007).

While reviewers tended to praise the book and movie, vocal skeptics of global warming protested almost immediately. Richard S. Lindzen, a climatologist at the Massachusetts Institute of Technology and a member of the National Academy of Sciences, who has long expressed skepticism about global warming and climate change predictions, accused Gore in The Wall Street Journal of “shrill alarmism” (Broad, 2007). Bjorn Lomborg, a statistician and political scientist in Denmark long skeptical of catastrophic global warming, said in an article that the panel, unlike Gore, had refrained from scaremongering. “Climate change is a real and serious problem” that calls for careful analysis and sound policy, Dr. Lomborg said. “The cacophony of screaming,” he added, “does not help” (Broad, 2007). In talks, articles, and blog entries that have appeared since *An Inconvenient Truth* was released, these scientists among others argue that some of Gore’s central points are exaggerated and erroneous (Broad, 2007). Kevin Vranes, a climatologist at the Center for Science and Technology Policy Research at the University of Colorado, said he sensed a growing backlash against exaggeration. While praising Gore for “getting the message out,” Dr. Vranes questioned whether his presentations were “overselling our certainty about knowing the future” (Broad, 2007).

Mr. Gore, in an e-mail exchange about the critics, said his work made “the most important and salient points” about climate change, if not “some nuances and distinctions” scientists might want. “The degree of scientific consensus on global warming has never been stronger,” he said, adding, “I am trying to communicate the essence of it in the lay language that I understand” (Broad, 2007). Michael Oppenheimer, a professor of geosciences and international affairs at Princeton who advised Mr. Gore on the book and movie, said “On balance, he did quite well – a credible and entertaining job on a difficult subject. For that, he deserves a lot of credit. If you rake him over the coals, you’re going to find people who disagree. But in terms of the big picture, he got it right” (Broad, 2007). “He has credibility in this community,” said Tim Killeen, the American Geophysical Union’s president and director of the National Center for Atmospheric Research, a top group studying climate change. “There’s no question he’s read a lot and is able to respond in a very effective way” (Broad, 2007). Some backers concede minor inaccuracies but see them as reasonable for a politician. James E. Hansen, an environmental scientist, director of NASA’s Goddard Institute for Space Studies and a top adviser to Gore, said, “Al does an exceptionally good job of seeing the forest for the trees,” adding that Gore often did so “better than scientists” (Broad, 2007).

Gore said himself that “not every single adviser” agreed with him on every point, “but we do agree on the fundamentals” – that warming is real and caused by humans**.** Gore added that he perceived no general backlash among scientists against his work. “I have received a great deal of positive feedback,” he said. “I have also received comments about items that should be changed, and I have updated the book and slideshow to reflect these comments.” He gave no specifics on which points he had revised (Broad, 2007).

Although individuals came forward and credited Gore’s work in *An Inconvenient Truth* in general terms, scientists and other professionals did not hesitate to pick out every flawed or incorrect statement. “Nowhere does Mr. Gore tell his audience that all of the phenomena that he describes fall within the natural range of environmental change on our planet,” Robert M. Carter, a marine geologist at James Cook University in Australia, said in a September blog (Broad, 2007). In *An Inconvenient Truth*, Gore states that, “temperatures are unprecedented over past 1,000 years, and the trend is intensifying.” Presently available proxy evidence indicates that temperatures at many, but not all, individual locations were higher during the past 25 years than during any period of comparable length since A.D. 900 (Nielsen-Gammon, 2007). In October, Dr. Don J. Easterbrook, an emeritus professor of geology at Western Washington University, made similar points at the geological society meeting in Philadelphia. He hotly disputed Mr. Gore’s claim that “our civilization has never experienced any environmental shift remotely similar to this” threatened change. Nonsense, Dr. Easterbrook told the crowded session. He flashed a slide that showed temperature trends for the past 15,000 years. It highlighted 10 large swings, including the medieval warm period. These shifts, he said, were up to “20 times greater than the warming in the past century” (Broad, 2007). Gore continued with saying, “consequently, hurricanes, rainstorms, and droughts are getting stronger.” Predictions regarding the magnitude of changes that would be caused by global warming are presently uncertain or in disagreement with observed change magnitudes, so anthropogenic climate change cannot conclusively be established as the primary cause of these changes (Nielsen-Gammon, 2007). “Greenland & West Antarctic ice sheets are endangered; their melting would cause catastrophic sea level rise,” states Gore. The first point is misleading because *An Inconvenient Truth* does not give a sense of the likely time scale of substantial sea level rise, and the extent to which such sea level changes are catastrophic depends sensitively on the rate of those changes (Nielsen-Gammon, 2007). Gore also goes into a discussion about the rising global temperature and the audience is being invited to infer that global temperatures ought to rise 18°C if carbon dioxide concentrations double, but the currently accepted value for climate sensitivity to doubled carbon dioxide concentrations is about 2.5–4°C. The logarithmic dependence of temperature on carbon dioxide and changes in other feedbacks such as snow cover are among the reasons for the smaller number (Nielsen-Gammon, 2007). With that said, the role of anthropogenic aerosols, volcanoes, top-of-atmosphere solar radiation, orbital variations, and other forcings of global temperatures are never mentioned in *An Inconvenient Truth*, and the movie never corrects the impression that carbon dioxide variations are the only important cause of climate change (Nielsen-Gammon, 2007).

Gore also mentions that Japan set an all-time record for typhoon frequency in 2004, yet there is presently no detectable trend in typhoon frequency either globally or in the northwest Pacific. Companied with global warming, the current scientific consensus is that typhoon frequency would probably stay about the same or decrease (Nielsen-Gammon, 2007). Furthermore, Gore associates the spread of the West Nile Virus across the United States with global warming, when in reality it was simply the introduction of an exotic virus into North America that was then spread through a large number of mosquito species indigenous to both temperate and tropical latitudes (Nielsen-Gammon, 2007). “He’s a very polarizing figure in the science community,” said Roger A. Pielke Jr., an environmental scientist who is a colleague of Dr. Vranes at the University of Colorado center. “Very quickly, these discussions turn from the issue to the person, and become a referendum on Mr. Gore” (Broad, 2007).

*An Inconvenient Truth* likewise is both effective and annoyingly misleading. For each statement in the film that goes too far, there are perhaps ten other scientifically valid statements that could have been made but were left out in the interest of time or persuasiveness for a lay audience (Nielsen-Gammon, 2007). What is largely missing in both the film and climate impacts research are words and images that convey the deeper injustice of the high vulnerability of low-income communities, dependent on climate-sensitive resources, who have contributed almost nothing to the problem of climate change but stand to lose the most due to their relatively higher exposure to risks and their lower capacity to adapt (Barnett et al., 2009). Nonetheless, *An Inconvenient Truth* as a major catalyst in the emergence of climate change as a global concern warrants significant ongoing critical understanding as new truths about the environmental crisis continue to emerge (Barnett et al., 2009). The film has met its goal; it has raised awareness about climate change in the US and beyond which is extremely important. For this reason the film is almost beyond reproach, and critiquing it feels sacrilegious (Barnett et al., 2009).

While it is difficult to accurately measure the full impact of the film, it is clear that it has shifted the game. All different types of people in various professions have been buzzing about it since its release, and that buzz has not died down. Through *An Inconvenient Truth*, Gore was successful in getting the threat and dangers of global warming into the minds of people all over the world. Over the past decade or so, it has been universally agreed upon by scientists that humans have indeed had an effect on global temperature increase; to what extent is still under scrutiny. In the year following the release of the film, Gore, along with the Intergovernmental Panel on Climate Change (IPCC), was jointly awarded the Nobel Peace Prize ‘for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to coun­teract such change’(Rohloff, 2011).





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