

The Anthropocene Media Project. Mass Media on Human Impacts on the Earth System.

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Abstract.

The Anthropocene Media Project is an on-going research project on how the Anthropocene (the geological concept created to measure and name human impacts on the Earth System) is represented in the mass media in local languages all over the world. So far, data has been collected from online searches of newspapers, magazines and other news media websites from around 100 countries/regions by about 50 volunteer researchers. The data is being analyzed by years of publication, numbers and types of articles. The paper concludes with some observations on the role and responsibility of the mass media in interpreting science for various publics.

Key words. Anthropocene; mass media communication; science, politics and the public

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Introduction

The focus of this paper is an on-going research project on how the Anthropocene (the still controversial geological concept intended to measure and name human impacts on the Earth System)¹ is represented in the mass media in local languages all over the world. The Anthropocene Media Project (AMP) started in early 2017, and data has been collected from online searches of over 1,000 newspapers, magazines and other media websites from around 100 countries/regions.² To date around 2,500 articles containing the word 'Anthropocene' have been recorded from online searches and of these, about one third have been summarized for further analysis. My aim is that, eventually, when all the results are collected and analysed, an edited book with chapters on geographical areas and thematic issues written by the researchers will be published.

There is an enormous amount of research on how the terms 'climate change' and 'global warming' are being reported in the media all over the world (see Boykoff 2011, Kunelius et al. 2016). However, my suspicion since beginning to study the Anthropocene (in mid-2016) and asking everyone I meet (face-to-face and virtually) about it, is that while many academics, environmentalists, social scientists, humanities scholars, and creative artists do engage actively with issues of the Anthropocene, most educated and cultured elites do not. I also suspect that the mass of the world's population have either never heard of it or if they have, they have no clear idea about it. Lacking the resources to conduct surveys all over the world to test my intuitions, I argue that researching how the Anthropocene is presented in mass media at the local level in local languages might serve to begin to answer my research questions – is the Anthropocene regularly reported in popular media around the world and if so, to what extent can this be

considered to be a form of science education? Kahan (2015) explores in great detail and with great finesse the difficulties of all science education and, in particular, communicating the elements of climate change to lay publics. When assessing how the media perform we should bear in mind that communicating the Anthropocene adds several layers of complexity to an already difficult task. It is also important to note the ambiguous nature of the concept - it was debated in academic and elite cultural spheres while it was being contested in the scientific community (as is widely reported in the media the geological gatekeepers are still considering whether or not to accept the Anthropocene in the official nomenclature). It continues to be controversial due to its political and philosophical implications. Hence, global analysis of the Anthropocene in the mass media raises important considerations about the nature of science and more generally, the science-politics interface, discussed in further detail below.

All the researchers are volunteers (mostly graduate students plus a few professors and others), contacted via my personal networks in and around the rapidly growing scholarly community engaged in Anthropocene studies.³ Most of the volunteer researchers are working and/or studying in the general field of environmental studies and most appear to have found out about the project either from my direct calls for participants, their university teachers (my original points of contact) or through friends working in the same field. Given the nature of the pool of participants the research has had to take its place alongside coursework, finishing off doctoral dissertations, and the day-to-day demands of working in educational establishments. Findings arrived throughout 2017. Raw data consists to date of around 200,000 words – whole articles, many translated from non-

¹ For a clear introduction that strikes a good balance between the science and the politics, see Angus (2016); more technical is Steffen et al. (2011); and Malhi (2017) for geological detail, debates and 121 references.

² China and the USA were split into regions. Most major languages are covered and multilingual

websites provided material on some non-English language media.

³ According to the bibliographical search engine Scopus, over 2,000 scholarly publications on the Anthropocene appeared between 2009 and 2018.

English languages in full or in part by volunteer researchers, with summaries, and researcher notes. The point of the research is to find out if and how the Anthropocene *per se* is being reported in the mass media. Almost half of the sources searched had no item that included the word ‘Anthropocene’ though most of them had articles on climate change (hundreds in some cases). The results so far suggest that on average each source contained between two and three ‘Anthropocene’ items. However, this masks large differences between places with very large counts (for example, Germany where 276 items were found from 7 sources and France, 165 from 4, compared with many single figure results from many other countries). It is also notable that hundreds of articles on the Anthropocene in the mass media referred to cultural events on Anthropocene themes.

Methodology

The methodology for the AMP is deliberately straightforward, minimizing difficulty and complexity for the volunteer researchers. Participants were asked to access the online sites of at least three (more if possible) newspapers, business publications, and magazines for the word ‘Anthropocene’ and the names of its two most prominent scientific proponents – Paul Crutzen (usually credited with introducing the concept) and Jan Zalasiewicz (who led the Anthropocene Working Group). The term ‘mass media’ is used in its broadest sense to mean any source of news that is available in print and/or online accessible to communities at various scales (towns, cities, regions, countries, and language and interest groups within these geographical entities).⁴ Wikipedia proved to be a good source of lists of mass media in most countries, as well as country-specific searches. Websites with subscription charges were excluded in most cases. This simple methodology also has theoretical significance. The research aims to show how likely it is that ordinary readers with no special interest in the topic would come across references to the Anthropocene while browsing the daily news and, if they did find

such information, what it would be telling them.

Where the word ‘Anthropocene’ was found in any source, total numbers of items with the word were recorded, along with the years of first and most recent items. The titles and summaries of items were recorded (translated into English where necessary). Many media sources, some of which had devoted considerable attention to ‘climate change’, never mentioned the Anthropocene at all, and I consider this to be an important finding. Also important is the fact that significant numbers of items did not directly connect the word with the geological (scientific) concept but referenced its use in a cultural context. This manifested itself in the titles of art exhibitions, music, and novels – notably the emerging genre of cli-fi (climate fiction). This phenomenon connects with the related concept of the ‘Anthropo-scene’, how the geological concept has been taken up in many other cultural spheres (see Lorimer 2017, Sklair 2018). The Anthropo-scene provides an excellent example of the ways in which a scientific concept interfaces with culture, creative arts, and beliefs (see Robin & Muir 2015). Some typical examples of cultural references to the Anthropocene are given below.

The data is being analysed, initially, in two ways. First, by types of items categorized as general explanations of the Anthropocene and its likely effects on human and non-human life forms, connections with specific eco-systems (notably climate change, biodiversity, forests, oceans), disputes within natural and social science communities, and artistic and philosophical expressions of the Anthropocene (the Anthropo-scene). The second criterion of analysis is whether or not the item takes a position on the Anthropocene and, if so, what it is in terms of three narratives:

[N1] Neutral reporting and/or Anthropocene as a continuation of natural processes, presenting opportunities for industry, science and technology, and human/non-human/nature relations;

[N2] Recognition that the planet and humanity

⁴ Search engines currently produce over two million results for ‘Anthropocene’. Blogs and other

social media are excluded from the results of this project.

itself are in great danger, that we cannot ignore the warning signs but if we are clever enough we can save ourselves and the planet with technological fixes, geoengineering, conservation strategies, etc.;

[N3] Recognition that planetary (including human) survival are at risk, that humanity cannot go on living and consuming as we do now, that we must change our ways of life radically, for example by bringing capitalism to an end and creating new types of societies, or religious/spiritual renewal.⁵

N1 and N2, often difficult to distinguish, can be characterized as predisposing towards the 'good Anthropocene' (see, for example, Shiue et al. 2014, Breakthrough 2015); while those arguing for N3 tend to be mainly on the anti-capitalist left (see Angus 2016, Sklair 2017).

Preliminary Findings

The majority of media representations of the Anthropocene in the AMP tended to conflate [N1] and [N2], but not all in the same way. We can begin with some typical examples from mass media in various parts of the world of how the idea of the Anthropocene is introduced.⁶ 'The Anthropocene, the Age of Humans: People become geological agents: does it mean that a new stage for Earth has begun?' (*La Vanguardia*, Spain, 2016) is typical of a number of long and informative articles with sections on the current geological age; the origin of the Anthropocene idea; debates on the starting date of the Anthropocene; and our place as humans in the Anthropocene. With respect to the consequences for humanity, the tone is neutral, no alarm bells are rung. Also non-committal, is the *Hong Kong Economic Times* [in Chinese]: 'Our footprint leads the Earth to a new geological age: the Anthropocene: Human activity will remain on the surface of the planet for millions of years' (2016). The article explains that the Museum of Tomorrow in Rio de Janeiro has a section on

the Anthropocene, showing how human activities have affected the earth since the industrial revolution. It provides visitors information for thinking about what we can do to make a change. *Diario Las Américas* (Miami, Florida) 'The Earth has entered a new geological epoch, according to scientists' (2016) covers standard debates about the Anthropocene, the causes that led to the transition between the Holocene and the Anthropocene, the 'great acceleration' of the mid-20th century as a plausible starting date, with a brief quote from Jan Zalasiewicz about the different markers of the Anthropocene. Once again, while technically accurate, the article sounds no alarms. An article in the *Philippine Daily Inquirer* on the 'Climate Pope' (2015) by the influential Anthropocene scholar Johan Rockström goes further. It explains that the main message of the Pope's encyclical is: 'If we do not change our behaviour quickly, we may well lose the environmental stability upon which our planet—and our lives—depends'. In France, where the media coverage of the Anthropocene has been both extensive and wide-ranging, we find many references to debates within the scientific community. *Le Figaro*, 'A geological era of which man would be the hero' (2011) cites both Paul Crutzen, and the eminent French glaciologist, Claude Lorius who argues: 'it is not so important that geologists accept or not to define a new era ... The real problem is that we are there. The future of the environment in which we live is worrying and too few people seem to be aware of it' – but the tone is bland. *The China Daily* [in Chinese]: 'The 11,700-year-old Holocene epoch is over' (2016) is a balanced account, concluding: 'We're now living in the Anthropocene epoch. In other words, geologically at least, there will be no denying the influence mankind has had on the planet. And it's a hard one to put a positive spin upon, no matter how you frame it.' The range of

⁵ These narratives are derived from the project findings to date – I have tried to avoid interpreting them in terms of academic debates focusing instead on what the lay reader might take from the articles in the media.

⁶ The examples following are identified by name and country of source, title of article, and year.

While the word 'Anthropocene' may not appear in all the quoted material, it appears in all the articles. Many of the items in the sample are reprints of material first published in European or North American sources.

messages in these typical examples from hundreds of articles offering introductions to the idea of the Anthropocene cluster around the first and second narratives identified above and feed into the general ‘concerned citizen’ approach to climate change and sustainability, namely that all we need to do is pollute less and find more renewable forms of energy. With the gradual move out of fossil fuels we may be starting to move beyond the situation that I labelled ‘The corporate capture of sustainable development’ (Sklair 2001: ch. 7), but the growth obsession of politics and business alike (propagated by most proponents and opponents of capitalist globalization) still dominates the discussion as the only way to alleviate poverty. This often appears to be hovering in the background in media representations of the Anthropocene.

The Starting Date of the Anthropocene and the Human/Nature Divide

A theme attracting regular media coverage all over the world is the argument among scientists about the starting date of the Anthropocene, which has important consequences for the credibility of the concept. This has been expressed forcibly in wide-ranging debates around the problematic relationships between humans and nature, the ‘end of nature’, and the impact of human activity on the planet as a whole and its separate but interdependent eco-systems (see, for example, Hamilton et al. 2015). All these issues are hotly contested and while the arguments are usually portrayed accurately in the media these debates can be seen as a diversion from the main issue of planetary survival. They might also be seen as contributing, however unintentionally, to good Anthropocene narratives and, sometimes, opening a door to Anthropocene and/or climate change denial. This is clearly expressed in the *Financial Times* (UK) ‘Muddle over the moment mankind made its mark on earth’ (2015) where, even in a well-informed discussion, the issue of planetary survival is blurred: ‘If we are indeed in a new geological epoch, the signals are gentler and we are still in the thick of it. Our planet is neither boiling nor frozen, although we may be in the middle of a sixth mass extinction [for which see

below]. The whole Anthropocene discussion deserves a wider hearing, not least for its power to inspire... It also poses a question worthy of public debate: do we want our arrival in the planetary logbook to be heralded by the ingenuity of the industrial revolution, or our indifference to plastic rubbish?’ At the extreme, we find a climate change sceptic and critic of the Anthropocene, Peter Foster, who writes in the *Financial Post Magazine* (Canada), ‘Man as killer asteroid’ (2014). He concludes ‘Issues such as climate science certainly deserve assiduous examination, but what we have had more of in recent decades is fashionable, ideologically-driven hysteria that has already led to lousy policies and threatens worse. No wonder the public has switched off, and climate negotiators are threatened with extinction.’ This last phrase may be a sardonic reference to a best-selling book, *The Sixth Extinction* by the eminent science populariser Elizabeth Kolbert, published in 2014. As Kolbert’s book and ‘extinction’ attract attention in the mass media it is worth further comment here.

Though Kolbert does connect the Anthropocene with the issue of extinction of humanity in her book and other writings, in the media the focus is almost always on threats to wildlife and biodiversity. For example, the *Liaoshen Evening News* (North-east China) ‘The Earth may be entering the Anthropocene era’ (2010), reports a science magazine article arguing that a sixth biological extinction may occur, in which millions of flora and fauna will disappear. This is a typical way in which the extinction/Anthropocene connection is represented – humans (through resource extraction and excessive consumption) are blamed for these extinctions but humans themselves appear to be exempt from the catastrophic consequences. Kolbert herself is quoted in *Shenzhen Te Qu Bao* (South China) ‘Looking at Animals from a Different Perspective’ (2017): ‘The fondness of lovely animals by humans saved endangered animals like pandas, which is a good thing, but humans should also pay more attention to animals who look less appealing. They are also an indispensable part of the world. This is the reason I didn’t talk about penguins, whales or crocodiles, with guilt, I only wanted to talk

about bats'. No direct mention here of humanity in peril. In *Česká televize* (Czech Republic) 'Bedřich Moldan (prominent local geochemist and ecologist) comments on climate change impact: Extinction of biological species is a threat' (2015), but his focus is on ocean acidification and damage to coral reef ecosystems. Similarly, *Economic Times of India* (2016) describes Kolbert's book in terms of 'mankind's part in mass extinction in the animal kingdom'. Another review of Kolbert's book in *Suddeutsche Zeitung* (Germany) 'World may lose 2/3rd of its wildlife by 2020, 6th extinction on the cards' (2015) cites a much-publicized report by World Wildlife Fund (WWF). 'There is still considerable room for optimism. Fortunately, we are not starting from scratch. We must create a new economic system that enhances and supports the natural capital upon which it relies ... While the prediction of losing two-third of global wildlife population is expected by 2020, the landmark Paris climate agreement (COP21) that would enter into force the same year, is seen as another sign of optimism.' In South Korea, two newspapers published articles on 'extinction', perhaps reflecting a more general sense of public alarm in the region. From *Joongang Ilbo*, 'Extinction of species due to humans... Is it now the Anthropocene? ... The 6th Mass extinction, is it more dangerous for the globe than nuke is...?' (2015), and from *Hangeora* 'Anthropocene, the 6th mass extinction is more serious than expected' (2017). *Gazeta.ru* (Russia), under the alarming title, 'Man came and destroyed everything. What happened to plants and animals because of human activity' (2015), is a summary of an article from *Nature*, arguing that human activity caused the elimination of plenty of different species, thus accelerating the process of natural extinction'. And humanity?

The *Glasgow Herald* (Scotland) 'We must protect our natural riches' (2015) takes a local issue to illuminate a global problem: 'We live in what some scientists are now calling the Anthropocene era. ... It is responsible for global warming and species extinction estimated by some as 1000 times greater than it would otherwise be. In the light of this, one four-month conviction for the killing of one bird may seem small beer. But the court's decision

is a welcome reminder that as a species we can recognize that this planet is not home to us alone'. Again, no comment on the fate of humanity, likewise *Aktuálne* (Serbia), 'Animal world faces catastrophe: Who is responsible for mass extinction?' (2016). This catastrophic prediction is briefly linked to the Anthropocene as the new epoch in Earth's history. Both the *Sudanese Business Centre*, 'World on track to lose two-thirds of wild animals by 2020, major report warns' (2016) and *Sabah* in Turkey 'The Earth is under the greatest mass extinction danger since dinosaurs' (2016) highlight WWF's Living Planet Index which shows vertebrate populations are set to decline by 67% on 1970 levels unless urgent action is taken to reduce humanity's impact. But, as usual, the action required is left vague. In the *Seattle Times* 'Pope Francis' environmental encyclical cannot be ignored' (2015), two academics applaud the Pope's exhortation to be good stewards of the Earth. They conclude: 'We have inherited our current predicament from generations past. Now it is up to us, and generations to come, to rediscover the intrinsic value of nature's biodiversity and stop what is known as the sixth mass extinction...A defining feature of the Anthropocene is the rapid extinction of nonhuman species.' This is, at best, a half-truth, opening the door to the 'good Anthropocene' mentality. More seriously, the *Austin Daily Texan*, in a review of *The Sixth Extinction*, 'Extinction makes plea to look at our effects on the planet' (2014) quotes from Kolbert's previous book *Field Notes from a Catastrophe* (2006): 'It may seem impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing.' Similarly, 'The extinction factor' *The Daily Star* (Bangladesh, 2010) discusses the belief of the late Australian biologist Frank Fenner, that humans, along with many other species, may be extinct in the near future, due to man-made climate change, with the Anthropocene marking the end of sustainable human life on the planet. But these warnings are few and far between.

The Anthropocene in the Creative Arts

References to the Anthropocene in cultural

contexts display a variety of attitudes to the phenomenon. It is rarely explained beyond stock phrases like 'Age of Humans' and 'man's impact on the planet' but there appear to be more overtly dystopian sentiments implied, as will be seen from some of these articles, organized by genre.⁷

Art exhibitions: *Hangzhou Daily* (2014) 'Taipei Biennale, there is a big world in the small play.' The 2014 Taipei Biennale is underway in Taipei city museum of Art. The theme is 'drama and acceleration', and the proposition is 'Anthropocene'. The works of 52 artists from around the world are on display here. *Le Quotidien* (Luxembourg) (2015) 'Casino : durant les travaux, l'activité continue' tells us that 27 young artists from the l'Atelier No Name de la HEAR (Haute école des arts du Rhin) de Strasbourg exhibit their works on the theme of the Anthropocène, or rather on its affects as a principal actor in climate change. *Daily Star* (Bangladesh, 2016) 'Fragments of the Anthropocene: Bengal Art Lounge' describes the works of two artists from Dhaka, from their exhibition about the loss which the onset of the Anthropocene has caused.

Photography: *Egypt Today* (2017) 'Climate change exhibit to open near Trump's house' reports that the photographer Justin Brice Guariglia will be bringing the catastrophic results of climate change to Trump's own doorstep, in his home at Florida. The exhibit, titled 'Earth Works: Mapping the Anthropocene' at the Norton Museum of Art features images of melting glaciers that Guariglia has collected with NASA while in a mission to Greenland. Guariglia tells the *Art Newspaper* that 'One of the unique things an artist can do is to help shape realities and, at the same time, have a political and social message. Artists today really have to use art to carry an important message forward.' *Maclean's* (Canada) (2016) 'Postcards from the edge of the earth' is also on a photography exhibition chronicling the environmental movement from the 1960s to today. The curator says that the title suggests falling off a cliff, perhaps one that mankind blasted itself.

'Maybe human beings are not the strongest species on Earth. It's something to say, beware.'

Music: *Seattle Times* (2016) 'Say goodbye to 2016 with a song' reviews the year in music with reference to a Nick Cave song 'Anthrocene' which 'felt appropriate because it wraps up the loss felt this year and the severe impact of humans on the environment. The word Anthrocene was first used instead of the more common Anthropocene in 1992 by science writer Andrew Revkin in his book 'Global Warming: Understanding the Forecast' to describe a geological era significantly impacted by humans.' *The Oxford Mail* (2012), 'Death of Hi Fi create a 'squall' of sound', profiles a local group with four recordings already under their belts, and their new album, Anthropocene. Andy says: 'There's a beauty in darkness in some ways and I get a lot of solace from it. I was probably the only person to read Cormac McCarthy's *The Road* and find it uplifting.'

Opera: *DV* (Iceland, 2016) reports the contemporary opera UR by Icelandic composer Anna Þorvaldsdóttir based on the idea that Man considers himself above the environment, affecting the Earth in an unprecedented way. 'Because of this, theories have emerged that have us living in *mannöld* (Anthropocene), an epoch of human impact in Earth history. This can maybe be seen most clearly in places where people have lived for thousands of years in a very close relation to the harsh natural forces, like on Greenland where the concept work for the opera was partially carried out. The glaciers are melting, the oceans are acidifying, and the livelihood of animals and human societies is crumbling.'

Dance: *Salzburger Nachrichten* (2016) advertises 'Anthropozän', an urban dance piece based on the influence of Man on the Earth. *Süddeutsche Zeitung* (2017) 'Im Fadenkreuz der Gotter' is a review of a ballet that deals with the end of humans on earth and their self-destruction.

Sculpture: *The State Journal-Register* (Springfield, Illinois, 2014) is one of many

⁷ Descriptions are a mix of researcher summaries and some direct quotes. I give titles and years to help find the original articles for those so inclined.

media to report: ‘The only way to see this incredible museum in Mexico is by scuba diving’. The installation is of 500 underwater sculptures off the coast of Mexico’s Riviera Maya, via the Museo Subacuático de Arte. One exhibit is called ‘Anthropocene’ and is a sculpture of a Volkswagen made to house lobsters.

Cli-fi (climate fiction): *Seattle Post-Intelligencer* (2016) in a review of *Barkskins* by Annie Proulx: ‘And if we’re lucky enough to survive the Anthropocene we’ve seemingly wrought, then *Barkskins* will surely survive as the crowning achievement of Proulx’s distinguished career, but also as perhaps the greatest environmental novel ever written.’ *Times of Israel* (2017) ‘Literary Critics Probing the Rise of Cli-Fi Novels in the 21st Century’. ‘Cli-Fi, Sci-Fi, We All Cry, The End is Nigh: What Cli-Fi Novels Say About the Anthropocene.’ The writer suggests that Adam Trexler led the way with his book [Anthropocene Fictions](#) in 2015.

Theatre. *Le Soir* (France, 2017) ‘The Yes Men: spreading some joy at la Fabrique de Théâtre à Frameries, sponsoring a studio dedicated to the anthropocene.’ *Suddeutsche Zeitung* (Germany 2017) ‘Hier spricht die Molekulargenetik’ (2017) is an article about a dramatist/playwright Konstantin Kuspert who is known for his dystopian (and sometimes utopian) plays and controversial topics. Kuspert talks about the Anthropocene, saying: ‘it is outrageous how it is exploited by the media but there seems to be no change in people’s mentality.’

Multi-media: *The Herald* (2015) ‘10 things to do in Dublin this weekend’. Riddle of the Burial Grounds is a free, international exhibition motivated by one of the major problems facing our planet – the markings and warnings around nuclear burial sites. ‘Did you know that mankind is entering the ‘Anthropocene’ era? Nope, me neither. I guess we’ll just have to allow the visual arts to educate us further, and Riddle of the Burial Grounds has it covered via the mediums of sculpture, film, photography,

documentary, science-fiction, and imagined futures.’ ‘This seems a fitting conclusion to this baffling sample from the cornucopia of cultural references to the Anthropocene.’⁸

Representing the Science of the Anthropocene to The Public

In terms of media efforts to reflect the best available science on the Anthropocene, it is difficult to decide if the glass is half-full or half-empty. Results from the AMP show that the two most prominent Anthropocene scientists are regularly mentioned – Crutzen (almost always described as ‘Nobel prize-winner in chemistry’) over 150 times, Zalasiewicz over 100 times. Various science publications (notably *Nature*, *Science*, *Anthropocene*, and *Anthropocene Review*) also appear in the media as sources of headline-material research,⁹ as do reports from scientific research establishments (e.g. Stockholm Resilience Centre on planetary boundaries) and ecological NGOs (for example, the 2016 World Wildlife Fund’s Living Planet Index).

As the media items quoted above show, it is not easy for journalists to find a clear path in reporting Anthropocene stories when the messages coming from scientists themselves is so often ambiguous. Many social science and humanities scholars, unsurprisingly, frame these issues in terms of the relationship between science and politics. Two prominent scholars, Isabelle Stengers and Bruno Latour, engage with the science-politics of the Anthropocene. Stengers (2015) argues that the urge of scientists to publicize the idea of Anthropocene before all the geological markers were firmly established was a risky strategy (necessitated, no doubt, by the fact that no-one really knows how long we have got to ‘save the planet’). However, this meant that climate change and Anthropocene deniers could keep the debate going and frame it as a struggle between ‘merchants of fear’ and ‘merchants of doubt’. Latour (2015) keeps this conversation going with the argument that

⁸ Robin L., Avango D., et al. (2014) discusses major multimedia Anthropocene events in various cities in great depth. See also Sklair (2018).

⁹ For example, a paper by Zalasiewicz and colleagues in the magazine *Anthropocene* in 2016

arguing that plastic waste would be a major marker for the Anthropocene in the future, was picked up by media all over the world.

science and politics are both frail human endeavours. Anthropocene politics 'is not a rational debate ... [it is] incredibly easy to make *two sides* emerge even when there is only one' (Latour 2015: 147).¹⁰ The opinions of some Earth scientists on the relations between science and politics may be inferred from a paper in the authoritative Geological Society of America journal (*GSA Today*) by the Chair of the International Commission on Stratigraphy and a Commissioner of the North American Commission on Stratigraphic Nomenclature who argue: 'The drive to officially recognize the Anthropocene may, in fact, be political rather than scientific' (Finney & Edwards 2016: 4).¹¹ As far as can be established, over 90% of scientists accept the reality of Anthropogenic climate change while about 50% of the public do not (Cook *et al.* 2015). While I have not come across any research on public attitudes to the Anthropocene *per se* it seems obvious that this disconnect between scientific research and public opinion is at least partly due to the way in which both climate change and the Anthropocene are represented in the media and that the media are not entirely responsible for the confusing messages that appear in newspapers, magazines and online. The first results from this project (to end 2017) suggest some potentially important lessons for science educators on the role and responsibility of the mass media in interpreting science for various publics. This, obviously, will involve not just the 'bare facts' of science (if such can ever be said to exist) but putting science in a context that the lay public might have a reasonable chance of understanding. While the names and views of Crutzen and Zalasiewicz appear frequently, few others made it into double figures. Elisabeth Kolbert (author of *The Sixth Extinction*) with 44 mentions, Gaia Vince (*Adventures in the Anthropocene*) with 28, and Diane Ackerman (*The Human Age*) with 22 – attracted far more

media attention than most Earth scientists. In the case of reporting on the Anthropocene (and particularly the threat of extinction of humanity) the media are forced into the unenviable choice between 'merchants of fear' and 'merchants of doubt', between pessimism and optimism, between highlighting the need for radical economic, social and political change or hoping that human ingenuity will solve the problems of planetary survival. While some of the media coverage tries to have it both ways, most of it promotes the optimistic option – narratives 1 and 2 in my formulation. Narrative 3 - that capitalism, the international system of competing states, and the obsession with 'economic growth' are the problems not the solution – is rarely discussed. The key idea of degrowth is almost entirely absent from mass media coverage.¹²

While there is, of course, good reason to give the people hope, it is not surprising that the mass media, largely owned by big business and generally dependent on advertising revenues, downplay the risks of the Anthropocene. As I noted above, climate change and individual eco-systems (atmosphere, oceans, forests, soils, etc.) attract much more attention than the Anthropocene and the totalizing concept of Earth System science, that is conceptualizing the planet as a complex system, not simply the sum of the parts of each individual eco-system. Generally speaking, there is little sense of urgency in the reporting of the Anthropocene in the mass media. As I suggested above the 'good Anthropocene' (as expressed in narratives 1 and 2) is predominant. The AMP provides substantial evidence of the potential for the creative arts to intervene in science education (or, at least, consciousness-raising) in general, and the Earth Sciences in particular. This may have been seriously neglected (or at least under-estimated). As noted above, many articles on the Anthropocene in the mass media refer to cultural events.¹³

¹⁰ Here I borrow from my review article of seven books on the Anthropocene (Sklair 2017).

¹¹ Professor Finney, described as 'the biggest critic of the Anthropocene idea', is quoted eight times in the sample, in newspapers from England, the USA, India, and France.

¹² See D'Alisa *et al.* (2014). This idea is so threatening to the status quo that my PC automatically changes the word to 'edgrowth'.

¹³ For evidence of the efforts of early Anthropocene proponents to bridge the 'two cultures' problem, connecting science with the arts and humanities, see Sklair (2018).

Finally, knowledge about and a serious appreciation of the potential dangers of the Anthropocene may provide a useful gateway for relatively uninformed publics into a variety of issues that are ignored or misrepresented by the media. It is understandable that both the science and media establishments and the business and political interests which underpin them would tend to lean towards reassurance rather than desperation in portraying the perils of the Anthropocene – often hinted at but seldom spelled out in its alarming detail. However, in the opinion of many Earth scientists this is a high-risk situation, probably not for most people living at present, possibly not even for their grand-children or their great grand-children, but almost certainly for generations to come. This is a reality that citizens and policy-makers, mass media communicators and science educators need to grasp – the issue of human survival is at stake.

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