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## Representing the Anthropocene: Transmediation of Narratives and Truthfulness from Science to Feature Film

**Abstract:** The aim of this paper is to investigate the transmediation of scientific articles to very different media types, meaning that the form and content of scientific communication is transformed into other forms of communication – more precisely works of art or entertainment, as exemplified by the media type feature film. The focus is on transmediation of narratives and truthfulness. Specifically, the discussions centre around narratives of human actions changing the environment on a global scale. Such narratives are vital to scrutinize because they concern the conditions of future human existence. To make the discussions truly relevant, the complex issue of truthfulness in communication is also included. Different media types can be, and are often expected to be, truthful in different ways, and because of media differences it may well be the case that narratives and their truthfulness are corrupted in transmediation. Whereas communication in general has many widely different purposes, its function is sometimes essentially to get things right – to represent certain things truthfully. Therefore, it is imperative to explore the capacities of different media types to narrate truthfully. The paper starts with explications of some of the core concepts of the investigation – transmediation, narration and truthfulness – and continues with a discussion of general media differences between scientific articles and feature films. This is followed by a brief analysis of a scientific article (“The ‘Anthropocene’”, published by Paul J. Crutzen and Eugene F. Stoermer in 2000), a somewhat longer examination of the transmediation of this article to a feature film (*The Day after Tomorrow*, directed by Roland Emmerich and released in 2004) and a conclusion.

**Keywords:** Anthropocene, Climate change, Intermediality, Narration, Science communication, *The Day after Tomorrow*, Transmediality, Transmediation, Truthfulness.

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## Introduction

The aim of this paper is to investigate what may happen when scientific articles are transmediated to very different media types, meaning that the form and content of scientific communication is transformed into other forms of communication – more precisely works of art or entertainment, as exemplified by the media type feature film. The focus is on transmediation of narratives and truthfulness, not on transmediation of media characteristics in general. Specifically, the discussions centre around narratives of human actions changing the environment on a global scale. Such narratives are vital to scrutinize because they concern the conditions of future human existence. To make the discussions truly relevant, I also include the complex issue of truthfulness in communication. Different media types can be, and are often expected to be, truthful in different ways, and because of media differences it may well be the case that narratives and truthfulness are corrupted in transmediation, that is, when they are transferred among different media types. Whereas communication in general has many widely different purposes, its function is sometimes essentially to get things right – to represent certain things truthfully. Therefore, I find it imperative to explore the capacities of different media types to narrate truthfully.

To make these complex issues graspable in a simplified way, I compare two specific media products. The paper straightforwardly consists of a brief analysis of a scientific article, a somewhat longer examination of the transmediation of this article to a feature film and a conclusion. However, before starting the analytical work, I must define and explain some of the core concepts of the investigation.

I delineate *transmediation* as media characteristics being represented again by another kind of medium (Elleström 2014: 11–35). For instance, the persons in a photograph in a newspaper or the visual actions in a film may be described by spoken words; a musical score may be performed by a musician; the oral statements of a witness may be written down; a story and characters in a theatrical play may be adapted to a movie; the gist of a scientific account may be rendered into a visual diagram; and written alphabetical text may be transformed to Braille writing. One can even understand the recipe in a cookbook being realized as a meal communicating, for instance, affection, contrasts or the sense of a certain season of the year, in terms of transmediation. However, transmediation occurs not only among specific media products but also among qualified media types and between media products and qualified media types (cf. Tornborg 2020; Salmose 2020). A qualified media type is one that is established through its contextual existence (in certain times, places and cultures) and expected functions (what sort of communication it should achieve). If one thinks in terms of general filmic qualities in a written article in a magazine, this is a case of transmediation from the qualified medium of film to a specific media product.

A *narrative* is something that emerges in communication when a media product represents events that are temporally related to each other in a meaningful way. Normally, narratives represent not only events but also an abundance of other things, embedding the events in a broader context. However, the core of a narrative, which one can call a *story*, is exactly this: *represented events that are temporally interrelated in a meaningful way* (Elleström 2019: 35–44; cf. similar and well-known but less transmedial definitions in, for instance, Chatman 1978 and Bal 2009). Contrary to some narrow understandings of narration in the field of science communication (Dahlstrom and Scheufele 2018: 1), I do not take narratives to be restricted to representations of persons (characters) involved in events; representations of meaningfully interrelated events that do not result from human actions are also narratives.

I base my definition of *truthfulness* on Charles Sanders Peirce's notion of index. According to Peirce, indices are signs grounded on contiguity, real connections (see, for instance, Peirce 1932: CP 2.303–304 [1902], CP2.247–249 [c.1903]). It is those media traits that are perceived to have real connections to the extracommunicational domain (what one perceives to be the world outside the immediate domain of communication) that ultimately create external truthfulness (Elleström 2018). Because the world and our experiences of it are immensely multifaceted, there is no easy way to explore truthfulness in general. Media products can be truthful to, for instance, our direct perceptions and experiences of the surrounding world or to our acquaintance with earlier communication; to objects that are material or mental; to objects that are universal or those that are particular; to objects that are typical or atypical; permanent or temporary; and global or local. Communication can furthermore be truthful to objects that are wholes or to objects that are details; to objects that have previously been manifested, that are currently manifested, that are bound to be manifested or that may be manifested.

As a background to the analytical work, I should also say something about differences between how the two qualified media types scientific articles and feature films are construed in a floating media landscape of changing and partly overlapping qualified media types and subtypes. On a basic level, there are major differences in media modalities (Elleström 2010): whereas scientific articles are non-temporal (albeit sequentially decoded, of course), feature films are temporal. Because one only needs to see them to read them, scientific articles are simply visual; feature films, on the other hand, are visual and auditory. Scientific articles are dominated by symbols, habitual signs (written letters and words), often complemented by icons, signs based on similarity, in the form of visual diagrams, photographs etc. In contrast, feature films are dominated by visual and auditory icons (images, broadly speaking), normally complemented by visual and auditory symbols, primarily in the form of written and spoken words (for definitions of these sign types, see Peirce 1932: CP 2.303–304 [1902], CP2.247–249 [c.1903]).

The two media types are furthermore operationally qualified in different ways. For instance, whereas media products that are categorised as scientific articles are strongly expected to connect methodically to other scientific publications, what we think of as feature films are ideally expected to be artistic or entertaining. However, in this paper, I focus on a limited range of qualified media traits related to narration and truthfulness. Feature films are clearly expected to be at least rudimentarily narrative; if nothing at all happens, the audience gets frustrated. Although less evidently, scientific articles are also expected to be narrative, that is, to consist of represented events that are temporally interrelated in a meaningful way. One major difference is that, whereas the meaningfully interrelated events in feature films are normally strongly related to represented persons that interact in various ways, the meaningfully interrelated events in scientific articles are usually related to represented phenomena that are not individual creatures, which means that the events may be abstract rather than concrete. Nevertheless, the reader of a scientific article would also be frustrated if nothing happens in it, even on a conceptual level.

Media types are also often qualified in terms of truthfulness. One anticipates different media types to be truthful in different ways because of explicit or implicit agreements. In other words, asserting that a certain media product belongs to a particular media type means that one makes certain truth claims. However, because of the floating borders of most qualified media types, and because there are few agreements on the exact nature of expected truthfulness in various media types, it is impossible to avoid a certain vagueness when trying to capture these differences – although media differences in degree, rather than in definite quality, are clearly present.

Thus, to connect to some of the previously mentioned forms of truthfulness, I argue that scientific articles, as well as feature films, might be assumed or even required to be truthful to objects that are both material and mental. This depends on the submedia types, or genres: there are scientific branches such as physics that must aim at truthfulness in relation to the material world, and there are scientific branches such as psychology that must aim at truthfulness in relation to our mental lives. Similarly, there are types of feature films where truthful representations of the surrounding world are of the essence, and there are types of feature films that first require psychological truthfulness.

There are probably larger overall differences between the two media types, as we have come to understand them today, in terms of expected truthfulness to universal versus particular objects and typical versus atypical objects. Even if science often strives towards formulating general rules or even laws, it can never ignore particular or atypical phenomena. If deviations are underestimated or completely left out, there is a risk that the whole picture cracks – that the theories turn out to be wrong. Once more depending on the submedia types, or genres, feature films, on the other hand, being art and entertainment, are rather assumed to represent truthfully what is universal or typical. Even if represented persons

and events may seem unusual or extreme, one largely expects to find traits that are broadly applicable to the conditions of existence in general and humankind in particular.

I also believe that there are differences in expectations regarding truthful details and wholes. For scientific representations, truthfulness in details is probably generally most important. The whole picture can wait, so to speak, until enough truthful details are accumulated. In feature films and other art and entertainment, on the other hand, one primarily assumes communication of truthful wholes. Untruthful details, which one would never accept in science, do not necessarily rule out the truthfulness of the whole. Similarly, truthfulness in details does not guarantee in any way a truthful whole, which requires sophisticated composition.

Finally, I would argue that scientific articles as well as feature films might be equally expected to be truthful to objects that have previously been manifested, that are currently manifested, that are bound to be manifested or that may be manifested. From all this follows that, despite more or less decisive media and submedia differences in terms of expected truthfulness – differences in truth claims – truthfulness is not at all restricted to a few exclusive media types such as scientific publications, news reports, documentaries and testimonies. I therefore find it misleading to think of media types in terms of ‘non-fiction’ and ‘fiction’, if the dichotomy is understood to imply divides such as ‘fact’ versus ‘fabrication’ or ‘real’ versus ‘invented’ (for elaborations, see Elleström 2018). I also reject the widespread notion that there are inherent conflicts between narration and scientific reasoning or between narration and truth claims, as explicitly argued by Dahlstrom and Scheufele (2018). Narration and truthfulness exist, and are expected to exist – albeit in partly different ways – both in science and in art and entertainment such as feature films. Therefore, to some extent, narration and truthfulness can be transmediated among the different media types.

### “The ‘Anthropocene’”

I will now briefly analyse the scientific article “The ‘Anthropocene’” (2000), written by atmospheric chemist Paul J. Crutzen and ecologist Eugene F. Stoermer and issued in a publication called *Global Change Newsletter* the year 2000. Although the article is not at all extensive, it includes several references to other scientific work, and the journal is a scientific forum for high-standard research. I choose this particular article because it is widely believed that it inaugurated the contemporary concept of the Anthropocene, a geological period generated by human actions. It is hence one of the vital source media products regarding communication on the Anthropocene.

The article constitutes a narrative with a core story with concrete rather than abstract events, which makes it fairly easy to comprehend also for laypersons. However, a deeper

understanding of its story requires knowledge of some major background stories: the histories of the universe, our own solar system and planet Earth.

These stories start with the major event, to say the least, which physicists call the Big Bang, and continue with the creation of the elements, the stars (including our own sun), the formation and major changes of the Earth, and eventually the events that give rise to geological epochs. One of the most recent events, considering the vast scope of the geological time scale, is when rising temperature caused a post-glacial geological epoch called the Holocene. This new chapter in the story of the Earth, so to speak, is supposed to have lasted for the past 10,000–12,000 years.

So far, all events in the story of planet Earth, and the universe at large, are clearly understood as occurrences. However, the concept of the Anthropocene offers a new kind of narrative, where the story is largely formed by another sort of event: actions. Let me explain the difference (Elleström 2019: 77–84).

I define *states* as relatively stable conditions flanked by events, while *events* are sudden or slow changes of conditions. Hence, states tend toward lack of evolvment, whereas events clearly comprise evolvment. In the context of human communication, it is useful to distinguish between the two recently mentioned forms of events: *actions* and *occurrences*. Actions are events resulting from acts of volition, while occurrences are events not resulting from acts of volition.

Narratives of the Anthropocene thus have a core story consisting of represented events that can be understood not only as natural occurrences, as in narratives of earlier geological epochs and everything preceding the creation of the Earth, but also as human actions having large-scale effects on our planet's development. Crutzen and Stoermer's narrative starts with the recently mentioned major occurrence of rising temperatures initiating the Holocene, and continues with representations of a series of interrelated human actions combined with natural occurrences. According to the scientists, all these actions and occurrences lead to such a large shift of our planet's condition that it is motivated to say that a new geological epoch has now started – the Anthropocene. The represented events in the article are, among others, a dramatic increase of the human population accompanied by an equally dramatic growth in cattle population, urbanization, exhaustion of fossil fuels, a massive release of sulphur dioxide (SO<sub>2</sub>) to the atmosphere, huge transformation of the land surface, enormous amounts of nitrogen fixed and applied as fertilizers, vast use of fresh water and massive release of greenhouse gases and toxic substances in the environment.

However, the story does not end there. Crutzen and Stoermer also emphasise that the fact that “several climatically important ‘greenhouse’ gases have substantially increased in the atmosphere” (17) possibly will lead to future occurrences: “climate may depart significantly from natural behaviour over the next 50,000 years” (17). It is clear that among all events in this scientific narrative, human actions play a central role. These actions, combined with and

leading to natural occurrences and other human actions, result in accumulated, large-scale anthropogenic changes of our planet.

Scientific articles like this one by Crutzen and Stoermer, consisting mainly of words and numerals, cannot be said to be truthful as such in isolation. They are strongly dominated by symbols – habitual signs – and truthfulness requires indices with real connections to the extracommunicational domain. In principle, a media product looking precisely like a scientific article may claim things that are utterly untruthful, which has indeed often been and still sometimes is the case. Therefore, truthfulness of many scientific articles depends on connections to other associated media products through chains of signs creating coherence among the media products to such an extent that they, in the end, might even be said to form one large media product. To produce truthfulness, the associated media products must eventually, in the chains of signs, contain strong indices that create perceived real connections to the extracommunicational domain.

I assert that the truth claims of scientific articles like the one by Crutzen and Stoermer rely entirely on expected indices in associated media products such as other publications and, particularly, the data that accompany the publications in one way or another and are available for retrieval: representations such as photographs, graphs, tables and data assemblages generated by various instruments that are perceived to be indexical. In the case of geoscience, these required chains of signs leading to strong extracommunicational indices may result in the whole planet being drawn into the communication to create truthfulness. In the end, one is led to the indices in the geological layers of the earth, in the seas and in the atmosphere, and planet Earth becomes one big media product!

### *The Day after Tomorrow*

Let us now leave the area of scientific publications for a moment and enter the domain of art and entertainment, focussing particularly on *The Day after Tomorrow*, a feature film from 2004 directed by Roland Emmerich. In 2016, Michael Svoboda stated that this is still “the most successful film explicitly devoted to climate change” and that it provides the model for other similar films (Svoboda 2016: 48). According to Maria Sakellari, its impact on film viewers regarding their perception of environmental issues follows a typical pattern for movies on climate change: “the film did increase awareness and concern about the potential effects of climate change and had positive, although short-lived, effects on willingness to act” (Sakellari 2015: 831). It is, furthermore, “the film most frequently addressed in academic analyses of films about climate change” (Svoboda 2016: 54). My main reason for analysing this particular film is precisely this: it is well known, it is representative and it gives me the opportunity to connect to an ongoing academic discussion. It is also one of the vital target

media products regarding transmediation of the scientific concepts of the Anthropocene and global warming to media types qualified as artistic or entertaining.

However, stating that it is a vital media product does not mean that I argue for (or against) its artistic, ethical or persuasive qualities. After an in-depth analysis and discussion of *The Day after Tomorrow*, Niklas Salmose concluded that, “[t]he blockbuster action-adventure narrative, despite its ability to create a sensation of the apocalyptic sublime – an experience of climate catastrophe – is not apt for creating either the urgency or the agency to change our current life styles and attitudes in order to salvage the planet” (Salmose 2018: 1429). However, the imperative question whether this particular film or any other media product, including scientific publications, are apt to change people’s lifestyle and attitudes lies beyond the aim of this paper, which is to investigate the possibility of transmediation of narratives and truthfulness from science to art and entertainment – whether these narratives are efficient in affecting our behaviour or not.

As already indicated, I here analyse one specific source media product and one specific target media product to make the process of transmediation more palpable, although my primary concern is to investigate transmediation of environmental issues between the two qualified media types scientific article and feature film, and even more broadly from science to art and entertainment in general. The two chosen media products are examples of relevant media products. Thus, the analysed scientific article is one of many source media products. To highlight the multitude and complexity of scientific ideas of the Anthropocene (for instance, the geological basis of the concept remains contested [see Bruhn 2020: 218]), it would be necessary to involve several other source media products. Furthermore, it would have been possible to extend the analysis to a more clear-cut, but less scientific, source media product mentioned in the film’s credit titles: the book *The Coming Global Superstorm* by Art Bell and Whitley Strieber. Similarly, the feature film *The Day after Tomorrow* is one of many target media products. I do not at all argue that there is a simple one-to-one transmediation between the article “The ‘Anthropocene’” and this film. However, parts of the core stories of the two narratives are clearly similar.

Chase Hobbs-Morgan has accurately noted that Emmerich’s film “compresses the slow violence of climate change into the span of a few days, rendering it spectacular” (Hobbs-Morgan 2017: 86). I will refer to these time scales in the film, on the one hand, global events during thousands of years, and, on the other, global and more personal events during a few days, as the long-term narrative and the short-term narrative, respectively. A very brief summary of the film’s short-term narrative, emphasizing events that are relevant for this paper, reads as follows. Paleo-climatologist Jack Hall is on an expedition in Antarctica drilling for ice core samples and then presents his findings on global warming at a conference in front of a largely sceptical audience. Not much later, there are disturbing signs of dramatic changes in the North Atlantic Current and the climate system changes for the worst all

over Earth. Jack sees the US President and gives him the bad news that his estimate of years is now down to days before the planet enters a new ice age. He advises the President to evacuate everybody in the southern states to Mexico, because it is too late to evacuate the people in the northern states. Millions of people, including the President, die because of the cold. Meanwhile, Jack's son, Sam, is in New York City for an academic competition. When a superstorm hits the city, Sam and his friends manage to seek refuge in the New York Public Library. Jack sets off for Manhattan to find his son. Thanks to his experience of polar expeditions, he succeeds, and US Army soldiers in helicopters rescue them. The survival of Sam and his friends gives hope to the new President who, from Mexico, orders search and rescue teams to look for other survivors.

Thus, short-term events in the personal lives of the protagonists are sandwiched with short-term global events: temperature drops in the North Atlantic, extreme hailstorms, tornados, flooding, so-called superstorms etc. However, not many details in this short-term narrative are relevant for analysing transmediation of the Anthropocene. One should note, though, that the first significant short-term events in the very beginning of the film, where Jack and his colleagues are drilling for ice core samples, clearly connect to Crutzen and Stoermer's article. The two scientists suggested that the Anthropocene starts in the latter part of the 18th century "because, during the past two centuries, the global effects of human activities have become clearly noticeable. This is the period when data retrieved from glacial ice cores show the beginning of a growth in the atmospheric concentrations of several 'greenhouse gases'" (17).

Just as Crutzen and Stoermer's narrative catches up and continues large-scale narratives of the universe and planet Earth, adding recent human actions to the natural occurrences for billions of years, the short-term narrative of Emmerich's film catches up and continues Crutzen and Stoermer's narrative of the Anthropocene, which ended with possible climate changes. In *The Day after Tomorrow*, this prediction is taken one step further: the drastic climate changes are no longer in the future but in the present.

However, the film also includes long-term global events, and it is mainly this narrative that transmediates basic ideas of Crutzen and Stoermer's article. The events in the scientific article are represented again, but by another media type. The scene early in the film where Professor Jack Hall orally presents his findings in a "UN Conference on Global Warming" in New Delhi is central (0:06:08–0:07:58). He claims that there is "evidence of a cataclysmic climate shift that occurred around 10,000 years ago. The concentration of [...] natural greenhouse gases in the ice cores indicates that runaway warming pushed the planet into an ice age which lasted two centuries" because the melting of the polar ice caps disrupted the North Atlantic Current. Although one cannot find the details of this scenario in Crutzen and Stoermer's article, they do write about rising temperatures at that time. At the conference, Jack Hall furthermore states, "At the rate we're burning fossil fuels and polluting the environment,

the ice caps will soon disappear”. Towards the end of the film, the new US president talks about the consequences of “consuming our planet’s natural resources” (1:47:07–1:47:40). All these human actions are core events also in Crutzen and Stoermer’s article. The last major event in the long-term narrative as well as the short-term narrative of *The Day after Tomorrow* is the beginning of a new ice age because of a disruption of the North Atlantic Current, which, according to Jack Hall in the film, parallels what happened 10,000 years ago. It is also a possible future core event in Crutzen and Stoermer’s article.

Clearly, and not very surprisingly, large parts of the scientific story of the Anthropocene are successfully transmediated to Emmerich’s feature film. However, not everything in the film is correct according to scientific media type expectations. Michael Svoboda notes that, “Due to its success, [*The Day after Tomorrow*] has elevated a lowprobability scenario into an iconic image for climate change” (Svoboda 2016: 59). Maria Sakellari refers to “the exaggerations and false scientific facts of the film” (Sakellari 2015: 830). Yet, this is not relevant for the main points of this paper. My notion of truthfulness concerns a different aspect that has little to do with whether verbal propositions or other forms of representations, such as those offered by a scientific article or a feature film, do or do not *correspond* to already known circumstances (Elleström 2018: 423). My concern here regards the broader and more fundamental question how truthfulness is *established* – and in contrast to other sign types, which indeed may correctly correspond to the extracommunicational, indices actually establish truthfulness (Elleström 2018: 444). Even though *The Day after Tomorrow* may contain representations that do not correspond to known facts (which can be the case also for scientific publications that nevertheless provide useful knowledge), the film can simultaneously represent things that can be traced back to indices that actually establish perceived truthfulness.

The question is, then, whether, and, if so, to what extent transmediation of truthfulness between science and art and entertainment, through indices, is possible without corruption. Because of variations of basic media traits among media products categorized as scientific articles, our source media type, and because feature films constitute only one example of a qualified target media type, my somehow frustrating general answer has to be that it all depends on the specific traits of involved media products and media types. However, the specific media products chosen for this paper demonstrate that such a transmediation is indeed sometimes fully possible to realize substantially. Let me explain.

As noted, truthfulness of several scientific articles, including Crutzen and Stoermer’s “The ‘Anthropocene’”, depends on connections to associated media products through chains of signs that, sooner or later, must contain strong indices that establish real connections to the extracommunicational domain. Written words in scientific communication, mainly constituted by symbols representing through habitual connections between signs and objects, do not as such create truthfulness. However, given that one indeed reaches such

indices, the kind of truthfulness that is expected in science can certainly be transmediated to a broad variety of media types through chains of symbols and icons eventually connecting to indices representing the extracommunicational domain.

Thus, some core parts in the long-term narrative of *The Day after Tomorrow* are equally scientifically truthful as when represented in scientific articles, because, as with many scientific articles, they depend on indices in associated media products that establish perceived truthfulness. In this case, there is no essential difference in achieving truthfulness between listening to an oral presentation of a paper such as Crutzen and Stoermer's "The 'Anthropocene'" and listening to Jack Hall's talk at a scientific conference represented in the film. In this specific case, at least, the transmediation from written to spoken language symbols does not imply any major changes. Nor is the predominance of visual and auditory spatiotemporal iconicity in feature films – although central for transmediation of media characteristics generally – essential for transmediation of truthfulness particularly. Truthfulness depends on indexicality.

## Conclusion

To wrap up my arguments, transmediation of narratives (and more specifically narratives of human actions changing the environment on a global scale) among several dissimilar media types is undoubtedly fully possible. Considering that narration is long since acknowledged as a transmedial phenomenon, this is in a way old news. Yet, I want to emphasize that the transmedial capacity of narration includes media types such as scientific articles that are normally analysed in different ways compared to media types primarily designed to be artistic or entertaining.

Although one can also conclude that it is possible to transmediate what one expects to be scientific truthfulness (towards details, the particular and the atypical) to at least some other media types (that are expected to be truthful in other ways), this issue is more complex. That is because, compared to narration, which is generally more directly analysable in delimited media products, truthfulness often depends on associated media products and compound chains of signs leading to extracommunicational indices. Detailed examination of source and target media products in each case of assumed transmediation is required. Yet, I hope to have demonstrated that, in spite of basic as well as qualified media differences between scientific articles and feature films, artistic and entertaining media products may well be truthful in a manner similar to scientific articles.

However, because there is such a broad spectrum of basic and qualified media differences, one cannot extend this assumption to all media types without further ado. Moreover, although there is nothing that prevents feature films (and many other media types of art or

entertainment with relatively fuzzy borders) from incorporating traits from a media type such as a scientific article, the reverse order of transmediation would probably be much more difficult due to the strictly regulated conventional borders of scientific articles.

Nevertheless, one may speculate about the possibility of works of art and entertainment being even more directly scientifically truthful than scientific articles such as Crutzen and Stoermer's "The 'Anthropocene'" that depend on associated media products. Strongly index-based media types, such as various forms of films and photography, may well be relevant for science and thus truthfully represent those aspects of the extracommunicational domain that one expects scientific communication to reveal. Although this is hardly the case for *The Day after Tomorrow*, with its computer-generated moving visual images of catastrophic events, other artistic media products substantiate this assumption. For instance, James Balog's artistic time-lapse videos of ice loss due to climate change are part of the Extreme Ice Survey project; although clearly works of artistic value, these videos are at the same time used as real evidence by scientists working within the project (Bruhn and Gjelsvik: 129).

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