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THE CYNEFIN CENTER CLIMATE CHANGE PROGRAM

A DEEPER EXPLORATION OF BACKGROUND

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Introduction

This document is both an introduction and a frame around our climate change program. I decided to call it a whitepaper, although that summons academic associations that could be misleading. But since it is too hesitant to be a manifesto and too interested in research, context and background to be simply a program outline (which also exists as a companion document), whitepaper will have to do. It is an attempt to address the enormity of the problem of climate change and our responses to it, in action and inaction. In a sense, it is a continuation of the blog post Dave Snowden wrote to introduce the study (Snowden, 2019). There, he voiced his concerns about the risk of paralysis caused by horror stories of the potential impact of climate change and argued for the power of small actions to restore a sense of agency and inspire further action.

Our pilot climate change study (let's call in here our Acorn Study) was just a first step, and we are now driven by the desire to go much deeper- encourage that seed we planted to start growing. We want to see it turn into an oak, and we want to allow a whole ecosystem to grow around it. In what follows, we will:

- I. Explore the part we see ourselves playing in the response to climate change,
- II. Outline some possible research avenues, and some significant implications and potential future actions, which are both backed by our results so far as well as a (by no means exhaustive) literature review.

We see these areas and directions of interest to be less of a final program to stick to, and more of a flexible scaffold around which discussion can grow.

Climate can actually be positioned as a perfect example of the way we think about and approach complex systems and how different ways of thinking about complexity interact. For example, studying the climate and how it changes over time is an example of computational complexity, involving modelling, projections, and forecasting based on agents and starting conditions. These forecasts have a margin of error and they might be more or less accurate, but they are not the whole story. Of course, the massive chain of impacts that climate change is involved in and the entangled networks of what it touches is highly complex in a way that goes beyond the changes in temperature, sea levels, or weather patterns themselves that are calculated by computational complexity. Not least when we take into consideration the very real need for changes to human behaviours, ambitions and basic ontological standing in order to prevent any further damage.

Thus, it is our view that by positioning climate change as an “intractable issue” and tackling it from multiple perspectives, that paradoxically, we can begin looking at it from a more empowered place: we would be no longer looking for the one great answer but probing for multiple attempts to shift the system, starting from our place in it. We will also discuss the areas where it might make sense to be on the lookout for weak signals that indicate potentially fruitful shifts in propensities. Ultimately, we are approaching this as a human problem, from our perspective as students of anthro-complexity, and we are looking at responses at the human, rather than planetary, level.

The human response to the crisis in its hundreds of manifestations, the web of anxiety, doubt, action, political consequences, negotiation, conviction, response, and politics is what anthro-complexity is all about. And it is to this last part that we can speak more than any other (Snowden and Stanbridge 2004, Snowden 2005). By looking at the human side, we can approach not just the complexity of climate change, but we can also introduce our own human compassion, appreciation, and even moral stance when it comes to the struggles, conflicts and paradoxes we all face when confronted with the future of our planet. Without taking this approach, we are in danger of contributing further to a disconnect from the world around us and our capacity to make improvements at our various levels of power and influence.

Problem scale and paralysis: contributing factors

One of the fundamental issues the literature on response to climate change has been trying to deal with, is solving the problem of why there has been limited action taken on reducing the effects of climate change (especially by those perceived to be the most powerful actors), given the severity of the problem and the widespread acceptance that a problem does exist and action is needed (Feinberg and Willer 2011; Lorenzoni and Pidgeon 2006; Norgaard 2006; Roser-Renouf et al. 2014; Whitmarsh 2011). Even straightforward surveys show beyond shadow of a doubt that climate change is considered an important issue by the general public. In the last edition of the Eurobarometer, the regular opinion survey undertaken by the EU, in November 2019, climate change came second after immigration as the issue most preoccupying Europeans. Moreover it has been steadily climbing in importance, from being one of the two most important issues facing the EU for 5% of respondents, to 24% of respondents (Eurobarometer, Autumn 2019).

A special edition of the Eurobarometer run in 2019, dedicated only to climate change, provides encouraging indications that the gap between concern and action might be shrinking, with 60% of respondents taking action personally to combat it in the year, an increase of 11% from the last time the question was asked in 2017. However, the percentage of those who think it is a serious problem (whether they themselves personally did something about it or not) is yet higher, at 93%, showing that the gap is definitely still here. Still, there are indications that it is moving in the right direction, and moving fast. This means that we find ourselves at an excellent point for introducing research on responses (Special Eurobarometer on Climate Change, 2019), but that in order to do so, it still makes sense to look at the factors holding people back.

One challenge in this context is that of media representation. Fear, misery, and impending disaster are often features of the media narrative around climate change (Boykoff 2008). These have multiple effects: they numb the perception of the public, by implying that only immediately visible catastrophic changes are worth noting, and they create a sense of paralysis through the feeling of powerlessness (Whitmarsh 2011). At the same time, despite their striking statements, they cultivate a sense of disbelief, often through their juxtaposition with sarcastic or contrarian takes (of the “some global warming would actually be great” variety). Dramatic media representations also actually extend the impact of climate change even to those who do not feel it directly through the creation of anxiety and the overwhelmed/ paralysis type responses associated with it (Doherty and Clayton 2011).

This is not unique to climate change, but has been documented in, for example, disaster response, as in the case of 9/11. The parallel with disaster response is especially interesting when we also take into account the tendency to respond differently to natural as opposed to human-caused disasters. Natural disasters tend to follow a fairly predictable pattern of response, which includes crisis and recovery that often brings about feelings of unity, solidarity, and a shared purpose. Human-made disasters, on the other hand, show much more uncertain and non-linear trajectories and tend to cause uncertainty, divisiveness, and sometimes rather unhelpful blends of blame and defensiveness (Doherty and Clayton 2011 ; Renner and Swim 2011). Climate change, an ongoing complex process of change rather than an immediate, more obvious crisis, has the potential to create an interesting mixture of those two disaster responses. Its effects - such as extreme weather events - bring about phenomena that are both natural and technological at the same time, but also subject to differing interpretations as to their causes.

Denial is a well-understood defensive response in the face of threat and fear. When mentioning denial here, I am not referring to what is often called “climate change denialism”, for which the term “doubt” will be used in this paper, but to the much more widespread kind of denial where the implications of the situation are minimised or ignored, regardless of whether the information is accepted or not. Denying the implications means that there is no reason for them to be translated to everyday practice. Rather than passive, denial can in fact be seen instead from an agential perspective as the active engagement in a process of constructing our relationship and interaction with the world, both individually and collectively through a variety of mutable narratives (Norgaard 2006). Reproducing and reinforcing the status quo is as much a question of agency as taking action or questioning it. This cultural and collective aspect of denial is crucial to the social dimension of action discussed in the next section, and it also has to do with what is considered a normal and accepted focus of attention, conversation, and preoccupation.

Denial can also take the form of a lack of tolerance for uncertainty, which can be rationalised and self-perceived as disinterested rationality, at the same time as undermining the existing level of scientific consensus (Nerlich 2010). It more likely to be mobilised as a response if a problem is distressing but of uncertain origins and consequences (Krosnick et al 2006). The psychoanalytic phenomenon of splitting is also relevant to exploring this response, which in the case of climate change can take the form of recognising the problem but removing all emotional significance from it – a kind of protective numbness. Splitting can also take the form of separating the bad from the good in place and in time, where all that is horrible and we cannot face is located elsewhere and in the future, while the present remains manageable and “business as

usual” (Randall 2009). Denial of an overwhelming force can also help preserve the sense that the world is a just and orderly place (Feinberg and Willer 2011). All of these effects however do not mean that denial or inaction happen because people are bad, or greedy, or don't care. It is simply a very human reaction to an overwhelming and disturbing reality.

How we think about agency and make sense of it is interwoven with the responsibility for action as well as the capacity for it. The combination of a sense of responsibility and a sense of efficacy, whether individual or collective (I can do something about this, and my actions will matter) is particularly significant for supporting engagement in 'environmentally significant behaviours' (Doherty and Clayton 2011; Salomon et al. 2017). Fear, in the absence of a belief in efficacy, is likely to lead to an attempt to address the feeling of the fear rather than the threat causing it, since the fear, at least, can be defeated (Roser-Renouf et al. 2014). There are many examples of trying to estimate the impact of emissions reduction by a single individual (Fraginière 2016; Salomon et al. 2017) as well as attempting to grapple with the moral implications of thresholds of harm, and what contribution towards reaching that threshold means, rather than the absolute quantity of emissions. Approaches to taking action from the perspective of moral philosophy also have to deal with the question of contexts, and with the variable circumstances and costs different agents have to deal with, something which will be discussed further in the section on climate justice below.

The conclusion is that worrying or showing concern about climate change is a natural and potentially productive response, as long as it is combined with a sense of responsibility which pans out in action as well as the meaningfulness and intent behind this. The appropriate level of worry remains an open question, however - as shown above, too much worry can be paralysing and mimic the fight, flight or freeze response. It is interesting that the highest levels of emotion around climate change can be encountered at opposite ends of the spectrum of engagement with this: among those who are most concerned and engaged and among those who are most doubtful and dismissive (Doherty and Clayton 2011).

So, how do we move away from worrying about the bigger picture and into our capacity to act and make a difference? Starting to deal with the problem at a smaller scale is supported by the literature. For some scientists, paralysis is mostly a feature of decisions made at the larger scale of elites and government, although action in the rest of the system does still suffer from divisions and inefficiencies (Bond 2015). Inevitable tensions and contradictions aside, there is evidence that small-scale, bottom-up programs encouraging action from individuals alongside a consideration of social impact are effective, especially in combination with an environment for community practice and decision-making, where larger-scale initiatives might fail (Adger et al. 2009). At the same time, individuals that are unwilling to take personal action can become willing with the support of a community and the negotiation of new social norms, conformity to which can evolve as a new normal (Hale 2010). This combination and co-evolution with a community practice, brings us to the next component that can be introduced for more effective interventions and gives us a quick idea of some of the ways that small actions matter, not only in the terms of cumulative effects but also in shifting the landscape of possibilities into one where change can more easily take root.

From individual to collective

The lack of preoccupation with or an awareness of what is known in greek as “koina” (the things we hold in common) is intimately connected with the response to climate change. In the literature (and in practice), this can manifest both in analysing the factors behind that lack of awareness and in examining new forms of citizen engagement that could stimulate it. What is often perceived as inaction can also be read as a lack of connection with collective capacities of action and a distance from the processes of collective decision-making (Carvalho et al 2017). Often citizen participation is still thought of as a top-down process, like a council that is convened and disbanded at will. Going back to 2019's Special Eurobarometer on climate change, we see widespread support for a transition to clean energy and for setting ambitious emissions targets instead of conservative ones. In slightly older literature, there are suggestions that the actions of certain governments were ahead of their citizens' desires when it came to climate change. Now however, we seem to see the reverse, where citizens are outpacing governments. With increased engagement, this has the potential to become a true tipping point.

A lot of the attempts to take action against climate change focus on the personal changes individuals can make in their habits or consumer choices. This means that prompting action can be limited to engaging individuals to make those choices, by persuading or motivating them (Carvalho et al 2017). The underlying assumption often is that if people only had the right kind of information, if they understood the data, then they would take action, and that if they don't we can justifiably point the finger of blame at them for failing to do so. At best this is an attempt to incite empowerment, at worst this manifests as a

form of “soft-paternalism” whereby those at the “top” of Governance structures are given free reign to avoid structural responsibility (see the UK Governments early “stay alert” approach to COVID-19 as one example of this). According to this “behavioural science” model, what is missing is knowledge and will. This is also connected to the assumption that humans are essentially rational and self-interested actors who analyse the information in front of them and make the choice that will most benefit them (Hargis, 2015). Following this assumption to its logical conclusion means that all we have to do is give people ways to benefit themselves by benefiting the environment and they will, logically, choose them. Moreover, the same trail of argument leads to the conclusions that only paths that lead to increasing prosperity as a benefit have a chance of being convincing. Evidence suggests that this is far from the truth (Fox and Alldred 2020; Hale 2010; Norgaard 2006).

Thinking of climate change around collectivities and seeing those in connection rather than in opposition often includes the scientific community, especially climate science and the way information flows between experts and non-experts. Changing the way we think about communicating information and citizen participation, from single-direction flows to densely connected networks has an important effect here: real citizen involvement means an effect of communities in policy building and on the needs for science communication. It challenges the division between informed, neutral scientists and emotional, value-driven non-scientists (Weber and Stern 2011). It also implies a growth of a sense of citizenship and a willingness to be involved in politics- not in the narrow sense of elections and authority, but also in the broader sense of public action and debate that shapes action: the intentional shaping of our collective world (Hargis, 2015). How we talk about communication and how we practice it constructs particular kinds of socio-political relations, or privileges some relationships over others, and shapes the meaning and content of communication itself. In the absence of possibilities for participation of substance, which includes collective participation and influence, withdrawal and lack of agency are the result (Lorenzoni and Pidgeon 2006).

Moreover, collective networks provide not only more opportunities for effective action, but also the motivation to take that action by the strengthening of a greater range of bonds (Hale 2010). Collective action can also help address the effects of individual, paralysing anxiety through presence in a system, where there is both support and a larger perspective of a reality beyond ourselves and a greater inclusion of both those people and places that are far away from us in space, and those that are further into the future that we are currently shaping (Stokols et al. 2009).

A collective perspective finally allows us to look more deeply, and perhaps more critically at institutions and at the systems of provisions that underlie the habits of consumption that are at the centre of so many environmental appeals (Spaargaren and Van Vliet, 2000). It reveals how the individual private life and the large-scale complicated collective systems are densely networked, and through constant interaction shape one another in a way that we are so used to experiencing and navigating, that we mostly ignore. These dense, networked systems are made up of our daily practices, existing infrastructures, social structures, as well as cultural standards of what is acceptable and what is possible. Innovation can be demanded, but innovation will also be negotiated and accommodated across all these factors.

Applying complexity and anthro-complexity

The way we approach climate change as an issue and solutions to it is bound to complexity in multiple ways, one of them being an entangled materialist approach that sees people as part of the world rather than as distinct from it (Fox and Alldred 2020). In this entangled material world made up of assemblages, in which human beings or aspects of human beings are also components, the interactions between elements become more central to how we approach the questions than the essential nature of those elements, which is also a key tenant of complexity. From a complex point of view, we can approach the systems of climate change and its connections as an interconnected and irreducible whole, rather than expecting clean separation between parts, disciplines, or sectors (Stokols et al. 2009).

Social complexity is a concept that has long concerned anthropology and archaeology and the debate on what it consists of and what it means for societies rages on. Yet a point of almost universal agreement is that one of the features of social complexity is the presence of multiple social groups, which might hold diverging values and interests. As we already saw in the discussion of paralysis, in dealing with climate change this truly matters (Adger et al. 2009). Social perceptions and values interact with our actions on climate change to either make them easier or restrict them, so they need to be a

component of every study looking at triggering or amplifying action. Multiple, coexisting, contradictory values also mean that debate, disagreement and questioning will be an inevitable part of the process.

The fact that the complexity of the interaction of climate change with human systems is partly what makes its impact so potentially severe and unpredictable is directly acknowledged in the literature (Doherty and Clayton 2011). Dynamic, long-term and continuous study, such as the one enabled by SenseMaker, would allow us to see some of the subtle changes in values as they interact with other actions and choices, changing them in return and producing a more sophisticated landscape of cultural symbols and values around climate change. At the same time, a systemic view lets us involve the multiple entanglements between social aspects, impacts, actions at different levels, and all the sides of climate change that are often very difficult to capture. Solutions offered often focus on a single aspect of a huge problem, but our approach recognises the underlying complexity while still finding power in small actions.

We face the challenge of negotiating the tentative connection between scientific knowledge and analysis and the constantly shifting and negotiated terms of social knowledge and practice (Wainwright 2010), moving from complexity to anthro-complexity, which we can only do if we see them as inevitably entangled. The idea of a fractal, which we often discuss in the context of scaling in complexity is also a useful perspective from which to approach embedded social knowledge as well as the articulation between individual and collective action: instead of those being two alternative options, they become expressions of the same phenomenon at different scales, where connection and communication between scales can be facilitated by finding the appropriate levels of granularity and abstraction, where individual action motivates and makes up collective and collective action is reflected and enables the individual level.

Finally, the operation of human societies through interactions of identities, and not just of individuals, is one of the defining characteristics of anthrocomplexity. Reframing identities is part of the process of accepting, confronting, and dealing with climate change through in depth changes. Multiple, social and connected points of identification that go beyond the activist/passive observer binary are necessary in order for people to connect and identify with alternative images of themselves and of one another (Randall 2009; Roser-Renouf et al. 2014). Since this is a highly complex process involving humans, we do not know what the outcome will be and we cannot decide on an identity or a range of them and try to push people towards it. Of the outcome, we only know that it will be diverse and multiple, if it is to be effective at all.

Potential future paths

1. Building a depository of knowledge interwoven with strengthening social networks and exploring the ideations of climate change

When it comes to reducing our impact on climate change now or adapting to an unavoidable degree of change, it makes sense to progress in a complexity-compatible way. This means that we can not look to the security of predictions to guide us, or plan every aspect of our action and response. We can instead look to interventions that do not rely on a very high level of confidence in prediction, which might be impossible. In fact, looking for reducing uncertainty before taking action can be actively risky both by causing dangerous delay and by increasing the feeling of paralysis. Instead, we can look towards managing uncertainty and sharing the resources, information, heuristics, and the stories around them with those who need them. This kind of work will progress faster through the identification and the strengthening of existing networks rather than the creation of completely new ones. (Bidwell et al. 2013).

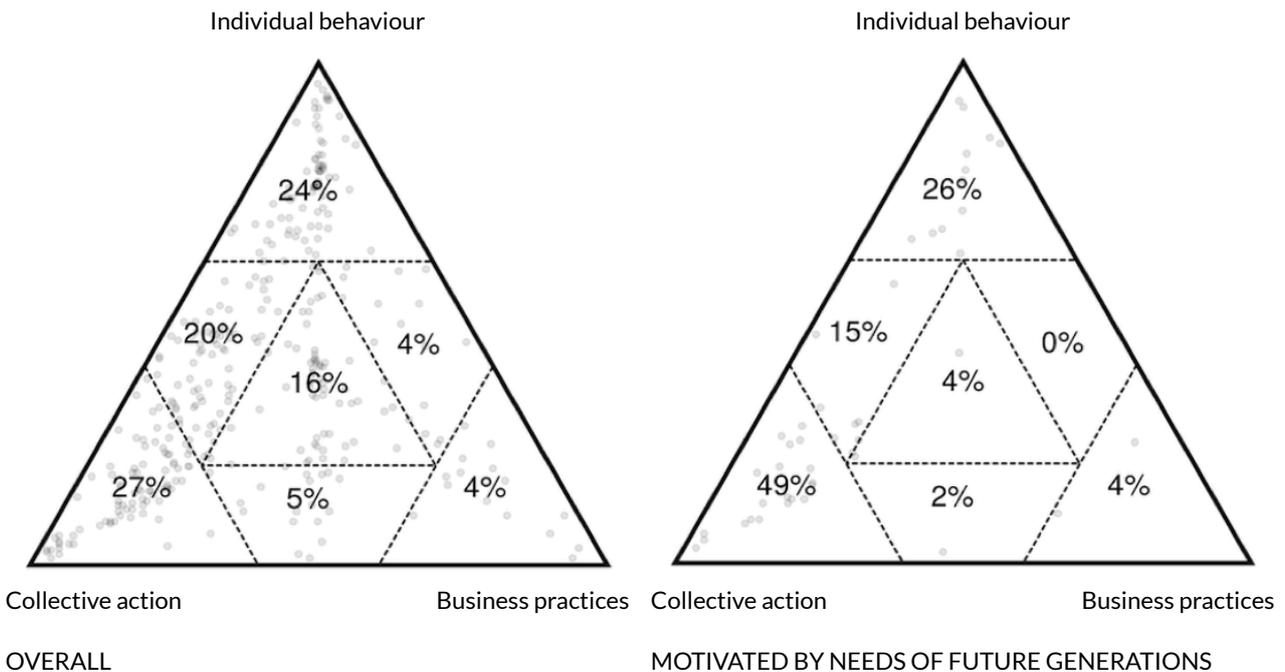
The existence of Citizen Engagement programme in the Cynefin Centre is a direct opportunity to start connecting environmental concerns with the practice of engagement in order to encourage alternative possibilities that go beyond individual attempts towards sustainability, and instead harness individual action to common purpose and use it to inspire further action, interweaving the private and the political arenas. We can also use this aspect of the programme to study the range of acceptable conduits of collective action, or at least for setting up frameworks or scaffolds around which collective action can grow.

The self-interpretation of narratives offered by SenseMaker is an ideal venue for exploring the integration of the climate movement with society, as well as specific instances of that relationship, such as climate change doubt. By asking people to tell us their own stories and concerns, we can connect climate change with the lived realities and understandings of citizens,

talking with them rather than at them. We can also use tools such as MassSense to see how people engage with and interpret different types of narratives and positions and how that affects their own engagements. We already know from existing research (e.g. Doherty and Clayton 2011; Whitmarsh 2011) that attitudes and ideologies and central and that certain values, such as communitarianism vs individualism are significant predictors for engaging in action to combat climate change, but there is a lot of room in digging down into what communitarianism actually means to people, which clusters are associated with it, and which aspects of value speak to us beyond political orientation or other potential differences. Earlier in this paper, the dense interconnections between individual lives, socio-material systems, and cultural standards were also discussed (Spaargaren and Van Vliet, 2000). These connections allow changes to propagate: standards are definitely not immune to change, and discovering some of their connections might be pathways towards faster-spreading and more acceptable changes. We can also look at the kinds of connections, perhaps in other areas as well, that drive people to look beyond their immediate interests and identify with distant others.

Insights from the Acorn study: People who emphasised motivation by the needs of future generations in their stories were far more likely than the overall population to have a sense of responsibility coming from collective actions in their stories.

A sense of responsibility in this moment came from...



2. Climate justice

The combating of climate change is often connected with the idea of climate justice, concerning those who most benefited from imbalances caused by humanity and those who most suffered, or will suffer from it. How other factors of social vulnerability and resilience interact with climate change is a relevant area of research (Doherty and Clayton 2011; Wainwright 2010). This is vividly illustrated by a 2015 Pew Research Center survey of world awareness of global problems. In this survey, those who were most concerned about climate change and those who are expected to feel its effects most keenly are not the largest emissions generators. Instead, the biggest generators of emissions are concerned with other

matters, such as ISIS in the case of the US (Bond 2015). Moreover, the side-stepping of the issue of climate justice in the framing of climate change is an approach that can be deliberately mobilised to trivialise the issue and reduce interest in it, effectively preventing solidarity responses between groups that will be less protected from negative effects, for example lower socioeconomic demographics in the western world and the global south (Boykoff 2008). The presentation of the concern with justice as a highbrow academic occupation encourages the sense of inevitability and paralysis, as well as isolation.

“Polluter pays” is central to many types of legislation, for example in the UK, so why is considered divisive or absurd when it comes to the global climate? There is an impression that the response to climate change is divided between those emphasising justice and those looking at action, but set justice aside. What shared starting points or adjacent possibilities can we discover, and what direction should we set? Which understandings of justice do multiple diverse groups share? Could it be easier to start from defining the negative and identifying inadequate solutions that we can agree on? How can tension and confrontation be negotiated, if it is inevitable, and which outliers exist in the area of assuming a greater share of the responsibility for climate change?

3. Accepting loss

We are already losing a lot, and we will lose more. Some of these losses will be tragic and traumatic, as local places invested with millennia of meaning change irrevocable or species die. A lot of the psychological literature around climate change (see for example Doherty and Clayton 2011) has identified responses that can even reach the levels of sub-clinical depression, guilt, and even despair, and a lot of the same literature recommends taking the same approach we would to any mourning process, where ideally grief and loss lead ultimately to the reintegration of the mourner into society and the reinvestment of their energy (Randall 2009). In other words, grief and loss in themselves are not paralysing as long as they are recognised for what they are and they become part of a movement and engagement towards something. Of course, like any mourning process, this can become pathological and result in apathy and isolation.

Other losses we might have to choose ourselves. The Acorn Study has shown the beginning of a willingness to accept and even embrace loss, and this is an element that we can continue actively monitoring and investigating, as well as consciously introducing. Many of the paths to action proposed today, especially those that make assumptions based on “rational individuals” promise solutions that will lead to benefit with no loss at all. But what if that is not true? For example, what indications are we seeing, or can we see, that an approach that involves reduced or no economic growth (Fox and Alldred 2020) would be acceptable, and what other parts of the system are connected to this acceptance? How much are different kinds of people prepared to give up, for what reasons, and under which circumstances? How can we accept and ease the pain of losing loved practices that have become a part of our way of life, and as well as live with the cognitive dissonance of still practicing them, without resorting to defence mechanisms like denial?

Stories from the Acorn Study

Theme: Negotiating Giving Things Up In a Social Space

“So how can demand be reduced? Consumers to not purchase, how can this occur education, the complete dropping of the production of something and then the allowing of a landslide of things to occur. The challenge then is what are the emergence of such an effect and how can we anticipate these in ways that could prevent other types of chaos occurring. The only way to do is to do...and see...all at the same time, education, media, and the devolving of 'greed' to 'need'. In a nutshell it's more than the sector that needs to act. Economic structure needs to shift, policy and government needs to change, the way we see ourselves and what we believe we are entitled to needs to also change. Today I brought some boots, I am thinking man I shouldn't buy these, but I also have these pressure to 'show up' at work in a manner that shows 'I am here and I am up for it' you know, if I didn't it is unlikely that anyone would really take me seriously, I am not that 'evolved' yet to have that level of positive response without wearing the kind of corporate bussiness armour which seems a necessary part of having people in the circle you wish to influence take you seriously. Maybe that's a blind spot of mine, I don't think so though, but that is one tiny pebble in an ocean of multiple inputs. Changemakers start now and we are all it.”

Woman, 36-45 years old, Oceania

“My position may sound extreme, however, our current situation probably demands more than most people are willing to sacrifice as of November 2019. In my view, it is about a dramatic reduction of consumption in the Western World (maybe 10% less per year for the next five years). We need to learn to live with much less than we currently do. That's less of everything: meat, cars, flights, chemicals, etc. This will lead to negative economic growth, higher rates of unemployment, most likely social unrest and a lot of unintended (unforeseeable) negative side-effects. We also need to stop thinking about national policies and move towards protecting and preserving the Rain Forests and” the oceans.

Man, 36-45 years old, Europe

Theme: Rational individuals

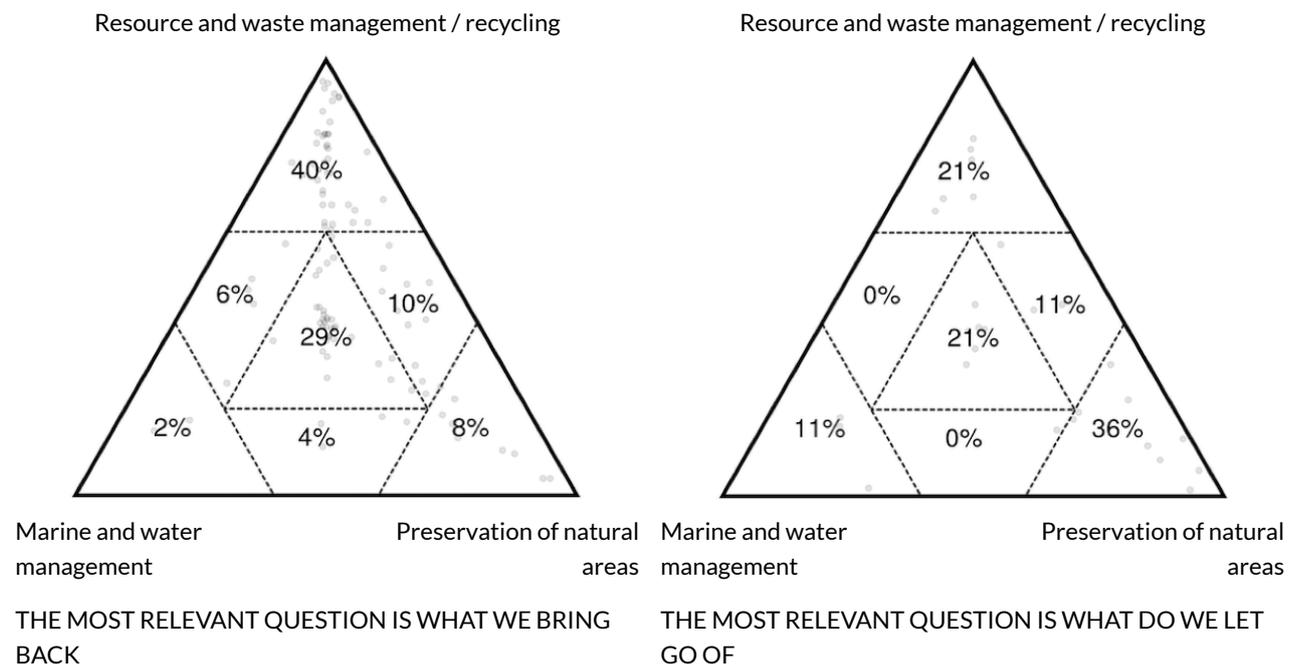
What do high emitters need to do?

“They shouldn't do anything - their job is to make money for their shareholders. Limiting their impact (if necessary) is government's job. I guess when green tech is more economical than the old fashioned kind, then the switch will happen all on its own, without anyone needing to make an effort to be virtuous and self-denying.”

Female, 31-35 years old, Europe

Insights from the Acorn Study: both kinds of loss are currently keenly felt right now, and the ties between them are something to investigate

This situation relates more or less to...



4. Out of ourselves and into the world

Values that connect human beings with one another and promote the formation of community have been shown to be significant in participation in actions supporting and promoting sustainability. Faith groups in particular can be a powerful source of commitment, community, and support (Hale 2010). Religious and spiritual beliefs and their communities of practice can support people in making difficult choices (Randall 2009). Where do our senses of responsibility and duty

towards the world we inhabit, but also our sources of repose and restoration lie, when it comes to increased environmental stress and insecurity?

References

- Adger, W.N., Dessai, S., Goulden, M. et al. 2009 Are there social limits to adaptation to climate change? In *Climatic Change* No. 93, pp. 335–354
- Bidwell, D., Dietz, T. & Scavia, D 2013. Fostering knowledge networks for climate adaptation. In *Nature Clim Change*, Vol 3, pp. 610–611
- Bond, Patrick 2015. Can Climate Activists' 'Movement Below' Transcend Negotiators' 'Paralysis Above'? In *Journal of World-Systems Research*, Vol. 21, No. 2, pp. 250-270
- Boykoff, Maxwell T. 2008. The cultural politics of climate change discourse in UK tabloids. In *Political Geography*, Volume 27, Issue 5, pp. 549-569
- Carvalho, Anabela, van Wessel, Margit & Maesele, Pieter 2017. Communication Practices and Political Engagement with Climate Change: A Research Agenda. *Environmental Communication*, 11:1, pp. 122-135
- Doherty, Thomas J. And Clayton, Susan 2011. The Psychological impacts of Global Climate Change. In *American Psychologist*, Vol. 66, No. 4, pp. 265–276
- Feinberg, Matthew & Willer, Robb 2011. Apocalypse Soon? Dire Messages Reduce Belief in Global Warming by Contradicting Just-World Beliefs. In *Psychological science*, Vol. 22, pp. 34-8
- Fox, NJ, Alldred, P. 2020. Re-assembling climate change policy: Materialism, posthumanism, and the policy assemblage. In *Br J Sociol*, 00, pp. 1– 15
- Fraginière, A. 2016. Climate change and individual duties. In *WIREs Clim Change*, 7: 798-814
- Hale, Stephen 2010. The new politics of climate change: Why we are failing and how we will succeed. *Environmental Politics*. Vol. 19, pp. 255-275
- Hargis, Jill 2015. Hannah Arendt's turn to the self and environmental responses to climate change paralysis. In *Environmental Politics*, 25:3, pp. 475-493
- Krosnick, J.A., Holbrook, A.L., Lowe, L. et al 2006. The Origins and Consequences of democratic citizens' Policy Agendas: A Study of Popular Concern about Global Warming. In *Climatic Change* Vol. 77, pp. 7–43
- Lorenzoni, Irene & Pidgeon, Nick 2006. Public Views on Climate Change: European and USA Perspectives. In *Climatic Change*, Vol. 77, pp. 73-95
- Nerlich, Brigitte 2010. 'Climategate': Paradoxical Metaphors and Political Paralysis. In *Environmental Values*, 19: pp. 419-422
- Nisbet, M. C., & Kotcher, J. E. 2009. A Two-Step Flow of Influence?: Opinion-Leader Campaigns on Climate Change. In *Science Communication*, 30(3), pp. 328–354
- Norgaard, K. M. 2006. "We Don't Really Want to Know": Environmental Justice and Socially Organized Denial of Global Warming in Norway. In *Organization & Environment*, 19(3), pp. 347–370
- Randall, Rosemary 2009. Loss and Climate Change: The Cost of Parallel Narratives. In *Ecopsychology*, Vol. 1, No. 3, pp. 118-129
- Reser, Joseph & Swim, Janet 2011. Adapting to and Coping With the Threat and Impacts of Climate Change. *The American psychologist*, Vol. 66, No. 4, pp. 277-89
- Roser-Renouf, Connie & Maibach, Edward & Leiserowitz, Anthony & Zhao, Xiaoquan, 2014. The Genesis of Climate Change Activism: From Key Beliefs to Political Action. In *Climatic Change* 125, pp. 163-178
- Salomon, Erika & Preston, Jesse & Tannenbaum, Melanie 2017. Climate Change Helplessness and the (De)moralization of Individual Energy Behavior. In *Journal of Experimental Psychology Applied*, Vol. 23, No. 1
- Snowden, David 2019. ... from little acorns grow. Published in the *Cognitive Edge* website at . Accessed on March 2nd 2020.
- Snowden, David and Stanbridge, Peter 2004. The landscape of management: Creating the context for understanding social complexity. In *E:CO Special Double Issue*, Vol. 6 Nos. 1-2, pp. 140-148

- Snowden, David 2005. Multi-ontology sense making: a new simplicity in decision making. In *Informatics in primary care*, Vol. 13, pp. 45-54
- Spaargaren, Gert & Van Vliet, Bas 2000. Lifestyles, Consumption and the Environment : The Ecological Modernisation of Domestic Consumption. In *Environmental Politics*, Vol. 9, No. 1
- Staggenborg, Suzanne & Ogrodnik, Corinne 2015. New environmentalism and Transition Pittsburgh. In *Environmental Politics*, 24, pp. 1-19
- Stein, Eleanor 2015. Ignorance/ Denial-Fear/ Paralysis/ Engagement/ Commitment: Reflections on a Decade Teaching Climate Change Law. In *Radical Teacher*, Vol. 102, pp. 17-23
- Stokols, D., Misra, S., Runnerstrom, M., & Hipp, J. 2009. Psychology in an age of ecological crisis: from personal angst to collective action. *The American psychologist*, Vol. 64, No. 3, pp. 181-19
- Wainwright, Joel 2010. Climate Change, Capitalism, and the Challenge of Transdisciplinarity in *Annals of the Association of American Geographers*, Vol. 100, No. 4, Climate Change, pp. 983-991
- Weber, Elke & Stern, Paul 2011. Public Understanding of Climate Change in the United States. In *The American psychologist*, Vol. 66, No. 4 pp. 315-28
- Whitmarsh, Lorraine 2011. Scepticism and uncertainty about climate change: Dimensions, determinants and change over time. In *Global Environmental Change*, Volume 21, Issue 2, Pages 690-700