

Intelligence Briefing

*Current address: 5613 Montgomery Place, Vancouver, BC V6T 2C8, Canada.

Cite this article: Hochachka G (2020). Unearthing insights for climate change response in the midst of the COVID-19 pandemic. *Global Sustainability* 3, e33, 1–10. <https://doi.org/10.1017/sus.2020.27>

Received: 16 May 2020
Revised: 8 October 2020
Accepted: 9 October 2020

Key words:
adaptation and mitigation; communication and education; human behavior

Author for correspondence:
Gail Hochachka,
E-mail: gail.hochachka@sosgeo.uio.no

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Unearthing insights for climate change response in the midst of the COVID-19 pandemic

Gail Hochachka* 

Department of Sociology and Human Geography, Faculty of Social Science, University of Oslo, Postbloks 1096, Blindern, Oslo, 0317, Norway

Non-technical summary

The COVID-19 pandemic can be considered an experiment forced upon the world community and, as such, responses to the pandemic can provide lessons about socio-ecological systems as well as processes of transformative change. What enabled responses to COVID-19 to be as effective as they were, right at a time when climate action is notably lagging behind what intergovernmental panels have called for? This paper examines key differences in the COVID-19 response compared to that of climate change, examining the ‘deeper’ human dimensions of these global issues. Unearthing insights into the responses to both issues provides important lessons for climate change engagement.

Technical summary

In the first half of 2020, a dramatic, fast and widespread series of changes occurred in response to the COVID-19 pandemic, in behaviors, mindsets, culture, and systems. Yet, despite the intergovernmental calls for precisely this kind of fundamental, transformative change across society regarding global warming, public opinion on climate change is fractured and collective action is slow. More research is needed on the psychosocial dimensions of climate change, to better understand what the bottlenecks are for realizing transformative change. In this paper, I examine what occurred in the COVID-19 pandemic response that could be learned for the climate crisis. I focus on three psychological aspects that made the COVID-19 response accessible and actionable in a way that climate change is not: the mental demands for understanding complex issues; psychological distance and its impacts on motivation and agency; and finite attentional resources that can render certain issues as non-salient. Lessons for climate engagement include: (1) the usefulness of concrete, simple, and personally-relatable messaging; (2) more diverse and democratized climate understandings and stories; (3) greater recognition about how psychological distance affects meaning-making and sense of agency; and (4) appreciation of attentional crowding and the need for sense-making strategies about complex issues.

Social media summary

Lessons from the deeper human dimensions of COVID-19 response help inform climate change engagement and transformation.

1. Introduction

‘Scientists: You should wash your hands because of the coronavirus.

People: I’m gonna stop flying, hoard masks, work from home & totally re-arrange my life.

Also Scientists: The Climate Crisis will kill millions – we must use clean power and change how we get to work.

People: No way. (Coronavirus meme, March 4, 2020)

‘Climate change needs to hire coronavirus’ publicist.’ (Coronavirus meme, March 12, 2020)

As the coronavirus outbreak – and COVID-19, the disease it causes – spread across the planet, two memes about this pandemic set the responses to coronavirus next to those of climate change. Although these were intended to make people laugh, they also contained an uncomfortable truth about how limited responses have been to the climate crisis, lagging far behind what climate science has found warranted. COVID-19 provoked a rapid large-scale systemic disruption, which may contain longer-term transformative potential. One by one, nations have risen to meet this pandemic, with governments reallocating resources, medical units deploying emergency measures, businesses closing or shifting online, educational institutions shifting to virtual learning platforms, and the majority of populations changing their behaviors

almost overnight. Enacting such widespread changes was underpinned, at least in part, by an alignment in values/worldview and a sufficient degree of cognitive buy-in that this was indeed a crisis worthy of such changes in actions and systems. On balance, enough of the population grasped the contours of the COVID-19 crisis and made meaning of it in such a way that supported behavioral changes (such as maintaining 2 m distance, not socializing in groups larger than six, and staying home). This, in turn, also enabled a broad social agreement by which governments made systems changes (such as required health assessments, instituting shelter-in-place, and dramatic social investments to mitigate the economic impacts of the pandemic), some of which have long-term implications and may influence further development trajectories.

Change as broad and swift as this has not happened with the climate crisis. Intergovernmental scientific panels on global environmental issues have noted the need for transformative change across society, meaning fundamental, system-wide reorganization across technological, economic, and social factors (IPBES, 2019; IPCC, 2018). Yet, how to carry out such transformation to sustainability, and how to assess whether it has occurred, remains unclear (Feola, 2015; Salomaa & Juhola, 2020). In the search for pathways forward, it has been noted that some of the key climate change puzzles are in the realm of the social sciences, such as psychology, sociology, and human geography (Overland & Sovacool, 2020). More comprehensive models for transformation in a changing climate have been proposed (such as Fazey et al., 2018; O'Brien, 2018; O'Brien & Hochachka, 2010), specifically that better integrate knowledge of psycho-social changes in meaning-making and culture (interior) with more techno-managerial shifts in practices and systems (exterior) (Shrivastava et al., 2020, p. 333). It is this former category – namely, the psycho-social change processes or ‘deeper’ human dimensions – that I focus on here, not only as it is less-well integrated with other dimensions of change regarding global warming but also because it may have been a key catalyst for COVID-19 response.

With this point of departure, I reviewed the literature as to what aspects made this response to COVID-19 occur as it did and what insights can be learned for (possibly more transformative) responses to climate change. COVID-19 was largely perceived by the public as an *acute* problem with immediate health risks and economic costs, whereas climate change is often not perceived by laypeople as urgent (Berge, 2020). Citizens were asked to carry out *temporally close* behavioral changes regarding COVID-19, ones that are imminently within reach of the present self-concept; whereas for climate change, citizens are essentially asked to plan for and conceive of an uncertain future self-concept that is not clear for many people or may even be rejected because it hurts short-term interests (Pittis, 2020). This body of research finds that the human brain is hard-wired for short-term thinking, presenting difficulties for planning on long timelines; this could help explain the effective response to the pandemic to date, as well as the reluctance to work on the longer timelines of climate change (Hershfield, 2011). COVID-19 is also a conceptually *simple* problem – although a ‘novel’ virus, it can be contained by well-known, accessible strategies of face masks, social distancing, contact tracing, and, hopefully, immunization (Wiersinga et al., 2020) – quite unlike the ‘wicked’ problem that is climate change (Trembath & Wang, 2020). These commentaries raise important points when we compare these two global phenomena, but they

only lightly examine why COVID-19 being acute, close, and simple matters in terms of human cognition and response.

Here, I build on this to take a closer look at three psychological aspects that made it harder to comprehend and garner collective action for climate change, compared to that of COVID-19. These include: (1) the mental demands for understanding complex issues; (2) the psychological difficulty of relating to an issue that is distant in both space and time; and (3) the finite attentional resources that can lead people to render certain issues as non-salient. Although these pertain to the interior, personal dimension of transformation, they have an integrated relationship with the uptake of new habits and practices and larger-scale systems change. The pandemic is an experiment forced upon the world community and, as such, teaches us about real-world dynamics which in turn may improve the science of socio-ecological systems as well as processes of transformative change. Understanding the differences between climate change compared to COVID-19 on these three points may bode helpful in understanding the effective drivers and the tenacious sticking-points for transformations to sustainability. I discuss each of these three lenses in turn below, concluding each section with implications for climate change communications and engagement.

2. A deeper look at responses to change: three key lenses

2.1. Complex issues are more fully understood via a complex meaning-making structure

How people make meaning of the world around them matters. According to developmental psychology, the perspectives a person can take on phenomena enable them to organize meaning about it (Cook-Greuter, 2013). This organization of meaning changes across a lifespan, moving further away from egocentric perspective-taking capacity, to increasingly broader perspectival embrace (O’Fallon et al., 2020; Wilber, 2000). Regarding global warming, people organize meaning in varying degrees of complexity, from concrete and simplistic meanings through to more subtle and multifaceted, to construe different ‘climate changes’ (see Table 1) (Hochachka, 2019). What this research suggests is that the profound complexity, high abstraction, and immensity (in both space and time) of climate change makes it difficult to *fully* comprehend; rather, people grasp some fragment of the whole, from which they construct a sense of what climate change is.

Over these past months, anecdotally I have noted a similar series of increasingly complex stages of meaning-making regarding COVID-19 (examples in italics in Table 1). Yet, the meanings about it seemed to more easily converge than they have with climate change, such that the collective response to the pandemic became, at least in a short-term frame, structural. This is not the case with climate change; rather perspectives remain diverse, often divisive, and collective action lags behind what climate science has called for. Although there is possibly a similar spectrum of meanings about COVID-19, it seems that populations gained a sufficient fundamental grasp of the issue and saw that it warranted a change in behaviors and societal systems, at least temporarily. What made COVID-19 easier to cohere meanings around, so to more effectively assemble collective action about it, and what lessons could be learned for climate change?

With COVID-19, citizens were asked to comprehend and act upon something that pertains to their own physical body on the short-term; that is, something egocentric, concrete, right now,

Table 1 Spectrum of meaning-making about COVID-19 and climate change

Perspective-taking capacity	Complexity of thought	Object of awareness	Scope of time	Examples of COVID-19 response (based on anecdotal evidence to illustrate this concept)	Examples from climate change adaptation based on O'Brien and Hochachka (2010) regarding adaptation; De Witt (2016) regarding worldviews; and from Hochachka (2019) regarding meaning-making
1st-person perspective	Atomistic, bits-and-pieces; ego-centric	Concrete	Present moment	<i>Pastor Howard-Browne a prominent religious leader on the Christian right in the USA, who claimed the virus is a hoax, or that it can only be defeated by supernatural means, rather than solid healthcare policy, was arrested for not following Florida social distancing policies (Wilson, 2020)</i>	With a first-person perspective (magic worldview), people organize meaning in an atomistic bits-and-pieces manner, with isolated views that seem disconnected from other views about climate change; it may fuse subject and object in a form of magical thinking
2nd-person perspective	Parts seen but not coordinated into a whole; socio-centric	Concrete	Present moment, recent past	<i>An organized movement in Canada, involving more than 30,000 members who offer help to others within their communities, particularly those who are more at risk of health complications related to coronavirus, as part of a 'caremongering' trend across the country (Gerken, 2020)</i>	With a second-person perspective (traditional worldview), people organize meaning about climate change using concrete objects of awareness (i.e. more rain) rather than subtle objects (i.e. increased precipitation), and consider what other people in their social group are doing or what the rules and principles ought to dictate. Meaning-making takes an immediate view of climate change, with the scope of time focusing mainly on the present, with a slight stretch toward the past
3rd-person perspective	Parts coordinated into a system of cause-and-effect mechanisms; world-centric (early)	Subtle	Past, present, and near future	<i>Examples could be found in data dashboard webpages tracking the exponential increase in COVID-19 cases, hospitalizations, deaths, and recoveries within and across nations (Public Health – Seattle and King County, 2020)</i>	With a third-person perspective (modern worldview), people organize meaning by linking various concepts together logically using cause-and-effect and instrumental logics. Climate change is construed to be occurring in relation to a series of other changes, such as increases in pollution, unsustainable practices, and certain habits, combined into a logical explanation
4th-person perspective	Parts and processes coordinated into systems, using self-reflective and contextual understanding world-centric (late)	Subtle	Past, present, near and increasing distant future, multiple generations	<i>An example of this would be a blog article by Homer-Dixon (2020) applying systems-thinking to consider an array of variables and systems-interactions in a measured assessment of the tradeoff between 'lockdown' versus 'let it rip' COVID-19 scenarios</i>	With a fourth-person perspective (postmodern worldview), people organize meaning about climate change using subtle concepts that are now seen to occur across past, present, and into the future, demonstrating an ability to consider context and the multiple causes of a situation, and also demonstrate a further increase in agency and responsibility. Climate meanings place greater emphasis on the power dynamics and systems injustices that create vulnerability and (re) produce climate change. Later, meanings are construed using systems thinking and view climate change as a complex adaptive system

(Continued)

Table 1 (Continued.)

Perspective-taking capacity	Complexity of thought	Object of awareness	Scope of time	Examples of COVID-19 response (based on anecdotal evidence to illustrate this concept)	Examples from climate change adaptation based on O'Brien and Hochachka (2010) regarding adaptation; De Witt (2016) regarding worldviews; and from Hochachka (2019) regarding meaning-making
5th-person perspective	Parts and processes coordinated into self-aware systems of constructions of meaning. (cosmos-centric)	Meta-aware (awareness of one's awareness)	Past, present, near and increasing distant future, multiple generations, evolutionary timelines (and even timelessness itself)	An example could be found in the description of 're-gnosis or forming] a loop of knowledge in which we include ourselves and our inner change in the future [such that a] 'Future Mind' is created... [in which we] are able to anticipate not only the external 'events', but also the internal adaptations with which we react to a changed world' (Horx, 2020)	With a fifth-person perspective (post-postmodern, integrative, or integral worldview), people organize meaning about climate change acknowledging that meaning is constructed and employing a meta-awareness (being aware of one's own awareness). Climate change may be seen as something that presents us with opportunities to grow and develop our potential, and can be seen as an important trigger for transformation. Deliberate, conscious change is seen as possible and as a potential opportunity in response to the climate crisis

and within one's own direct experience. That is, the request from public health experts, although it seemed extreme on mass, actually amounted to a handful of basic cognitive prerequisites to support comprehension and action, which were able to be met (for the most part). More abstract concepts were presented in R_0 values (i.e. the basic reproductive rate of an infection in a population) and exponential rates of infection and community-spread across time, globally, yet the actions requested by government didn't depend on citizens to construe the pandemic in a highly abstract manner, across an expansive scope of space/time. Moreover, everyone had a direct personal experience of getting a flu, most people know an older person or perhaps a health care worker, and, even though the risk to younger age groups was less, COVID-19 was nevertheless present for oneself and one's families and friends. All of these helped people to convene an immediate and self-oriented connection with the coronavirus, which in turn supported their uptake of COVID-19 protocols. In other words, one way to understand the success of the widespread behavioral changes is to see that the COVID-19 crisis did not challenge meaning-making in the same way that climate change does: it was imminently within cognitive reach of a vast swath of the population in a way that climate change has never been.

Seen through a developmental psychology lens, the meaning-making demands are found to be more straightforward for COVID-19 and more complex for climate change. Modern life at the best of times presents complex cognitive demands on people – such that as Kegan (1998) notes we are largely 'in over our heads' – but this is all the more the case regarding climate change. Weber (2010, p. 333) explains how 'climate change is a phenomenon that is not easily and accurately identified by the lay public, using their normal tools of observation and inference'. It is a statistical phenomenon, inherently abstract, and highly distributed in both space and time, such that it is not easily detectable by personal experience. It is also worldcentric; although discrete impacts may have an egocentric relevance, its causes and impacts can really only be fully understood when the global dimensions are perceived. It has been referred to as a hyperobject and a wicked problem, and it is not easy to get one's mind around (Morton, 2013). In fact, only parts of the entire hyperobject are available to many people's meaning-making apparatus, which is one explanation as to why *climate* is so frequently misunderstood to be *weather*; the latter is more concrete, directly experienced, egocentrically accessible, and occurring in the present moment (Hochachka, 2019). Although COVID-19 is also global, it was sufficiently graspable in terms of meaning-making by the majority of populations (at least to render reluctant factions in a society as outliers).

Yet, even without having (full) cognitive understanding, emotional impacts of global warming can and do move people to act. For example, as can be seen with the recent school strikes, climate change increasingly gives meaning to the lives of many (young) people, as a key ingredient of a missing grand narrative. Weber (2010, p. 333) explains how learning from personal experience relies on associated, affective reasoning, whereas learning from statistics requires analytic processes, and these lead to very different perceptions and actions. Associative, affective reasoning is quick and more basic, whereas analytic processes are slower and require cognitive effort. Although some areas of psychology suggest these run parallel to each other (Marx et al., 2007), developmental psychology would also see that the affective organization of meaning (i.e. concrete operations) is transcended and included in the analytic organization of meaning (i.e. formal operations),

but not vice versa (Wilber, 2000). Which is to say, not all of the analytic processing that guides later-stage meaning-making would be available to earlier meaning-making capacities. This understanding could help explain why action becomes motivated when abstract risks about climate change are concretized and brought into emotional experience (Marx et al., 2007) – perhaps when such risks were construed using concrete operations, they were made more accessible to people's meaning-making.

In terms of *how* to support meaning-making about a complex issue, two recommendations can be found in responses to the pandemic as well as from the climate change literature. First, the COVID-19 responses to date suggest that messaging is most effective when it relates to early meaning-making capacities to which more of the population has access. Regarding climate engagement, Stoknes (2015) recommends keeping climate messaging connected to the *present moment*, couched as a health risk (*self-centric*), framing it in supportive ways with new narratives that are *more positive*, and sharing simple ideas that are *within reach* – all of which are accessible to early meaning-making capacities. Climate change communications should not rely entirely on analytic processing (using formal operations) in their messaging, lest they end up talking 'over the heads' of their audiences. Keeping the affective and analytic styles of information-processing connected in a nested manner – as seems to have occurred with COVID-19 response – may provide a longer-standing support for climate action, precisely because they will resonate with more of the meaning-making capacities present in a population.

Second, the discourse around the COVID-19 response made room for a spectrum of meanings about it (Table 1). Climate engagement could learn from this. Ghosh (2016), in his book, *The Great Derangement*, analyzes that storytelling about climate change has gone in an individualist-bourgeois direction, representative of the modern worldview, providing limited ways to understand global warming from other worldviews. Ghosh, and others (Milkoreit, 2017; Veland et al., 2018), call for greater imagination and a broader set of narratives from other worldviews to which more of the global population can relate. Developmental psychology scholars on this matter would agree, and have suggested that more 'stories' about climate change are needed that take into account the spectrum of ways that people are making meaning about it (Cook-Greuter, 2020, personal communication). Crafting multiple climate change stories from different meaning-making stages would better reflect the multiple 'climate changes' that exist. This may require challenging the politics of knowledge and adding to the dominant climate science 'story' to allow for more epistemological diversity. For example, responses to the question, 'Are you worried about climate change?' often include statements like, 'No, God will help me/us through this', which is frequently heard outside the modern worldview and yet isn't easily accepted in the dominant (modern) discourse. De Vries (2019, p. 11) suggests that the modern worldview 'no longer offers satisfactory principles and rules for the relationships of human beings with each other and with the natural world in the Anthropocene' and underlines the important role of storytelling, values and beliefs, and more inclusive dialog regarding sustainability issues.

2.2. Psychologically close versus distant

The COVID-19 pandemic is close in a way that differs from how climate change is typically perceived. Although coronavirus is

similar to climate change in how it is massively distributed globally, it also differs in that it is perceived as close both in time and space – it is happening now and it is happening to you. Climate change, however, is perceived as 'psychologically distant' in both time and space (Brügger et al., 2015, p. 1031). This notion of psychological distance comes from construal-level theory (Trope & Liberman, 2010), and explains how 'people use different levels of abstraction to think of an event or an object (i.e. mental construal) based on their perceived distance from the self' (Chu & Yang, 2018, p. 174). The process of cognitively encountering this 'distant' issue results in a great variance of meanings about climate change – described by Mike Hulme as, 'near-infinite plasticity' (Demeritt et al., 2011, p. 136). This occurs in part (as described above) because people have different capacities for organizing meaning about abstract concepts, and so they end up constructing different 'climate changes', rendered at different cognitive distances (Hochachka, 2019).

Some studies have shown how lessening the psychological distance of climate change evokes greater concern and action (Jones et al., 2017). Chu and Yang (2018) found that framing climate change as spatially close and familiar helped to reduce ideological polarization, when compared to it being framed as distant and novel. People also often seek to understand it in a familiar frame, embedded in their experience of place. For example, Clifford and Travis (2018) found that people use close, concrete proxies to track changes – such as hotter temperatures, abnormal rain, less snow-pack, and so forth – holding climate change as a social-ecological-atmospheric construct. Familiar metaphors that are close and concrete – such as to describe the increase of carbon dioxide in the atmosphere as a 'thickening blanket' that 'traps heat' – has been found to help people to support climate action (Bostrom & Lashof, 2007).

However, there are other issues at play with psychological distance. For example, it could also be due to a lack of the *linkage* made between (close) unpredictable weather and the (distant) phenomenon of climate change. As climate change wreaks greater havoc with long-held weather patterns, already people are experiencing the impacts of global warming more directly. Through making this link clearer, it could be that climate change becomes less distant and therefore more a concern to populations as well as more of a stimulus for climate action. However, to date the research findings on this are mixed. Rather, regarding:

'the extent that experiencing severe weather results in higher levels of support for climate adaptation policy, *only near-term events seem to matter*. This suggests the effect of severe weather on opinion towards the merits of climate adaptation is transient, and is consistent with the idea that psychological distancing has a temporal, as well as spatial, dimension' (Ray et al., 2017, p. 109).

Referred to as the 'decay effect', these findings showed that the experience of more recent weather events increased support for adaptation measures, but longer periods failed to do so.

A related (possibly explanatory) aspect of this is the psychological experience of the self across time. Large time-periods are, in general, more difficult to consider in planning. As the time-span horizon increases, 'psychological connectedness of oneself in the present with oneself in the future grows more tentative' (Hershfield, 2011, p. 4). In other words, the problems with intertemporal decision-making may occur not just because of an inadequate linkage made regarding climate change and its impacts, but also because perceptions of self are not continuous

over time. Temporally distant selves are remote and harder to identify with in the present moment, which can de-emphasize future planning objectives set against present ones.

The issue of psychological distance is also related to scale. It has been argued that the underlying drivers of change in environmental systems are too *global* and too complex to unravel beyond the relatively *local* scale (Wilbanks, 2006). For the majority of people, the sustainability of one's own neighborhood matters more to them than sustainability in distant neighborhoods (Wilbanks, 2015). Yet, 'it can be argued that no place is sustainable if other places with which it is related are not sustainable' (Wilbanks, 2015, p. 6). The issue of scale also highlights the tension between agency and structure – where agency means intentional human action, and structure means the set of institutions and systems within which such action takes place. Wilbanks and Kates (1999, p. 603) describe how 'the scale of agency – of direct human action – is often intrinsically localized while the scale of structure is almost always more encompassing [distant]'. What people feel they have control over and access to with regard to their own actions is perceived as something close; whereas addressing the larger, encompassing structure is perceived as distant, occurring on a broader, often global scale. This is sometimes a reason why actions regarding climate change don't occur; people can perceive that climate change is beyond their control.

These perceptions of reality and meaning regarding climate change can be influenced if not determined by scale (Wilbanks, 2007, 2015). The importance of working out the dynamic interplay of multi-scale interventions for sustainability informed the approach taken by the Millennium Ecosystem Assessment (2005), and is now incorporated into the translation of the Sustainable Development Goals in local contexts (Tan et al., 2019). Considering multi-scale responses will clearly be an ongoing aspect in addressing the climate challenge. In this, I recommend consideration be given to the underlying issue of psychological distance – rendered noticeable with the COVID-19 response – namely, in terms of how people construct abstract meaning about climate change, hold (or not) a future self-concept in planning climate actions, and galvanize their agency to confront the structural complexities of the issue.

The COVID-19 pandemic doesn't encounter challenges with psychological distance in quite the same way for several reasons. It is more psychologically proximate – even though you can't 'see' the virus and may not yourself get it, everyone has experienced having a fever and a cough – such that policymakers and lay-people are working with a common construct (for the most part). Also, COVID-19 gets around the issue of temporal distance, by being seen by many as a possible risk to the *present self* now. However, climate change is typically seen as something that will probably happen to a *future self* – a self that, for many, fades in perception on the long horizon of time – even if or when current unpredictable weather bears down on daily life. The tension between agency and structure is also less apparent with COVID-19, due to the fact that regardless of what measures are instituted structurally, an individual can still decide to take measures to protect themselves. In extreme cases where national leaders have failed to move ahead on health policies regarding COVID-19, individuals faced structural challenges but their agency remained intact in, for example, wearing masks and practicing physical distancing. However with climate change, an individual's avoided emissions can seem puny and irrelevant when dealing with industrial-scale, structural emissions.

The tension between multiple scales (local *versus* global) appears to be less acute with the coronavirus: although there are local differences in COVID-19 response, the measures to limit its spread are fairly common across contexts (Wiersinga et al., 2020). The communities, regions, and nations who have reacted differently did so in terms of the resources or political will to move on such measures or the degrees to which they were instituted, but didn't come up with an entirely different set of measures per se. Rather, efforts at the local scale for the most part combined with those at the national, regional, or global scale, rather than working against each other as can happen with climate change. For example, alongside domestic response, many governments allocated foreign aid resources for a COVID-19 vaccine (once available) through COVAX, a global procurement initiative meant to ensure fair, equitable, and timely access to vaccines for less wealthy countries (COVAX Facility, 2020). Canadian prime minister Trudeau was quoted saying, 'This pandemic can't be solved by any one country alone because to eliminate the virus anywhere, we need to eliminate it everywhere' (Harris, 2020). This echoes precisely the same conundrum as Wilbanks' (2015) sustainability (and climate change within that) quote above, and yet doesn't carry the same trade-off, where it is either my neighborhood sustainability or the global one. In other words, to date at least, we have not seen a widespread NIMBY ('Not In My Backyard') phenomenon with COVID-19 (a possible exception being the current Trump administration in the USA). For the most part, the global population watched the coronavirus sweep across the world, regardless of neighborhood or national borders, and viewed it as a collective problem that cut across scales.

In terms of *how* to deal with the psychological distance of climate change (and the related issues of multiple scales and agency-structure), engagement strategies could create a more spacious process in which people can come to know what climate change is to them, drawing it as close as their approach to making-meaning allows, and construing it in ways that make more sense to them. Ways to do this include asking people, 'What does climate change mean to you?' and then encouraging reflection and group discussion on their meanings; this resulted in participants' uncovering their own constructions of 'climate change', enabled a form of meta-cognition (i.e. discovering what they didn't know they knew about climate change) and supported collaboration (Hochachka, 2020, unpublished observations). Bostrom et al. (1994) recommend finding out what people already know about climate change, through a mental models interview which allows for the expression of beliefs disclosed at different psychological distances, so to proceed with greater information about the public's knowledge and to better anchor public messages in relation to that knowledge. Marx et al. (2007, p. 56) recommend retranslation of 'statistical information into concrete experience' which they suggest can greatly facilitate an intuitive understanding of complex processes in global warming. Problematizing and discussing the issue in its local-global and agency-structure dimension are also important and may be key ingredients for lessening that distance and supporting transformations toward sustainability (O'Brien et al., 2019). Finally, for climate communicators and policy makers to expand climate change beyond its definition as a CO₂ problem and to recognize it as being constructed and entangled with other change processes (i.e. social, cultural, and psychological), could help bring it closer to the experience and understandings of lay people (Hulme et al., 2009; Scoville-Simonds, 2018):

‘Valuing people’s everyday experiences of climate change and diverse ways of knowing climate (even when they might be scientifically imprecise) provides the possibility for people and communities to act on climate change through the knowledge and experience they already have’. (Rice et al., 2015, p. 254)

Processes by which people can encounter their understanding of climate change at whatever psychological distance makes the most sense to them could lead to more sustainable climate action in the long term.

2.3. *Is this, or is this not, on one’s salience landscape*

A third way in which climate change is hard to get our minds around is the fact that it simply doesn’t make it onto our salience landscape. ‘Salience landscape’ is a term coined by Vervaeke and Ferraro (2013, p. 28) to refer to the mental frame a person cognitively holds to determine relevance and to allocate attentional, metabolic, temporal, and behavioral resources. This is partially related to worldview, but is mainly a way to manage the onslaught of unprioritized information: people need ways to determine what is salient and worthy of their attention. How this attention-management works is important because climate change can often end up low on that list. Regardless of what statistical evidence for global warming is presented or how compelling the anecdotal accounts of climate change might be, these will only influence subsequent perceptions and actions *if the public attends to them* (Weber, 2010).

As it turns out, attention is a finite resource (Weber & Johnson, 2009). There are various psychological mechanisms by which people sift and sort through phenomena to allocate those scarce attentional resources. Regarding climate change, Whitman et al. (2018, p. 384) find that ‘attitudes about climate change are associated with attentional biases determining how likely an individual is to see climate-related information in the environment’. The example given is the extent to which a person parses through crowded visual scenes, such as a news broadcast, to notice climate-related words is associated with his or her level of existing concern about climate change. In some sense, this is an attention-saving mechanism – to track and attend to that which you already believe in.

For many people, coronavirus has been pushed front and central into their salience landscape. Although there is a crucial role here for opinion leaders in the media, often such leaders are found on multiple, contradictory sides of an issue, such that what is also needed is greater sense-making capacity of audiences – something that appears accessible regarding COVID-19 in a way that it hasn’t been for climate change. With COVID-19, perhaps because it is perceived as an immediate crisis, people are unusually forced to make orderly meaning out of chaos, honing, and attending to what is salient to them, to find their way through a sea of exponential graphs about COVID-19 cases, deaths, and recoveries. The perceived non-urgency of climate change can set it on the back-burner of what requires immediate attention now. With COVID-19, people have had to find immediate ways to use their attentional resources wisely, sifting through the extensive and quickly changing information about it – how to prepare, who to believe, and what to do if one gets it – to attend to what is most relevant in an enormous glut of largely un-prioritized perspectives on the matter.

I argue this sense-making in contexts of high complexity is an acute and critical skill today. Although prior generations were guided by education curricula that *provided information* about

the world, today school curricula ought to be (if it isn’t already) oriented to *how to make sense* of that information. Climate change is likely an issue that will eliminate significant depth of consciousness present in the world today, at the greatest scale we have seen – in other words, it ought to be seen as urgent and high on our list of priorities – and yet it doesn’t make it onto the salience landscape of many. So, instead, people may end up giving their attention to less important information, like cute cats or last night’s dinner, rather than the issue that may take down both of those, and much more, if left unattended. In other words, the difference perhaps between the COVID-19 response compared to that of climate change, may have been that the former was forced to be salient, whereas the latter has been crowded out of a sense of acute relevance by lesser but more distracting issues. Adjusting that balance is a necessary part of an effective climate change engagement.

Considering *how* to adjust that balance raises the question, *who is to force an issue to be salient?* It would seem political leaders and the media have a key role in this, yet they can only venture as far as their voting base extends, which means that climate change communicators and educators have a role here too. The current media landscape is markedly different than it used to be and global issues are increasingly complex; more capacity building for making sense of information is needed. Rather than joining in the cacophony of opinions, climate communicators could instead impart sense-making strategies, both to politicians (who influence the larger structures in which individuals live their lives) as well as to citizens, for how to sort out perspectives on phenomena and more consciously curate their salience landscape to track issues of significance. Examples include Lynam and Fletcher’s (2015) research into sorting complexity and multiple perspectives using a tool called SenseMaker, and Moloney *et al.*’s (2014) work with social representations theory to explore constructions of climate change in socially-oriented solutions and communications campaigns. This could start in school, it could be a public-service resource, or it could be contained within community-engagement sustainability projects; one way or another, people need opportunities to develop the skills to more effectively navigate complicated and contested media messages and identify what is most salient.

3. Conclusion: lessons from COVID-19 for climate change

Comparing the COVID-19 response to that of climate change through these three lenses, it becomes apparent that the meanings people make about coronavirus make it accessible and actionable in a way that climate change is not. The psychological complexity and distance of coronavirus, being concrete and proximate, makes it feel immediate and present, and thus within reach cognitively and behaviorally. For that reason, people have a felt-sense of the loss that co-arises with this issue. That then supports COVID-19 taking a central place on people’s salience landscapes, displacing other more minor phenomena that are constantly pulling at their attention. In turn, the world has witnessed a globally coordinated shift in awareness, behavior, culture, and systems in approximately 2 months.

In the case of climate change, however, those dimensions operate in the reverse. Its developmental complexity and psychological distance make climate change abstract, distant in both space and time, and thus hard to construe in its totality. That requisite cognitive complexity alongside the psychological distance compound to push climate change away from some people’s sense of what is

salient, displacing what is the major and possibly most relevant issue today with lesser but more distracting issues. Although there are other psychological layers that influence climate change response – such as ideology, contested values, difficult trade-offs, strong emotions, and so forth – in terms of the cognitive component of grasping the extent and contours of the issue, the three aspects discussed here combine in important ways to slow down timely and meaningful behavioral- and systems-change responses to global warming.

What lessons can be learned for transformation? The pandemic evoked *broad and swift* shifts in mindsets, actions, culture, and societal systems. The extent to which they will be *lasting* remains to be seen. Certain aspects of the decisions taken (or not taken) to date may leave an indelible mark on the developmental paths of some nations. For example, Canadian policy-makers have noted that COVID-19 made visible crucial vulnerabilities in the society and politicians are now focusing on 'building back better', weaving into pandemic recovery other social aspects such as paid sick leave and building a more resilient economy that empowers women, fights climate change, and addresses systemic racism (Privy Council Office, 2020). Many of these changes incur massive financial debts that extend far into the future; in other words, the price tag on COVID-19 measures are not insignificant and nor are they fleeting, and yet – in part due to the three reasons I presented above – national constituencies to date have accepted them. Notable exceptions here provide important lessons. For example, in the UK and the USA, the neoliberal wave of anti-public sector sentiments that tended to weaken the response-options to the pandemic may provide insights for climate change; namely, with respect to being prepared in terms of public sector organization and decision-making, as well as to not underestimate the influence of such sentiments underpinning political attitudes. Similarly, there will be much diversity in terms of how sustained COVID-19 responses are and whether rebuilding efforts stretch to include other global issues. For now, the COVID-19 responses to date provide a template for how change across multiple dimensions of society can occur.

For engaging such a multi-dimensional change process regarding climate change, the response to the COVID-19 pandemic sheds light on the usefulness of concrete, simple, and self-centric or personally relatable messaging about the issue. It also underscores the value of adding to the climate-science definition to make space for more democratized climate understandings and stories. It also discloses the need for climate communication strategies in which people are encouraged to encounter their understanding of climate change at whatever psychological distance makes the most sense to them, rather than imposing a certain level of abstraction that they may or may be capable of rendering. Also, greater understanding is required of the nature and degree of attentional crowding people experience, and the need to impart sense-making strategies for how to sort out perspectives on phenomena and more consciously attend to issues that are most significant.

Learning from the differences between these two responses provides important insights into climate change communications and engagement, and may give hope that large-scale system transformations regarding climate change, involving people's cognitive, behavioral and cultural change, as well as global coordination, is very much possible.

Acknowledgements. I acknowledge with gratitude the support of the editor and an anonymous peer reviewer for valuable feedback, Dr. Karen O'Brien for reviewing and editing this manuscript, Roland Stanich for our many

conversations on this topic, and the children in Climate Club at University Hill Elementary School (most specifically my daughter Anya) for their inspiration.

Author contributions. The manuscript is sole authored.

Financial support. This research is conducted by a grant from the Research Council of Norway, project number 250434.

Conflict of interest. The author declares no conflict of interest.

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