A climate for change: millennials, science and the humanities

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# Abstract

The rise and pervasiveness of post-truth and alternative facts posit fundamental questions for the current epistemic authority of scientific knowledge. In conjunction, complex and multi-scalar problems of the likes of climate change call for research that transcends traditional disciplinary silos, upon which much of that authority was built. As such, we call for a greater involvement of the humanities in environmental research and communication. We suggest that young researchers wishing to pursue academic careers (including ourselves) may be well-equipped to reconfigure and reconcile science and the humanities within the context of their PhDs and beyond – taking a frontline position in the constant struggle to overcome longstanding antagonisms between the scholarship of fact-finding and that of meaning-making. We do so by exploring examples - within academia and beyond - where those collisions have been successful, including the works of a millennial scientist/artist and a dystopian video game.

Keywords: humanities; millennials; interdisciplinary; climate; environment; communication

# Introduction

Calls for science to coalesce with the humanities form somewhat of a clear lineage going back to C.P. Snow’s seminal 1959 lecture: “The Two Cultures” (Snow, 1960). In the realm of environmental issues, scholars have argued that conducive collisions of both worlds could foster and encourage transformative social action (Hulme, 2011; Nisbet et al., 2010). The emerging scholarship falling under the loosely-defined environmental humanities seeks to address these challenges by embracing an approach that largely defies categorization. The environmental humanities (including but not limited to philosophy, literature, arts, music, theater that pertain to the environment) promote “a thicker notion of humanity” in the environmental sciences by extending and revaluating traditional humanist concerns of ethics, value, justice, meaning and knowledge and reframing our understandings of the natural world and/or built environments as “lively ecologies of meaning and value, entangled within rich patterns of cultural and historical diversity” (Rose et al., 2012, p. 12).

This is particularly important as new narratives and new realities of a changing Earth (and their consequences) are transpiring - requiring us to radically redefine our understanding of being and move beyond the anthropocentric to include the “more-than-human world” (Barry & Maslin, 2016; Rose et al., 2012; Swyngedouw, 2011). Moreover, the newly coined age of post-truth and alternative facts reflects a more profound crisis in the epistemic authority of (Western) scientific modes of knowing - prompting us to fundamentally rethink how to communicate the science on complex issues and secure public engagement. This is particularly difficult in the climate change arena wherein the default *modus operandi* has been to excessively rely on “science as a driver of political action” which “also gave […] opponents a clear target: science itself” (Howe, 2014, p. 9).

Yet, despite their apparent value, the humanities are still poorly understood or acknowledged in science and everyday life (Holm, Jarrick & Scott, 2014). In environmental communication, to critically and seriously engage with climate change also means greater reflection on the various heuristics or frames which may be deployed (Cox, 2015), a task we argue can largely be aided by the humanities. For example, Susanne Moser (2015) called for a “humanistic” turn in environmental communication; in which the exchange of information and ideas seeks to support kindness and compassion, nurturing “a meeting of hearts” instead of “a battle of the minds” (p. 403).

Here, we suggest on the one hand that research and methods in the (environmental) humanities already offer creative ways of communicating and engaging (Hutchings, 2014; Moser, 2015; Rose et al., 2012). On the other hand, as young researchers soon to be embarking on interdisciplinary PhDs (at the University of East Anglia and the University of Cambridge, respectively) we believe and contend that millennials are best equipped to bridge the divide, both within academia and beyond. In this short essay, we are calling for the humanities to be taken more seriously in climate change research and its dissemination. We also wish to encourage young researchers - and peers thinking of going into research - to truly embrace the humanities so as to collectively bring about the sea of change that we deem here necessary.

**Millennials**

Millennials are in a challenging, precarious position - both in academia and wider society - in a particular cultural milieu with vast opportunity yet relentless uncertainty. Despite living in a time characterized by events such as entering adulthood post-The Great Recession (Godelnik, 2017) and living “the reality of a changing climate” (Corner et al., 2015, p. 523), we continue to face widespread disillusion and lack of affiliation with mainstream politics[[1]](#footnote-1) (Duffy, Shrimpton & Clemence, 2017), precarious employment and the possibility of being financially worse-off compared to our predecessors (Duffy et al., 2017). Further, millennials are slowly making up the largest proportion of the workforce (Eckleberry-Hunt & Tucciarone, 2011; Ng, Schweitzer & Lyons, 2010), but there is little literature on how to engage millennials on climate change and other environmental issues. As Corner et al. (2015) discuss, young people hold most at stake, yet their concerns are not voiced appropriately in climate change discourse and they become subject to decision-making by older generations. As a result, millennials may feel disempowered, unable to control their own futures. However, we do have one great advantage: while disciplinary silos may have intuitively made sense to previous generations, millennials have a tacit understanding of the importance of interdisciplinarity.

Interdisciplinarity has been recognized by many as the most suitable framework for research to address the ever-increasing complexity of the social and environmental sciences (Bammer, 2017; Hein et al., 2018; Shaman et al., 2013). Over the last few decades, we have witnessed the restructuring of university departments and formation of research clusters along interdisciplinary lines (Gewin, 2014). One such example is the Arts, Environment & Humanities Network at the University of Arizona or the Science, Society and Sustainability (3S) Group at the University of East Anglia. In conjunction, teaching and training within higher education degree programs in both undergraduate and postgraduate courses has been increasingly interdisciplinary (Haider et al., 2018; James Jacob, 2015). Multi-/inter-/trans-disciplinary collaborations and education are changing the way research is conducted with the view to improve knowledge production, sharing, accountability and innovation (Barry, Born & Weskalnys 2008; Hunt & Thornsbury, 2014), in line with the intricate nature of the issues we confront.

Thus, with a new generation of millennial researchers looking to advance their early careers, we believe the time is ripe to capitalize on our advantage in order to adequately deal with those current and emerging challenges that cannot be captured by singular disciplines (James Jacob, 2015). We have yet to convince our peers to recognize that the global environmental issues we are constantly facing are complex, multi-faceted and unbounded (Jasanoff, 2010) and millennials with “epistemological agility” (Haider et al., 2018, p. 191) should utilize their widespread knowledge to advance understanding of environmental change beyond uniquely scientific accounts. More in the way of addressing the various barriers to interdisciplinary research must be done, however, including both intrinsic (e.g. epistemological, organizational) and extrinsic (e.g. limited readership of interdisciplinary journals, poor assessment criteria for tenure and promotion) barriers, to create an encouraging environment for early career researchers (cf. Hein et al., 2018 for a comprehensive overview).

Indeed, in addition to a culture of “publish or perish” running rife in academia (Warren, 2018), early career researchers are confronted with an environment where interdisciplinary research is often seen as antagonistic to cementing academic standing and reputation (Bammer, 2017; Haider et al., 2018) and being successful in securing funding (Bromham, Dinnage & Hua, 2016). Moreover, interdisciplinary training often comes under scrutiny from those who are concerned that the new generation of young academics does not have sufficient disciplinary grounding, robust knowledge or competence in academia (Haider et al., 2018). Equally, there appears to be neither a “premium nor a penalty” (Hanks and Kniffin, 2014, p. 1277) in post-PhD salaries for academics who have gone through interdisciplinary training and appropriate guidelines or metrics for assessing interdisciplinary work (e.g. the 2011 University of Southern California’s amends to appropriately weigh interdisciplinary work in committees, for tenure and promotion) are still few and far between (Bammer, 2017; Hein et al., 2018; Klein and Falk-Krzesinski, 2017).

For instance, in the UK, the Research Excellence Framework (REF) is a method to assess the quality of research in UK higher education based on multiple factors, ultimately steering decisions on university funding. In the most recent REF (2014), it became apparent how interdisciplinary research was being purposely side-lined. The judgement process was failing to adequately merit interdisciplinary work, leading to its omission in some cases by fear of impoverishing the REF score (Shaw, 2013). Optimistically, the next REF 2021 has outlined that interdisciplinary research will now be assessed as a separate section. Overall, we support the current drive to reform traditional academic structures to create more incentives for interdisciplinary research (Hein et al., 2018; Milman et al., 2017; Mitchell & Weiler, 2011; Pfirman & Begg, 2012), fostering more substantive engagement with the humanities, both broadly in academia and specifically for young millennials beginning their research careers.

**Humanities**

Having discussed how millennials are well-equipped in facing complex problems thanks to their interdisciplinary research training, we now want to suggest that millennials should embrace and channel the humanities to advance climate research and communication beyond presenting scientific evidence (Corner et al., 2015). In 2010, Matthew Nisbet et al. called for an authentic synthesis across multiple disciplines (environmental sciences, philosophy and religion, social sciences and the arts) to combat the slow and inadequate societal response to climate change science. A year later, Mike Hulme (2011) added to this with his commentary in *Nature Climate Change* inviting scholars to embrace the humanities to help us appreciate and engage with the non-scientific ways of interpreting, sensing and knowing climate change.

Alike a kaleidoscope, the humanities can reveal how climate change is fragmented and “multiply constituted through diverse scientific-political assemblages” (Randalls, 2016, p. 147). While these “scientific-political assemblages” of climate change - and their associated “problem-solution formations” (Randalls, 2016) - are made visible by science, they are nearly always interpreted through the filter of values, beliefs, and sociocultural imaginaries, sometimes leading to incompatible solutions. The magnitude of this challenge for science communication is only growing with the current climate of distrust of expertise and the pervasiveness of cyberbalkanization[[2]](#footnote-2), which continue to legitimize and encourage the cultivation of these filters in silos of our choosing. To quote Sheila Jasanoff (2010) “environmental knowledge achieves robustness through continual interaction - or conversation - between fact-finding and meaning-making” (p. 16). The humanities should be the starting point of that conversation. As Galafessi et al. (2018) recently stated,

artistic practices offer possibilities for revealing limitations of existing knowledge systems and foster experiences that promote novel ways of understanding and responding to climate change, more attentive to our embodied, imaginative and emotional experiences (p. 73)

The humanities can also aid in story-telling; a communication method that humans are often engaged with and remarkably receptive to (Corbett and Clark, 2017; Hulme, 2011). Now by story-telling, we do not mean reciting novels. We mean to spark up essential and compassionate conversations, poetry writing, creating theater screenplays, engaging with film and video, music, photography or any form of expression that nourishes the mind and can actively deepen an understanding of environmental issues; the very spark that is required to creatively harness the re-thinking, re-imagining and re-telling of our world stories (Hutchings, 2014). As Galafassi et al. (2018) recently pointed out, the arts can be “key contributors to processes related to social learning, as they are particularly well-suited to give access to sources of knowledge and to drive action relevant for climate transformations” (p. 72). There are noteworthy attempts to transform our relationship with climate change. For instance, “Creative Climate” by the Open University[[3]](#footnote-3): a diary project that is creating a living archive, recording individual diary entries online from 2013-2020 to understand the diverse ways people comprehend and respond to environmental change. Or the Cape Farewell project[[4]](#footnote-4), initiated by artist David Buckland which is now an international program that seeks to inspire, transform and engage society through multiple projects developed to think through environmental issues in a compelling and novel way, joining together “creatives, scientists, and informers”.

Such projects encourage us to have meaningful discussions about reimagining society (Nisbet et al., 2010) and rethink the science-humanities relationship. With such methods, large parts of society are no longer excluded from the conversation and the traditional ivory tower erodes away to be replaced by the “agora” (Gibbons, 1999). If a meaningful and synergistic relationship between science and the humanities (on a broad scale) can be achieved through environmental communication, then society can begin to re-examine its values and norms and begin to ask the crucial, ethical questions that we require and are fundamental to the aims of the environmental humanities. What does it mean to live in the Anthropocene? What does reconstructing and redefining our relationship with nature to encompass a more-than-human outlook involve? Where does the environment end? How can we communicate this in knowable ways? Should we develop technology that allows us to have control over Earth’s natural functions? (Nisbet, 2018; Rose et al., 2012; Swyngedouw, 2011).

Now, we do recognize that the more traditional humanities may not appeal as much to younger millennials (often called the “digital natives”) (Prensky, 2001), yet the humanities - and indeed artistic practices - are evolving towards greater digitization and democratization. We go as far as to propose that the digital humanities can have similar effects and even greater reach. While Galafassi et al. (2018) report that theatre and performance have the most number of entries in their “climate-related art catalogue”, film follows closely behind. In the US, the decline in theater and play - a consequence of deeming attendance as an unnecessary expenditure (Statista, 2014) - has been accompanied by the staggering rise of online streaming services such as Netflix (with 61% of millennials using it) (Rainie, 2017). Recently, we have just to witness the phenomenal success of the BBC’s Blue Planet II - amassing 4.2 million views on the first episode alone - and tangibly raising awareness and even political change on the issue of plastics. We argue that the need for stimulation, emotional engagement, moral and ethical contemplation still exists and is recognized, but is evolving into various digital media; the humanities have not declined, they are adapting to technology (Henseler, 2014).

For instance, US-based artist and current Masters student Jill Pelto has become internationally recognized for her watercolor paintings - with mentions in *National Geographic*, *Smithsonian* and *Vice*. They express both curiosity and talent for science and art with depictions of scientific data (e.g. ice retreat numbers or tropical deforestation rates) in creative painting. For example, the illustration *Deforestation* (*Figure One*) is a rather unsettling painting of a Tiger trapped in the empty white that opens out to illustrate habitat degradation and deforestation in tropical rainforests from 1970 to 2010, starting from a high point in the right side of the artwork, declining to the left as time progresses. Not only does this communicate scientific data by providing the viewer with the scientific graph representing the decline in forest habitat, but it creatively illustrates the real effects of deforestation, habitat patching and loss of connectivity by displaying a struggling, fearful Tiger trying to escape the nothingness left by the graph. Pelto’s art - an encounter of her experience as an artist and a scientist - is a prime example of how combining science and the humanities can successfully engage millennials on issues of climate change and environmental degradation, through the digital metempsychosis of traditional humanity domains.

Figure 1. Deforestation. ©Jill Pelto. Reproduced by permission of Jill Pelto (jillpelto.com).

Additionally, a recently released Polish video game, *Frostpunk*[[5]](#footnote-5), paints a dystopian world where a volcanic event has triggered a devastating global ice age. Set in Victorian times (a fitting context to illustrate the onset of a new geological era) the steampunk, city-building survival game offers the players 3 different scenarios. In the first scenario, “A New Home”, the player must build “New London”, a settlement of survivors gathered around a coal-powered generator. The player must navigate continuous political and ethical trade-offs as well as dealing with the constant pressure of scarce resources and a growing population. In the second scenario, “The Arks”, the player leads a group of Oxbridge scholars responsible for maintaining what is essentially a seed bank. In the final scenario, “The Refugees”, the player leads a refugee group to a generator reserved for the wealthy and attempts to create an egalitarian society but is quickly confronted with the re-emergence of social classes and a growing number of incoming refugees. Although *Frostpunk* does not directly address the issue of anthropogenic climate change, it constantly forces the player to grapple with a number of socio-political and ethical decisions, in the most dismal depiction of a climate future.

Both Pelto and *Frostpunk* differ in methods of engaging in and communicating climate change and its possible futures. Pelto uses emotionally provocative paintings depicting the outcomes of particular scenarios arising from the data it seeks to represent and, in contrast, *Frostpunk* requires the player to reflect, assess and act on possible scenarios emerging from an extreme weather event with echoes of some of climate sciences' most apocalyptic predictions (e.g. global cooling and/or nuclear winters in the 1970s and 1980s). Neither of these examples would be possible without technology and particularly the internet. Sharing via the internet is unbounded and unrestrictive (despite technological access) and young millennials must awaken to the possibilities of changing climate change communication and engagement in academia, research and more broadly society and culture, in the digital age.

**Conclusion**

Within academia, if young researchers looking to pursue academic careers in the future are willing to combine science with the humanities - shaking off previous longstanding antagonisms - then we may be on the way to truly facilitate cooperation and perhaps even coproduction between two traditionally polarized areas of knowledge production. With interdisciplinarity holding prominence in scientific degree programs (Haider et al., 2018) and an increasing presence of environmental humanities in research centers and degree programs, across the West (Rose et al., 2012), it becomes apparent that uptake is improving. In April 2018, a “Climate Action Retreat”[[6]](#footnote-6) in St. Gilgen, Austria - organized by an array of international NGOs and scientists - aimed to develop “out-of-the-box methods” to stimulate new, creative ways of communicating climate change. The retreat was exclusively aimed at millennials and actual applications surpassed expected numbers. There is also the example of the NASA- and NSF-funded DISCCRS (DISsertations initiative for the advancement of Climate Change ReSearch), a network of PhD graduates which maintains a database, provides career-development advice and organizes symposia - with the aim of fostering future interdisciplinary collaborations (Hein et al., 2018). Again, this demonstrates a willingness to engage with the humanities by millennials (in these cases, with respect to climate change communication) - and we must facilitate this desire with further opportunities.

It is important to note that we are not suggesting radical disruption, but rather a more nuanced and stable transition to greater inclusion. We contend that it begins with us, millennials. As we have discussed, millennials can take it into their own hands and begin to revitalize engagement and further develop a much-needed voice in the politics and communication of climate and environmental change. Concretely, those of us wishing to pursue research careers in and around environmental issues should pave the way for a wider, greater and more permanent acceptance of the humanities by pursuing PhDs that look to combine elements from the natural and physical sciences, social science and humanities. If the (environmental) humanities gain traction within the young academic community, we are confident that old dichotomies can be broken down, from which a new role for science in society can emerge. In what seems to be the age of political disenfranchisement and post-truth politics, let us confront rhetoric with rhetoric, emotion with emotion, and together explore new realms of thought where previous antagonisms used to be.

**References**:

1. Bammer, G. (2017). Should we discipline interdisciplinarity? Palgrave Communications, *3*(1), 1-4.
2. Barry, A., & Maslin, M. (2016). The politics of the Anthropocene: a dialogue. *Geo: Geography and Environment*, *3*(2), e00022.
3. Barry, A., Born, G., & Weszkalnys, G. (2008). Logics of interdisciplinarity. *Economy and Society*, *37*(1), 20–49.
4. Bromham, L., Dinnage, R., & Hua, X. (2016). Interdisciplinary research has consistently lower funding success. *Nature*, *534*(7609), 684–687.
5. Corbett, J., & Clark, B. (2017) The arts and humanities in climate change engagement. *Oxford Research Encyclopaedia of Climate Science,* 1-27.
6. Corner, A., Roberts, O., Chiari, S., Völler, S., Mayrhuber, E. S., Mandl, S., & Monson, K. (2015). How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators. *Wiley Interdisciplinary Reviews: Climate Change*, *6*(5) 523–534.
7. Cox, R. (2015). Scale, complexity, and communicative systems. *Environmental Communication*, *9*(3), 370-378.
8. Duffy, B., Shrimpton, H., & Clemence, M. (2017). *Ipsos Mori Thinks: Millennial Myth and Realities*. Ipsos Mori: London.
9. Eckleberry-Hunt, J., & Tucciarone, J. (2011). The challenges and opportunities of teaching “Generation Y”. *Journal of Graduate Medical Education, 3*(4), 458–461.
10. Galafassi, D., Kagan, S., Milkoreit, M., Heras, M., Bilodeau, C., Bourke, S.J., Merrie, A., Guerrero, L., Pétursdóttir, G. and Tàbara, J.D. (2018). ‘Raising the temperature’: the arts in a warming planet. *Current Opinion in Environmental Sustainability*, *31*, 71-79.
11. Gewin, V. (2014). Interdisciplinary research: break out. Nature, *511*(7509), 371-373.
12. Gibbons, M. (1999). Science’s new social contract with society. *Nature*, *402*, C81-C84.
13. Godelnik, R. (2017). Millennials and the sharing economy: Lessons from a “buy nothing new, share everything month” project. *Environmental Innovation and Societal Transitions*, *23*, 40–52.
14. Haider, L. J., Hentati-Sundberg, J., Giusti, M., Goodness, J., Hamann, M., Masterson, V. A., ... & Sinare, H. (2018). The undisciplinary journey: Early-career perspectives in sustainability science. *Sustainability Science*, *13*(1), 191-204.
15. Hanks, A. S., & Kniffin, K. M. (2014). Early career PhD salaries: The industry premium and interdisciplinary debate. *Applied Economics Letters*, *21*(18), 1277–1282.
16. Hein, C. J., Ten Hoeve, J. E., Gopalakrishnan, S., Livneh, B., Adams, H. D., Marino, E. K., & Susan Weiler, C. (2018). Overcoming early career barriers to interdisciplinary climate change research. *Wiley Interdisciplinary Reviews: Climate Change*, *e530*, 1-18.
17. Henseler, C. (2014, July 12). The arts and humanities are alive and well – just watch the millennials. *The Huffington Post*. Retrieved from <http://www.huffingtonpost.com>.
18. Holm, P., Jarrick, A., & Scott, D. (2014). *Humanities World Report 2015*. Palgrave Macmillan: London.
19. Howe, J. P. (2014) *Behind the Curve: Science and The Politics of Global Warming*. London: University of Washington Press.
20. Hulme, M. (2011). Meet the humanities. *Nature Climate Change*, *1*(4), 177-179.
21. Hunt, F., & Thornsbury, S. (2014). Facilitating transdisciplinary research in an evolving approach to science. *Open Journal of Social Sciences*, *2*(4), 340–351.
22. Hutchings, R. (2014). Understanding of, and vision for, the environmental humanities. *Environmental Humanities*, *4*(1), 213-220.
23. James Jacob, W. (2015). Interdisciplinary trends in higher education. *Palgrave Communications*, *1*,1-5.
24. Jasanoff, S. (2010). A new climate for society. *Theory, Culture & Society*, *27*(2-3), 233-253.
25. Klein, J. T., & Falk-Krzesinski, H. J. (2017). Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies. *Research Policy*, *46*(6), 1055-1061.
26. Milman, A., Marston, J. M., Godsey, S. E., Bolson, J., Jones, H. P., & Weiler, C. S. (2017). Scholarly motivations to conduct interdisciplinary climate change research. *Journal of Environmental Studies and Sciences*, *7*(2), 239–250.
27. Mitchell, R. B., & Weiler, C. S. (2011). Developing next-generation climate change scholars: The DISCCRS experience. *Journal of Environmental Studies and Sciences*, *1*(1), 54–62.
28. Moser, S. (2015). Whither the heart (-to-heart)? Prospects for a humanistic turn in environmental communication as the world changes darkly. In A. Hansen & J. Cox (Eds.), *The routledge handbook of environment and communication* (pp. 402-413). Oxon, New York: Routledge.
29. Ng, E. S. W., Schweitzer, L., & Lyons, S. T. (2010). New generation, great expectations: A field study of the millennial generation. *Journal of Business and Psychology*, *25*(2), 281–292.
30. Nisbet, M. (2018). The Gene-Editing Conversation. *American Scientist*, *106*(1), 15.
31. Nisbet, M. C., Hixon, M. A., Moore, K. D., & Nelson, M. (2010). Four cultures: New synergies for engaging society on climate change. *Frontiers in Ecology and the Environment*, *8*(6), 329-331.
32. Pfirman, S., & Begg, M. (2012, April). Troubled by Interdisciplinarity?. *Science*. Retrieved from <http://www.sciencemag.org>.
33. Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon,* 9(5), 1-6.
34. Rainie, L. (2017, September 13). About 6 in 10 young adults in U.S. primarily use online streaming to watch TV. *Pew Research Center*. Retrieved from http:/www.pewresearch.org.
35. Randalls, S. (2016) Climatic globalities: assembling the problems of global climate change. In: van Munster, R., Sylvest, C. (Eds.) *The politics of globality since 1945, assembling the planet* (pp. 145-163). Oxon, New York: Routledge.
36. Rose, D. B., van Dooren, T., Chrulew, M., Cooke, S., Kearnes, M., & O’Gorman, E. (2012). Thinking through the environment, unsettling the humanities. *Environmental Humanities*, *1*(1), 1-5.
37. Shaw, C. (2013, November 21). Research that doesn’t belong to single subject area is deemed ‘too risky’. *The Guardian*. Retrieved from <http://www.theguardian.com>.
38. Shaman, J., Solomon, S., Colwell, R. R., & Field, C. B. (2013). Fostering advances in interdisciplinary climate science. *Proceedings of the National Academy of Sciences*, *110*(1), 3653-3656.
39. Snow, C. P. (1960). *The two cultures and the scientific revolution*. Cambridge, MA: Cambridge University Press.
40. Statista. (2014). Economic reasons for decreasing cultural participation in United States in 2014. *Statista: The Statistics Portal*. Retrieved from <http://www.statista.com>.
41. Swyngedouw, E. (2011). Whose environment?: the end of nature, climate change and the process of post-politicization. *Ambiente & Sociedade*, *14*(2), 69-87.
42. Warren, C. (2018, Janurary 29). Professors eat their own young: how competition can stifle good science. *The Guardian*. Retrieved from http://www.theguardian.com.
1. See UK General Election 2017 as an exception. [↑](#footnote-ref-1)
2. The segregation of the Internet into small groups with similar interests and opinions [↑](#footnote-ref-2)
3. http://www.open.edu/openlearn/nature-environment/the-environment/creative-climate [↑](#footnote-ref-3)
4. http://www.capefarewell.com [↑](#footnote-ref-4)
5. http://www.frostpunkgame.com/ [↑](#footnote-ref-5)
6. https://climateoutreach.org/climate-action-retreat/ [↑](#footnote-ref-6)