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Pearce, B.J.

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INTERVENTIONS: PROVOCATION

Changing hearts instead of changing minds – another take on climate action

BinBin J. Pearce, b.j.pearce-1@tudelft.nl
Delft University of Technology, The Netherlands

Abstract
This piece elaborates on a 'new way of thinking' (Einstein, 1946) that would contribute to overcoming the challenge of climate change and its impacts. This 'new way' will have us go beyond using facts and figures alone to persuade and cajole. It will have us stretching our moral imagination (Johnson, 2016) and empathising with people very different from ourselves. It will have us investing in processes of exchange which support the co-creation of knowledge and the future we want together.

Keywords climate action • self- and collective self-efficacy • transdisciplinary approaches • implementation gap • frames

Key messages

- Communication of scientific knowledge alone has not been sufficient to stimulate the change needed to overcome implementation gaps to reach emission reduction targets.
- Being mindful of diverse worldviews and being explicit about the values which drive scientific work would encourage the acceptability of scientific knowledge.
- Each of us are called to expand our 'circle of concern' such that we are willing to adjust individual and systemic behavior in the interests of a global collective need.
- Cultivating a sense of self- and collective efficacy is necessary for each of us to act in the face of great challenges.
- The processes involved in the co-creation of knowledge may change not only our minds, but also our hearts about what actions to take in the future.

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In 1946, after the atomic bomb was unleashed and the threat of nuclear warfare became a disturbing new reality for the world, Albert Einstein wrote 'a new type of thinking is essential if mankind is to survive and move to higher levels'

(Einstein, 1946). Today, the climate crisis is another human-made phenomenon requiring global cooperation and coordination – what 'new type of thinking' is needed now?

Rationalist decision-making has been the principal logic of many governments throughout the 20th century. Such a logic assumes that decision-makers can access sufficient knowledge to determine clear objectives, that they can collect information about the costs and utility of all options and are able to choose the most effective course of action between alternatives. While this strategy works for specific situations where there are no unknowns, this is clearly not the world we live in most of the time (Etzioni, 1989). There is too much information and too little time. Facing a myriad of 'wicked' global problems – the climate crisis, rising global inequality (World Bank, 2022), rapid technological change and conflicts around the world (Ansell et al, 2017) – we live in a world where unknown unknowns are inherent to many of the decisions we make and yet, it is also urgent that we quickly find the way forward together. How can we meet the challenge of the new type of decision making that is needed?

Over decades, the scientific community has collected sufficient data to arrive at near unanimous consensus that climate change is real, that it is mostly caused by human activity and that its impacts are extremely serious (IPCC, 2023). The Intergovernmental Panel on Climate Change (IPCC) has gathered conclusive evidence that avoiding a climate disaster requires a drastic reduction in emissions. As the human impact on the climate becomes increasingly difficult to turn away from, the scepticism of climate denial has given way to the fatalism of climate doom of 'inactivists', as climate scientist Michael E. Mann calls them.

Despite the rallying effect of the Paris Agreement, the world is heading for a 2.7°C warming (compared to the 1.5°C target) based on current policies (Climate Action Tracker, 2023). The chasm between the intended target and the actual outcome is the result of both a targets gap and an implementation gap. The targets gap has to do with countries not *wanting* to commit to lowering their emissions. The implementation gap, on the other hand, has to do with countries not *being able* to lower their emissions after committing to targets. The implementation gap itself consists of two components. First, not being about to translate targets into viable national policy – the 'policy action gap', as named by Fransen et al (2023). And second, once a policy has been created, not being able to implement the policy in a way that would result in emission reductions. This has been described as the 'policy outcome gap'. Factors leading to this situation include opposition from voters and/or interest groups, limited bureaucratic capacity, autonomy of government agencies from political groups and lack of access to climate financing (Fransen et al, 2023).

One cause of these implementation gaps has variously been named the knowledge–action, intention–action, value–action, attitude–action and/or the intention–action gap (Frederiks et al, 2015). Social and behavioural scientists have long acknowledged that possessing knowledge of a topic is not sufficient to change one's actions. For example, how an issue is framed greatly impacts decision making (Tversky and Kahneman, 1981). Personal motivations rooted in individual and collective identity (Fritsche et al, 2018), values (Steg and de Groot, 2012) and the geographical scale of one's sense of belonging (Running, 2013; Reysen and Katzarska-Miller, 2018) can all influence what information is believed and/or acted upon (van der Werff et al, 2013). Thus, what information policy makers and their constituents act upon

depends on a myriad of complex factors not solely based on the availability and comprehension of the information.

In the following section, I relate insights from a variety of social science disciplines (social psychology, sociology, geography, policy studies, economics) to challenge the prevailing frames about what stands in the way of effective action for climate change. These frames may be defined as representing conventional wisdom by their prevalence in either academic literature or how frequently they are represented in news media. These frames were also chosen on the basis of how often they came up in my own conversations with citizens while carrying out field work, and with academic colleagues. These frames are therefore not comprehensive, nor can I claim they are the most important ones, but they seem to be overlooked. Further reflection on these points might be a good starting point for a 'new way of thinking'. Frames are 'interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it and what should be done about it' (Nisbet, 2009: 15). A frame is an actor's perspective and serves as the underlying foundation on which narratives can be built (Aukes et al, 2020). The following four perspectives should be considered 'frames' rather than 'narratives', given the single point of view each one represents for a specific issue. They are different arguments which reduce the 'magnitude of dissonance' between the urgency of dealing with climate change and the lack of action in themselves or others (Festinger, 1957). Four frames are discussed here, one from the perspective of scientists and the other three from the public. I will conclude by suggesting how challenging these frames could result in more effective climate action.

Scientists say: 'If they knew better, they would do better'

This statement underpins a 'deficit' model of the public that assumes that scepticism of science and evidence-based rationale comes from ignorance of science. In the case of climate change, this is also known as the science comprehension hypothesis (Kahan et al, 2012). This is the assumption that an increased understanding of scientific knowledge would lead to greater support for science and desired action by the public. This view has been criticised as overly simplistic by ignoring the ways in which attitudes, media use, emotions, value predispositions and trust influence the public's uptake of science (Sturgis and Allum, 2004; Nabi et al, 2018). A competing hypothesis is the cultural cognition theory. This assumes that people form their perception of risks based on the perceptions of the groups with whom they identify (Kahan et al, 2011). Individuals, in this case, will lean towards the information and expert positions that align with their existing beliefs and identification with their group. Ideologies that affirm these identities predict attitudes on issues such as climate change better than individuals' cognitive ability to process complex scientific knowledge (Kahan et al, 2012; Guy et al, 2014). Under these circumstances, scientific consensus could not be expected to settle a disputed question because what 'most scientists believe' becomes just another factor that will be filtered through an individual's predispositions.

Adherence to the science comprehension hypothesis will lead scientists to see their main contribution as providing more accurate scientific knowledge – for example, better climate models with more localised climate information, more accurate information about feedback loops and improved user interfaces and services so

that knowledge can be better incorporated into people's everyday decision-making (Knutti, 2019). Scientists may then default to a mode of communication that does not necessarily allow for deliberation about 'what truth is' and engages the public without acknowledging or avoiding controversy (Alinejad and Van Dijck, 2023). This tendency leaves little room for dialogue or for citizens to engage and voice their concerns or doubts.

On the other hand, when the cultural cognition hypothesis guides scientists' interactions with the public, they focus on presenting knowledge in a way that affirms rather than threatens people's values or sense of self-worth (Cohen et al, 2000) without deviating from the veracity of the information being conveyed. They would also ensure that a diverse set of experts are presenting the information. Giving the platform to people from different cultural communities has also been shown to enable the acceptability of knowledge (Kahan, 2010).

A study conducted by Guy and colleagues (2014) found that the effect of scientific knowledge on individuals' opinions depends on their view of the ideal structure of society (hierarchy versus egalitarianism) and the amount of emphasis society ought to place on group outcomes (communitarian versus individualist). For 'communitarians', more knowledge about climate change leads to increased concern, while for 'individualists', the opposite is true (Guy et al, 2014). This insight suggests that if scientists want to create an environment in which open-minded consideration of the best available scientific information is possible, then framing scientific knowledge in a way that is sensitive to differences in these world views would be crucial.

Public #1 says: 'We don't trust science (and/or the institutions, industry and government supporting science)'

Citizens and politicians alike may resist authoritative truth claims (including those from scientists) in favour of what they believe or feel to be true due to public distrust of 'institutional truth-tellers' (Harsin, 2018). People may reject climate science because it conflicts, or is perceived to conflict, with their core values linked to economic interests, religion and/or political ideology (Oreskes, 2021). This type of rejection has, for example, led to strategic disregard for factual evidence by the fossil fuel industry, libertarian think tanks and conservative scientists (Harding, 2008; Oreskes and Conway, 2011), further eroding trust in discourses and institutions. The oil and gas industry may reject the veracity of climate models because the models reveal human responsibility in causing climate change, and indicate that they should change their business operations, thus threatening the survival of an industry. Therefore, they fundamentally distrust scientists responsible for these findings (Oreskes, 2021). Within this context, more and better knowledge, no matter how relevant, would not be accepted as true, because it is the implications of the findings that are threatening and not the science as such.

Scientists attempt to retreat from these considerations by claiming that science is value-free. However, it appears from all historical accounts that science is not actually value-free. Science supports specific values, political aims and societal goals. For example, scientists steered the development of nuclear weapons and also subsequently protested against their use and proliferation. Government-backed research funding schemes are also justified on the grounds that research

outputs would bring greater health, sustainability, prosperity and social stability to the world. Scientists are a part of these value-laden efforts as individuals and must therefore also have values. So, when scientists claim that they are value-free it makes them seem less trustworthy.

Public #2 says: 'Why should I be the one to change?'

Despite the reality of growing global interdependence, there is still a temptation to see the world as a zero-sum game. There is a tendency to perceive the world as a dog-eat-dog field of competitive bidding, rather than as a non-zero-sum situation, where all of us benefit from the efforts of others (Wright, 2009). This perspective leaves us unwilling to see the world from the point of view of someone outside of our own immediate circle of concern. Our brains have evolved to be sensitive to in-group/out-group distinctions which presumably allow us to identify ill-willing intruders and defend our own groups from possible harm (Moffett, 2019).

Nevertheless, the reality is that we *are* connected to those living thousands of miles away, we just don't know their faces, are not able to feel their pain, and don't feel accountable to them. While those in Malawi have already needed to adjust to the realities of extreme drought and flooding in recent years, for others in the American Midwest, climate change is still a figment of liberal imagination. No wonder we don't all feel the same need for change (Fritsche et al, 2018). People experience the consequences of global challenges differently and consequently perceive differing degrees of responsibility in confronting them (Reysen and Katzarska-Miller, 2018).

The challenge of climate action requires us to expand our circle of concern so that we would be willing to adjust our individual behaviour in the interest of a global collective need. Fortunately, there is plenty of evidence from our own lives, and the lives of those around us, that there is capacity to act in the interests of others (Reysen and Katzarska-Miller, 2018). We are wired for connection. We have evolved so that cooperation is central to our survival, even as we strive to define the boundary of the communities that we belong (Moffett, 2019).

Public #3 says: 'What's the use?'

The connection between self- and collective efficacy has been linked to pro-environmental behaviour, including examples of climate action (Jugert et al, 2016; Fritsche et al, 2018). Research has also shown that a person must perceive that they, or the groups to which they belong, have the ability to address a problem in order to act on that problem (Bandura, 2006; Heath and Gifford, 2006; Bamberg and Möser, 2007). It follows that when individuals have a weaker belief in the potential impact of their actions, they are less likely to act (Heald, 2017; Bostrom et al, 2019). On the other hand, constructive hope and constructive doubts have been shown to lead to more motivation for climate action (Marlon et al, 2019). The constructiveness of both hope and doubt is the belief that humans can change the future through their own actions if they should choose to do so. For the case of climate change, constructive hope is the optimistic view that humans will choose to enact the necessary policies. Constructive doubt is the sceptical view that humans may not act quickly or effectively enough (Marlon et al, 2019).

The role of human agency and efficacy thus exemplifies two sides of the spectrum in relation to climate action. On the one side, climate deniers claim that human actions make a negligible contribution to global climate systems (see Koonin, 2021). On the other side, there are climate 'doomers' who claim that societal collapse is imminent and unavoidable, that we are too late for change and must adapt. Climate denial has increasingly given way to climate doomism, though the outcome is the same – inaction. It seems that climate action requires a cultivation of self-efficacy and collective efficacy that will serve as a bulwark against doomsayers and deniers, as well as enabling persistence in carrying out small-scale individual and collective action while acknowledging the need for systemic change.

The paths forward

Given these existing frames rationalising climate (in)action, how do we move forward? The following section contains some ideas for both scientists and the wider public. They draw from a myriad of academic fields, including transdisciplinary research, participatory action research and research about the public understanding of science, as well as my own experiences of working with communities in both research and teaching settings.

Moving forward for science

- *Focusing on transformation knowledge*: transformation knowledge is knowledge about 'how we can get there' (ProClim, 1997). As opposed to systems knowledge ('what is' knowledge) and target knowledge ('where we should head'). Scientists may be more reluctant to wade into the 'how to get there' discussion because this is seen as the responsibility of politicians and others in practice. However, research insight is also needed to create roadmaps and crucial for realising plans. This may necessitate training scientists to be comfortable in drawing the lines between advocacy, knowledge brokering and activism. It may involve scientists becoming more explicit about what the values that underpin scientific activity as well.
- *Co-creating knowledge*: between the Scylla of portraying science as being 'value-free' and the Charybdis of admitting all information as being legitimate (thus legitimising false claims and disinformation from forces that actively try to derail climate efforts), there is a third option. This is opening the processes of knowledge production to people beyond academia. By not only talking about the process of doing science, but also involving citizens in this process, research questions can be jointly framed by those most affected for existing challenges (Pearce and Edjeryan, 2020). If the real world is our concern, scientists must engage in the messiness of the world (Rosenhead and Mingers, 2001; Hirsch Hadorn et al, 2006). This will take longer but will be important in exploring and incorporating different ways of knowing into our own work.
- *Cultivating trust*: trust is created when individuals are able to take part in, or recognise some part of themselves, in the construction of the knowledge itself (Engdahl and Lidskog, 2014). This has to do with both the way in

which the message itself is framed in order to link its relevance to everyday concerns of people and to connect with their values (Kahan, 2010). It also means that the experts themselves should represent diverse communities such that citizens can see their cultural positions represented and considered in discourse about climate change and what to do about it (Kahan, 2010).

Moving forward from 'Why should I be the one to change?'

- *Cultivating moral imagination for 'opponents'*: climate change is often cast as a moral problem by opposing sides. Those who do not support climate action are seen as lacking willpower to act on principle when it is inconvenient (and therefore morally inferior). On the other side, those supporting climate action are cast as being naive, or as self-righteous people who are blind to their own contradictions and deficiencies. These perspectives are not constructive for bridging political and/or ideological divides. The drawbridge is pulled up, the door is closed for mutual understanding. To overcome this divide, greater moral imagination is needed. Moral imagination is our 'grasp of other people's experiences and situations' (Johnson, 2016: 356). We need 'an intelligent process of moral inquiry that helps us to resolve conflicts, harmonise competing values and expand possibilities for growth of meaning' (Johnson, 2016: 362). Moral imagination can be used as a part of a deliberative problem-solving process (first proposed by John Dewey) (Johnson, 2016: 360). Instead of quickly resorting to 'them and us' we must show a willingness to sit together and to deliberate.
- *Fostering perspective-taking in education*: being moved to do something about climate change and other global societal challenges requires us to expand the boundaries of our concern. Successful examples of communal cooperation have often been linked to a specific place and context (Ostrom, 2010). Those involved were able to clearly see, touch and feel what was at stake. Now we must carry out actions for those whom we will not meet and for places to which we have not been. This requires having empathy for those we may never know. Risberg (2022) has suggested that one way of clarifying and cultivating empathy in an educational setting is 'self-directed perspective-taking' (Risberg, 2022: 572). This is the ability to imagine ourselves in the situation of another. In this way we are better able to bridge the chasm of difference, not in assuming that we could *know* the experience of the other, but to share in a set of circumstances that we would never be confronted with ourselves. When we can put ourselves in the situation of another, no matter how imperfectly done, we are able to access a broader range of action that could and should be taken.
- *The intersection between art, science and design* holds great promise for cultivating moral imagination and empathy. The potential for this cross-fertilisation has been explicitly recognised by the European Commission, as well as the National Resource Council of the US. Storytelling, co-creation of artworks, scientific experiments as public art – all these approaches have been shown to change a community's perception regarding the need for action related to

the climate crisis. Such an approach is a part of University of Exeter's Green Futures Initiative. In addition to music, theatre performances, soundscapes and public art, it has produced three anthologies of poetry and narratives for the World Economic Forum and COPs 26–28. The creation of these books has been the voice of hundreds of climate scientists, health professionals, youth workers, school children, artists and storytellers to urge policy makers to undertake climate action and to give voices to people already experiencing the impacts of climate change.[1] In one Horizon 2020 project, Energy Citizens for Inclusive Decarbonization (ENCLUDE), researchers created an online course ENCLUDE Academy for energy citizen leadership based on human-centred design and system thinking principles. This course has guided citizens from across the African continent, as well across Europe, to design interventions, with the input of local actors, which would support inclusive and sustainable energy use in their own communities.[2]

Moving forward from 'What's the use?'

Cultivating a sense of self- and collective efficacy: social cognitive theory has shown that perceived self-efficacy is at the core foundation of human agency (Bandura, 1997; 2000). Findings in this field indicate that while people are partly the product of their environments, *belief* in one's own ability to shape the environment enables them to do so (Bandura, 2000). Efficacy beliefs influence what challenges we choose to take on, how much effort to invest and how we respond to failure. A strong sense of self- and collective efficacy cultivates resilience to adversity and reduces vulnerability to stress (Bandura, 2006). Global challenges highlight the need for collective efficacy. This is people's shared belief in their power to produce a desired result. Social persuasion, mentoring and positive reinforcement from others also help to boost a sense of efficacy. It can also be cultivated through social modelling where people see others like themselves accomplishing difficult goals. Higher perceived collective efficacy leads to more investment in group undertakings, greater staying power in the face of adversity, and greater accomplishments as a group (Bandura, 2000). People's belief in their efficacy can be cultivated through overcoming obstacles, experiencing success and learning how to manage failure.

Concluding remarks

There are no easy ways to agree and decide on a course of action in a world of complex challenges. It is a world of entrenched interests, major power imbalances and resource disparities, with a history of mistrust and hurt created in the wake of discord. However, the paths forward are marked. Taking these paths requires each of us to encounter the other with an open heart, especially in matters where we are certain that we are right and 'they' are wrong. We must move out of our own echo chambers to understand that the other is also a person with a need to be recognised, loved and live a meaningful life. If we can grant this possibility to those standing nearby and far away, we have a chance to move forward together.

> 'We will not change the hearts of other men by mechanisms, but by changing *our* hearts and speaking bravely.' (Einstein, 1946; emphasis in original)

Notes

[1] https://greenfutures.exeter.ac.uk/our-impact/ (accessed: 14 August 2023).
[2] https://encludeproject.eu/ (accessed: 12 July 2023).

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Conflict of interest

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