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Creating a Culture for Transformation

Karen O'Brien, Gail Hochachka and Irmelin Gram-Hanssen (University of Oslo, Norway)

12.1 Introduction

The Paris Agreement on climate change and the United Nations' Sustainable Development Goals can easily be interpreted as "marching orders" for societal transformations. Yet how do we transform at the rate, scale, speed and depth called for by global change research and international agreements? It has been argued that such transformations are unrealistic, unlikely or impossible, especially within a limited timeframe (Friedlingstein *et al.* 2014, Rogelj *et al.* 2016, Raftery *et al.* 2017). What are the alternatives? Some point to adaptation as a solution. However, the IPCC (2014) concluded with high confidence that *even with adaptation*, the risks of temperature increases of anywhere from 3.6°C to over 4°C over the next century, together with sea level rise and more frequent and intense extreme weather events, will lead to severe, widespread, and irreversible impacts globally. Some argue for the need to invest in geoengineering research and development, even though some technologies for solar radiation management and carbon dioxide removal have been widely criticized for introducing new risks while failing to address the root causes of climate change (Dalby 2015). These alternatives are consistent with what Milkoreit (2017) refers to as a failure of imagination to create a compelling, shared vision of an alternative future that catalyzes social transformations.

Can we imagine a *cultural transformation* that catalyzes policies and actions to meet climate and sustainability goals? How would such a transformation come about? Specifically, what factors and experiences might contribute to cultural tipping points for sustainability, i.e., a point in time where sustainability is prioritized, promoted, and more importantly, embodied in everyday life? In other words, how can culture be harnessed for transformation, rather than serve as an impediment to change? To foster a culture that actively engages with transformations to sustainability calls for insights on cultural change.

Culture can be defined and interpreted in many ways. Benhabib (2002:3) distinguishes between the Romantic notion of *Kultur*, which represents distinct expressions of shared values, meanings, linguistic signs, and symbols, and a more egalitarian understanding that views culture as "the totality of social systems and practices of signification, representation, and symbolism that have an autonomous logic of their own, a logic separated from and not reducible to the intentions of those through whose actions and doings it emerges and is reproduced." She criticizes a reductionist approach, whereby cultures are considered clearly delineable wholes that are congruent with population groups. Rather than essentializing it and associating it with a homogenous group identity, Benhabib (2002:8) views culture as "constant creations, recreations, and negotiations of imaginary boundaries between 'we' and the 'other(s)'" that are formed through binaries based on evaluative stances, such as what is "good" and "bad" or "pure" and "impure."

In this chapter, we adopt Benhabib's (2002) broader definition of culture to explore the idea of cultural transformation. We start by discussing the notion of cultural tipping points and

exploring some of the barriers and potentials for rapid cultural change. Drawing on insights from Integral Theory, Self-Determination Theory, and Dialogical Action Theory, we examine the relationship between individual and collective change. We then describe an experiment focused on individual behavioral change and consider how it can be used to trigger awareness of the dynamics of cultural change. We present some preliminary results from a transformative learning experience, then link theoretical insights to some reflections from this experiment. We conclude by revisiting the potential for rapid cultural transformations to sustainability.

12.2 Cultural Tipping Points

Many climate change projections for the future are based on integrated assessments that focus on variables such as population growth, gross domestic product, the energy efficiency of technology, and carbon intensity of energy (Swart *et al.* 2004, Kriegler *et al.* 2012, Friedlingstein *et al.* 2014). Integrated scenarios, defined as "coherent and plausible stories, told in words and numbers, about the possible co-evolutionary pathways of combined human and environmental systems" are derived from qualitative analyses that include cultural, institutional, and value aspects of sustainability (Swart *et al.* 2004:139).

Projections and scenarios can be considered valuable tools for analysis, but they seldom include the possibility for large-scale cultural transformations. If they do, they do not elaborate on the types of social changes driving such transformations. This reflects a gap in knowledge on how such changes might occur. The IPCC Shared Socioeconomic Pathways (SSPs), for example, represent narratives of future socio-economic development generated by state-of-the-art models (van Vuuren *et al.* 2017). The SSP1 narrative of "Taking the Green Road" alludes to gradual yet pervasive shifts in development priorities that are based on increasing environmental awareness and changing attitudes, yet says little about how these changes might come about (O'Neill *et al.* 2017).

Research on social tipping points has explored the factors that may contribute to large-scale social change, including how changes in social norms influence behavior at larger scales (Nyborg *et al.* 2016). Some have explored how mathematical models from the natural sciences might be used for identifying "Early Warning Signals" to anticipate non-linear societal responses to environmental changes (Bentley *et al.* 2014). These authors found that it is difficult to apply natural-systems models, and conclude that probabilistic insights from research on collective social dynamics may be more promising. Factors such as heterogeneity, connectivity, and individual-based thresholds may be used to predict qualitative changes that cascade through social networks or systems (Bentley *et al.* 2014). Others have examined the implications of tipping points for the science-policy interface. For example, Werners *et al.* (2013) explore social and political thresholds as a relevant focus for sustainability, with an emphasis on situations where current management strategies no longer suffice to meet policy objectives and societal preferences. Turning points occur when social and political thresholds are exceeded and priorities shift (Werners *et al.* 2013).

What remains unclear, however, is how quickly cultural shifts can come about as individuals change their beliefs and attitudes. A few studies have explored this, showing that cultural shifts can be initiated by a minority, establishing new norms, rules and standards that then draw in the majority, such that change happens more broadly and rapidly. For example, Xie *et al.* (2011:1) used agent-based modelling to identify how "a prevailing majority opinion in a population can be rapidly reversed by a small fraction *p* of randomly committed agents who consistently proselytize the opposing opinion and are immune to influence." They found that when the number of committed agents exceeded a threshold of about 10%, there was a

dramatic decrease in the amount of time it took for the entire population to adopt the opinion of the committed minority. Xie *et al.* (2011) refer to the suffragette movement in the early 20th century and the Civil Rights Movement in the United States as examples where committed and inflexible minority opinions influenced the majority. More recently, Castilla-Rho *et al.* (2017) used agent-based modeling to explore the contextual factors that drive human cooperation and collective action, including monitoring and enforcement powers, social norms, and cultural values. They found that social norms about groundwater conservation shifted abruptly with small changes in cultural values, combined with monitoring and enforcement provisions. Specifically, a small number of rule followers were found to have a strong, positive and non-linear influence on group behavior (Castilla-Rho *et al.* 2017). Centola *et al.* (2018) show that theoretically expected dynamics do emerge within an empirical system of social coordination. In their experiment they found that 25% of the population represented a critical mass but acknowledged that it was not expected to be a universal value.

Taking this promising research as a starting point, below we look more closely at the role of culture as both a constraint and catalyst for transformative change. Recognizing the tensions between these two aspects of culture is important and can be useful in identifying the types of climate and social policies that support transformations to sustainability.

12.3 Culture as a Constraint

Culture is often described as a conservative characteristic of society that supports and maintains the status quo, particularly when interpreted by what Benhabib (2002) distinguishes as *Kultur*. Cultural change is considered to be particularly slow relative to socio-technical change. Indeed, while culture can be considered a property of individuals, it is carried collectively and creates its own momentum, maintained by norms, traditions, and institutions that can tolerate and dissipate the impacts of nonconforming or "radical" views, even if they are held by many individuals (Wilber 2004). Although culture is recognized as constructed and fluid, structures such as norms, traditions, rules, laws, policies, judicial precedents, protocols, institutions, and bureaucracies often perpetuate discrimination based on gender, class, ethnicity, or physical features, and they legitimate particular attitudes towards nature, resources, and non-human life. Culture thus tends to be robust to the wavering trends, currents or fashions of the day.

Cultures can be slow and "heavy" when it comes to responding to new ideas, as social structures feed on individuals' desires to conform or fit in. This desire may foster the avoidance or editing of thoughts or understandings that threaten one's sense of self-identity and social self (Wilber 2004, Swim *et al.* 2009, Norgaard 2011). Researchers have discovered a neural overlap between physical and social pain, which makes social connection and inclusion particularly important to the surviving and thriving of humans (Lieberman *et al.* 2009). The perceived weight of the structures that hold people within a particular cultural discourse tends to reproduce and privilege the mindsets or consciousness that gave rise to the structures in the first place, even when the current political and social context might otherwise encourage individuals to adopt more progressive (or regressive) perspectives (Wilber 2004). For example, Kahan *et al.* (2012:734) found that "[f]or the ordinary individual, the most consequential effect of his beliefs about climate change is likely to be on his relations with his peers."

To shift cultures requires engaging with the collective itself, including with meanings embedded in social representations (Wilber, 2004). According to Waddock (2015:259), memes or "cultural artefacts that pass from one person or group to others" are the foundations

that shape behaviors and beliefs within a culture, including attitudes towards change initiatives. Social representations, like memes, are shared assumptions and understandings about the world that are relayed into forms, such as in media, built environments, and technology, and are used to collectively make sense of the world. They include material expressions of culture such as infrastructure, images, texts, technology and information that capture and reflect a particular worldview (Swim, 2009:108). For example, a landscape with wind and solar farms may represent a culture that values sustainability, whereas oil and gas pipelines signal the values associated with a fossil-fuel based economy; both types of representations can be externally imposed on a culture. They also include the consensual understandings and operating constructs, classifications, thoughts, and ideals shared by members of a group that are produced and reproduced through everyday conversation and transactions, and through shared contexts.

Memes and social representations are not random and politically neutral. Drawing on the work of Pierre Bourdieu (2002), Stokke and Selboe (2009) discuss symbolic distinctions and representations, situating them within the context of power relations and the larger political economy. They discuss how political representation grants power to define the "official version of the social world" (Stokke and Selboe 2009:62). However, they also point to the power associated with "the agency of popular forces in appropriating and contesting symbolic representation" (Stokke and Selboe 2009:76). Just as culture can be used deliberately to maintain the status quo, it can also serve as a powerful force for social change.

12.4 Harnessing the Power of Culture

To understand how culture can serve as a catalyzing force for change, we first explore several theories that provide insights into the relationship between individual and collective change: Integral Theory, Self-Determination Theory, and Dialogical Action Theory. Our presentation represents neither an attempt to comprehensively cover what are robust, extensive theories resting upon their own canons of research, nor an attempt to limit the understanding of the complex relationship between individuals and groups to this particular selection of theories. Rather, our objective is to highlight some specific insights that we consider relevant to cultural transformations, which will later be explored through an empirical case study based on an experiment with change.

12.4.1 Integral Theory

Integral Theory grew out of the transpersonal psychology and human potential movements to encompass a contemporary East-West philosophy or metatheory (Wilber 2006). Certain works in Ken Wilber's writing focus on transformation dynamics in groups, including in relation to cultural and systemic change, which is what we focus on here. Overall, Integral Theory describes the foundational dynamics of evolutionary systems as they arise in four interrelated quadrants, which correspond to four irreducible perspectives available for generating valid knowledge. These include subjective/psychological, intersubjective/cultural, objective/behavioral, and interobjective/systemic (Wilber, 1996, 2000a; 2003a; 2003b, 2006). Central to this theory is the integration of developmental psychology to clarify what is meant by transformation and to better understand the evolution of human consciousness in individuals and groups.

Drawing on research within developmental psychology, Integral Theory describes human consciousness as unfolding through stages of greater complexity across a lifespan (Kegan 1998, Torbert *et al.* 2004, Cook-Greuter 2013). Kegan (1998) considers transformation as a

developmental shift in orders of consciousness represented by the ability to take as "object" something that was formerly "subject" within one's awareness. In other words, rather than remaining subjectively immersed within a perspective (i.e., being unaware of "the water one swims in"), it is rendered visible to the conscious mind from an objective point of view. When these subject-object dynamics are studied in psychology, they refer to a central axis upon which psychological growth seems to occur (Wilber 2000).

Individual psychological transformations are important, as societal transformations are often catalyzed by individuals who develop new social practices, technologies, or wisdom from a worldview of greater complexity or depth, then communicate and share these insights (verbally and cognitively) with others (Riddell 2013:132). Social consciousness, a term that refers to "the level of explicit awareness a person has of being part of a larger whole," develops over time to embrace larger circles of care (Schlitz *et al.* 2010:21). Being aware of how one is influenced by others and how one's actions affect others can be an important catalyst for worldview transformations. When a more holistic and inclusive worldview is held by enough individuals within a particular group, it becomes meshed with the wider social milieu and creates or advocates structural and systemic changes to support it. Eventually this worldview becomes the new norm, or 'center of gravity', for a society that expresses a wide range of values. Examples of such shifts include the emergence in the 20th Century of a universalistic worldview that afforded rights to all humans regardless of color, caste, or creed (United Nations General Assembly 1948), and more recently the movement to recognize a diversity of identity-based cultures representing a range of sexuality and gender categories.

However, individual transformations in consciousness are not enough to shift cultures, nor are changes in political structures alone sufficient (e.g., the introduction of liberal democracy). The relationship between agency and structure cannot be considered directly causal in either direction, as discussed in Giddens' (1986) structuration theory. Wilber's integral approach explains how the dominant level of consciousness in a society can undermine or oppress those individuals who challenge an existing paradigm, while also pulling younger members of a population up to the culture's "center of gravity." On the one hand, this "gravitational pull" encourages young people to develop and replicate the basic norms for how people live together socially. On the other hand, this pull can stifle individuals who are critical of the cultural mainstream (Wilber 2000). This relates with the notion of a "social imaginary," defined as broadly shared ideas that are associated with social norms and produce a "massive background consensus" against which social reality is patterned and enacted (Habermas 1996:22). Von Helund and Folke (2014:254) applied this in social-ecological resilience and arrived at the idea of a social-ancestral contract that "serves as a moral attractor that assembles the social–ecological entities of the system." Such social attractors can be powerful, as they are constantly weighing on members of a society. Yet such attractors are not always consistent with notions of sustainability. Schlitz *et al.* (2010:20) suggest that "more constricted, fear-based, threat-oriented, intolerant, or narrow views of the world and a person's place in it" can also be present, arising from a different process as compared to transformations that are more inclusive and prosocial. However, whether progressive or regressive, cultures often change through shifts in the dominant social discourse.

In summarizing Wilber's integral theory of social transformation, Riddell (2013:132–133) notes that it highlights "the power of the techno-economic base in determining the average societal level of consciousness, the importance of enacting new social practices/paradigms, and the need to test and spread new political and institutional forms as consciousness develops." These are among various other insights from Integral Theory that are important to consider in understanding how to create cultures of transformation, which we summarize here and then further explain in the experiment described below, namely:

1) personal, cultural, behavioral and systems change all play an important role in cultural transformations, and understanding the dynamics and drivers of change in each of these is important for effectively catalyzing social change;

2) personal transformations orient around a shift in the subject-object perspective, whereas cultural transformations reside in shifts within the wider social discourse; and

3) harnessing the power of culture as an impetus for transformation will require helping individuals espousing and enacting progressive ideas and practices to shift the discourse within their cultural milieu.

12.4.2 Self-Determination Theory

Self-Determination Theory is an approach to human motivation and personality that investigates people's inherent growth tendencies and innate psychological needs that become the very basis for self-motivation and personal wellbeing. Though it comes from the discipline of psychology and is used in mental health work, it is relevant to social transformations, particularly when it comes to facilitating constructive social development. Ryan and Deci (2000) describe how the social context influences motivation and personal growth, moving a person towards agency or apathy. What distinguishes the indolent, passive, non-motivated tendencies found in some, from the persistent, proactive, positive tendencies found in others? These researchers distill from inductive empirical research three core needs to be met via the social context for such agency and empowerment to stabilize. These include autonomy, competence, and relatedness, which appear to be essential for optimal functioning of the natural propensities for living an active, constructive life.

Autonomy here refers to the feeling of volition or choice that can accompany any act and it points to an internally perceived locus of causality (which is quite distinct from being independent, detached, or selfish) (Ryan and Deci 2000:70). Competence refers to the quality of being adequate, sufficient, and in possession of the necessary knowledge or capacity. Relatedness – a term that comes from attachment theory – places great importance on the social context in which an action is carried out; although many actions occur individually, the relational base has been found to be central for agency and motivation (Ryan and Deci 2000).

Self-Determination Theory examines how these three needs intersect with intrinsic and extrinsic motivation, self-regulation, personality development, and so forth. Most notably in reference to sustainability, this theory emphasizes the role that social contexts play in supporting agency and intrinsic motivation for living in an active, responsible manner. Social environments facilitate or forestall, for example, intrinsic motivation by supporting versus thwarting people's innate psychological needs. Ryan and Deci (2000:73–74) describe how "contexts can yield autonomous regulation only if they are autonomy supportive, thus allowing the person to feel competent, related, and autonomous… In this sense, support for autonomy allows individuals to actively transform values into their own." Social-contextual events that lead to feelings of competence about the action being undertaken (e.g., appreciative inquiry and positive feedback) can in turn enhance intrinsic motivation for that action. In contrast, a controlling environment that emphasizes an external locus of causality (i.e. less autonomy) often leads to a loss of intrinsic motivation. A controlling teacher, for example, can produce less intrinsically-motivated students if their needs for autonomy are not met, just as a controlling social environment can undermine an individual or group's sense of autonomy and agency.

Self-Determination Theory thus describes how intrinsic motivation is more likely to flourish in contexts characterized by a sense of security and relatedness. Insights we can draw upon from this towards harnessing the power of culture for transformation include:

1) clarity into the ways in which agency, empowerment and social responsibility are underpinned by basic, universal human needs of autonomy, competence, and relatedness;

2) a nuanced understanding of how social contexts can support or thwart these needs; and

3) a psychologically-informed framework for considering the social context carefully in cultural change endeavors.

12.4.3 Dialogical Action Theory

Cultural change is not always positive, and there is a need to be critically aware of how power and politics influence the potential for transformations. In discussing the relationship between power and climate change, Manuel-Navarrete (2010) calls for critical perspectives that recognize the importance of emancipatory approaches that go beyond treating humans as objects. Being treated like an object – or in Foucauldian terms, a subject of control through governmentality – can be oppressive and alienating. Paolo Freire (1970:173) emphasizes the importance of people becoming the subjects or authors of their own lives, capable of critical reflection to name the world and transform it, rather than the objects of domination, which "maintains the oppressed in a position of 'adhesion' to a reality which seems all powerful and overwhelming, and then alienates by presenting mysterious forces to explain this power." The shift in cognitive awareness described in Integral Theory (i.e. that seeing something as "object" rather than being "subject" to it can lead to a shift in cognitive awareness) aligns with what Freire describes as naming the world in order to transform it.

Restricting or eliminating critical dialogue can lead to the replication of existing systems of oppression, such that the oppressed, when liberated, merely take on the role of oppressors. This points to the important role that dialogue and narrative play in social change, and how detrimental "echo chambers" can be when it comes to cultural change (d'Ancona 2017). Freire deconstructs the "banking model" of education where teachers deposit knowledge into students and lays the foundation for a critical pedagogy based on dialogical action. With this approach, "men and women develop their power to perceive critically the way they exist in the world with which and in which they find themselves; they come to see the world not as a static reality but as a reality in the process of transformation" (Freire 1970:12). Dialogical Action Theory supports the co-production of knowledge, recognizing that the more that people problematize the current situation and deepen their critical awareness of reality, the greater responsibility they take for that reality (Freire 1970).

Dialogic action is consistent with transformative learning, described by Mezirow (2000) as a process through which taken for granted frames of reference become more inclusive. Through active dialogue between two persons, within a group, or between a reader and author or viewer and artist, individuals can become critically reflective of established cultural norms or viewpoints and freed from distortions by power and influence (Mezirow 2000). The dialogic action approach is also conducive to what Stirling (2015) refers to as emancipatory transformations, which he suggests can be achieved through a combination of diversity, creativity, and democratic struggle. Stirling (2015:56) is critical of the way that "the roots of environmental change are increasingly located in the 'behavior' of ordinary people, rather than in the powerful vested interests that so actively constrain and condition associated

growing individualism, consumerism and materialism." Stirling (2015:67) sees the need for both knowledge and action to yield "more distributed *culturings* of radical change." Insights from dialogical action theory that may inform this "culturing" include:

> 1) the importance of dialogue in awakening critical consciousness for transformative learning and change;
>
> 2) the importance of making people subjects or authors of change, rather than treating them merely as objects to be changed; and
>
> 3) more emancipatory learning pathways involving opportunities for dialogue on "generative themes" that become the foundation of personal and social change.

12.5 Experimenting with change

To explore the power of culture in transformation processes, we present some preliminary reflections from an informal study conducted with university students after they had voluntarily participated in a facilitated change experiment. The change experiment, referred to as the cCHALLENGE[1], involved identifying one small change that could be beneficial to the environment and committing to it for 30 days. In this section, we explain the design of the change experiment and how it relates to the insights on cultural transformation described above, then describe an informal study of an experiment with change.

12.5.1 Design

The cCHALLENGE was designed as a reflexive and experiential process for transformative learning, with an emphasis on the relationships between individual change, collective change, and systems change. Based on the heuristic of the Three Spheres of Transformation (O'Brien & Sygna, 2013; O'Brien, 2018), inquiries and reflection questions are used to develop insights about behavioural changes and practical actions and how they are influenced by larger systems and structures, as well as by individual and shared beliefs, values, and worldviews. It originated as a class exercise for graduate students studying the human dimensions of global environmental change at the University of Oslo, and has been expanded through a social enterprise to reach other audiences, including secondary schools, municipalities, and the general public.[2] It includes a transformative program that highlights key features of the curriculum on transformation, including insights from the three theories discussed above (see Table 1). It also included a digital platform for sharing experiences, insights, and reflections on the process of change (cCHALLENGE 2018).

Key insights from theories of cultural change that are important for creating transformations to sustainability.	***Design components of cCHALLENGE relating with these theoretical insights***

[1] cCHALLENGE can ambiguously refers a climate challenge, a change challenge, a conscious challenge, a courageous challenge, a collaborative challenge, or a creative challenge.

[2] The social enterprise, cCHANGE focuses on the role of collaborative, creative and conscious change in responses to climate and sustainability challenges; the cCHALLENGE is used as a tool for experientially engaging with the "change" dimension of the climate challenge (cChange n.d.).

Integral Theory	• Personal, cultural, behavioral and systems change all play an important role in cultural transformations, and understanding the dynamics and drivers of change in each of these is important for effectively catalyzing social change • Personal transformations orient around a shift in the subject-object perspective, while whereas cultural transformations reside in shifts within the wider social discourse • Harnessing the power of culture as an impetus for transformation will require helping individuals espousing and enacting progressive ideas and practices to shift the discourse within their cultural milieu.	• ***Supporting dialogue and interpersonal sharing*** *to step out of echo chambers and contribute to shifts in social discourse.* • ***Creating an emergent process to support a subject-object shift*** *in individuals.* • ***Valuing the agency*** *and emancipatory potential of individuals to propose and advance novel ideas from more complex worldviews than those of the status quo.* • *Acknowledging the upstream cultural current individuals traverse to advance a novel practice or paradigm, by* ***providing small supportive sub-cultures*** *(such as, a shared website for blogs and weekly seminars) in which to experiment with new ways of being and to support the uptake of new social practices and new social norms.*
Self-Determination Theory	• Agency, empowerment, and social responsibility are underpinned by basic, universal human needs of autonomy, competence, and relatedness. • Social contexts can support or thwart these basic, universal human needs (above). • The social contexts should be tended to carefully so to include these psychologically-informed considerations of needs when engaging in cultural change endeavours.	• ***Creating an "autonomy supportive" process*** *to invite participants into their own agency and to meet their basic need for autonomy and competence.* • ***Ensuring the sub-culture / context meets the participants basic need of relatedness****.*
Dialogical Action Theory	• Dialogue is important in awakening critical consciousness for transformative learning and change. • It is important to encourage people to be subjects or authors of change, rather than treating them as objects to be changed. • More emancipatory learning pathways entail creating opportunities for dialogue on 'generative themes' that become the foundation of personal and social change.	• ***Facilitating a process of critical dialogue*** *to support greater critical consciousness.* • ***Identifying generative themes*** *for participants to explore individually and together.*

Table 1: Weaving insights from three theories of social change into the iterative design of the cCHALLENGE program.

The focus on one self-identified behavioural change as a starting point allowed students to both experience and assess change as an object, rather than as something to which they are subjected. It should be noted that there are many books, pamphlets, carbon calculators and other sources of advice and tools about small personal changes vis a vis sustainability. Some of these emphasize the importance of behavioural changes in impacting systems, and some highlight how structural incentives (such as a tax on GHG emissions) can support changing personal habits (Réquillart 2015). However, few of them account for the interactions among

the *practical*, *political*, and *personal* spheres of transformation, nor the intriguing and complex interplay between individual change and cultural change.

The cCHALLENGE invites participants to consider the interactions between the various dimensions of change processes, and provides a facilitated process for them to become more conscious about the ways that culture and social norms exert pressure on people, and about the ways that they themselves influence others. It encourages participants to examine their experiments with change in relation to larger systems (e.g., consumption, transportation, energy) and structures (e.g., social norms, institutions, rules, regulations, incentives), and to reflect on whether and how these factors facilitate or prevent individual and collective change. Participants are also encouraged to consider the role that their own beliefs and assumptions play in change processes.

12.5.2 Informal Case Study

The informal case study involved 82 undergraduate students taking the Environment and Society course in the spring of 2018 at the University of Oslo. Students who participated in the cCHALLENGE identified and committed to one change for a 30-day period. Although many students chose explicitly environmental themes, such as to reduce consumption or take new modes of transport, they were not restricted to changes that could be beneficial to the environment; some opted instead for personal changes, such as taking up meditation, embodied dance or contemplating the modern self. Over the 30 days, they wrote in a journal and were provided with a digital blog where reflections, inspiration, resources, and information could be shared with classmates in a closed group. The blog also helped to track progress and it provided a space for comments from other students. Many of them also attended a two-hour seminar each week, where they reflected together on aspects of the experiment that were easy or hard, problematizing the challenges they had taken on, and discussing the systems in which the challenge was occurring. Discussions involved first noticing or recognizing the systems that the participants found themselves embedded in, and then surfacing which habits or choices were easily accommodated and which were obstructed by these systems.

The majority of cCHALLENGE participants were committed to the program and carried it out over the 30 days. Many expressed being inspired by it and reported that even if they felt they could not sustain the full challenge they had taken on, they learned something important and useful about how change happens. The majority of participants expressed that they experienced the process of change in a new way, with some recognizing their agency and ability to impact others around them. Some reported changes that others in their family or social network took on as a result of conversations about their cCHALLENGE. Many committed to a reduced version of their challenge at the conclusion of the 30-day experiment, such as eating less meat or driving less, which would still carry an impact in society. The students also shared experiences of frustration and doubt, often in reference to the discomfort associated with challenging cultural norms. Considerations about the role of culture in supporting and hindering engagement with the challenge was central to most reflection papers.

Some preliminary results are described below and then discussed within the context of cultural transformations. Our analysis builds on participant observation carried out by two of the authors who served as seminar leaders, as well as a reading of the students' online blogs, analysis of reflection papers that were submitted by students upon completion of the experiment, and a survey conducted with a 16% sample of the class (n = 13). Students in this course ranged in age from 20-35 years old and came from different disciplines (mainly social

sciences). The class included both Norwegian and international students, primarily from Europe, North America, Latin America and Asia. Although the reflection paper was obligatory, the degree to which students engaged with the cCHALLENGE was voluntary. Participation in the seminars and blogging was also optional, and students self-selected to respond to the survey. As this was an informal, qualitative study, the following discussion is based primarily on our impressions as participant-observers of the experiment, the student reflection papers, and the students' responses in classroom discussions and in surveys.

12.6 Results and discussion

We have organized the results according to four key themes that emerged from the participants' experience, and we present some quotes to illustrate the findings. We also discuss how the themes correspond to the theoretical insights presented above.

12.6.1 To challenge oneself is to challenge one's culture, and vice versa

Students reported that in challenging themselves, they also challenged their very culture. This was perceived as difficult, especially when confronted with differing norms and values from family and friends. However, many students found value in being able to step outside their own cultural milieu and view it in a new way:

> At home with the family, who live in the countryside, I experienced a bigger barrier connected to the challenge and felt like I was breaking with several norms when I talked about the purpose of the challenge and ate my vegetarian food next to their meat dishes. …I had to step outside of my own food culture and look at it from the outside with new eyes…this gave me more self-awareness. (Translated from Norwegian) (Student M, vegetarian diet)

For this particular student, looking at her and her family's food consumption habits as if she were an outside observer allowed her to view her culture from a different perspective. This corresponds with the subject-object shift that Integral Theory considers central to personal transformation. While on the one hand the student challenged her surrounding culture, on the other hand she too was reciprocally challenged to take a new perspective of herself within her culture.

While challenging cultural norms was perceived as uncomfortable by most, some found it thrilling to discover that a simple behavioural change could have such impact:

> Through the 30-day challenge, I learned to stand up for myself. As I was called both naive, idealistic, boring and 'that lady' when I…gave 11 single potatoes without a bag to the person behind the register. It is a social challenge to stand out, and at the same time show pride, no matter what norm you are taking a stand from. (Student N, no plastic bags)

This student reflected on how standing up for her challenge, even when ridiculed, is linked to standing up for herself as a human being. This relates to Self-Determination Theory, which recognizes the needs of autonomy and competence as underpinnings for agency,

empowerment and social responsibility. When changes are linked to feelings of identity and agency, it is often easier to maintain behavioral changes and more likely to influence other actions.

12.6.2 Agency is contagious, through both action and dialogue

Students reported insights on how small individual actions can create social ripple effects. As one survey respondent said, "I could see that people were thinking about their food-choices just because they saw what I was eating for lunch or just because they knew about my challenge" (Survey Respondent A, vegan/vegetarian, 2018). Most students who made this observation were positively surprised by how their challenge had inspired others:

> I told my family about the challenge, and they immediately wanted to participate in their own way. My father decided to meditate every day, my sister wanted to learn new gymnastics tricks, and one of my brothers decided to try getting up earlier in the morning to have more time to wake up before school…We also started a shared challenge for them all; recycling. I found four different buckets, and placed them in the kitchen. Then I labelled them 'glass', 'food waste', 'paper', 'plastic', and 'other rubbish', and told them how to use them. Two weeks later I came back, and they were recycling their heads off! This proves my previous point about planting an idea, and watching it grow in someone else's head. The influence one can have on other people. (Student O, recycling)

This influence on others often occurred through dialogue. Students encountered that in talking about their new practices, as well as the ideas and values that such actions were rooted in, they opened the possibility space for others to consider changing as well.

> Friends who earlier had a negative view on vegans or thought that it only meant eating lettuce, have become positively surprised when I shared my experiences with them. During my cChallenge, several friends have chosen beans instead of beef in their tacos and even dared to taste a vegan burger. I definitely think that the more you talk about it, the bigger it gets… (Translated from Norwegian) (Student P, vegan diet)

> A key insight of my cChallenge [was that] I had to get into conversations with other people. We often tend to believe that…as an individual [one] does not have a chance to change something. This might be true if we do not convince other people of what we are believing in. To convince other people of your own beliefs, one also has to give other people the space to come to their own conclusion; this I believe is the way of making a long-term impact. (Student Q, biking)

This interpersonal sharing is an important part of the cCHALLENGE, allowing participants to contribute to shifting the social discourse. In Integral Theory, changing the dominant mode of discourse of a social group is a key to cultural change. What is talked about -- and the way that it is talked about -- influences social perceptions regarding what is socially condoned, acceptable, and even possible. It is through

dialogue that new ideas are absorbed into the mainstream. Ideas that previously may have been regarded as "outliers" with the current social discourse become normalized.

Consistent with Dialogical Action Theory, the students underscored the importance of fostering critical awareness of social challenges, and the significance of transformative learning:

> I have come to realize how crucial the constant awareness of climate change is to create necessary change to reduce global warming. Creating awareness around the issue of climate change can be done through challenges such as the cChallenge, but simply through conversation as well. Throughout the thirty days that have passed, I have noticed how spreading the word to the people around me has affected them to act more environmental friendly. (Student R, walking)

> In encountering [my] family [with my challenge], I also became aware of how my actions, to eat vegetarian for 30 days, influenced others. For instance, my climate challenge quickly became a discussion topic without my initiation, both during dinner with my parents and when I visited my brother and his family. (Student M, vegetarian diet)

Some students also stressed the importance of reflecting on one's own autonomy in the face of a seemingly immense task. Breaking down that immensity to one single, tangible behavioural change helped participants to feel that they had gained some insights on the process of change. They also spoke of the importance of relating with others, both to be seen and to be held to account for the challenge they had taken on. As one survey respondent explained:

> Creating an environment that allows inspiration and motivation is the key. Group meetings and 'peer pressure' so to say [were helpful]. [It] would be harder to accomplish if one was doing it alone on its own accord. Also having something more tangible like the cChallenge to start the process of change is immensely helpful, a metaphorical kick in the butt. (Survey Respondent B, 2018).

Self-Determination Theory emphasizes the importance of meeting the basic human needs of autonomy and relatedness in sustaining changes in habits. The seminar leaders facilitated a supportive process within the class structure to help students meet their basic need for autonomy and competence. They did this by inviting participants to explore their own agency and by providing positive feedback. One survey respondent reflected that "I was very inspired; particularly for [the seminar leaders] that gave me so much encouragement to continue. [I felt] a sense of togetherness in a changing time" (Survey respondent C, 2018).

Other students also reflected on this sense of togetherness, and particularly on the value of hearing about the difficulties other students had met and overcome with regards to their challenge. This gave them increased confidence in meeting their own challenges, or even in

taking on new ones. One survey respondent described "I found it inspiring to hear from other students about their challenges; it made me think about how I can improve my own behaviour towards their topics" (Survey respondent D, 2018).

12.6.3 The role of a small supportive sub-culture in which to experiment

Many participants emphasized how important a safe, supportive subculture was to try out their new practice:

> The culture outside of [the] classroom made me feel less empowered, obsessive maybe, and kind of crazy, to try and change my habits when the structure and system in society still is the way it is (I was trying to cut out all plastic). The culture in the classroom made me feel empowered and hopeful of the future, because a lot of young people were willing to change and feel the need for protecting the environment. (Survey Respondent E, 2018)

Underscoring the importance of group support, student F noted, "You need help; from the people in your surrounding[s] and by society." Several survey respondents described the inspiration derived from witnessing how others undertook their challenges, such as respondent H: "[I realized I] could seek inspiration from reading others blogs," and respondent E: "It was very inspiring discussing with classmates; without doing that, cChallenge would be much harder." Others reflected on how their ability to step outside their cultural comfort zones was aided by the educational setting where other students and educators provided encouragement and support.

> The most important outcome of the challenge was nevertheless how a new topic was introduced in my life. I consider myself as environmentally friendly, with a role in social settings who might [disrupt things] as 'that lady' that has something to say about sustainability. [And yet] leaving [my] comfort zone through the cChallenge and…taking a stand [to] some aspect of the actual reality we live in, was overwhelming. [I became aware of] how we are set in socially constructed trajectories, and the absence of willingness to [engage] transformation. (Student N, no plastic bags)

During the 30-day experiment, many students encountered how "locked-in" systems and worldviews influenced their own individual choices. Survey respondents reflected on, "how difficult it is for an individual to change a system" (Survey respondent H, 2018) and "how it can be very hard to 'move against the tide' of the given norm" (Survey respondent I, 2018). Importantly, some students reported that getting other people to join their challenge was a supportive factor in sticking with it. In the quote below, one student reflects on how this is not only about finding other people with similar worldviews or mindsets; it also relates to the (cultural) systems governing certain behaviors:

> Change is hard when you're doing it alone. All of us as individuals will have to do major and minor changes in our everyday lives, but perhaps it will be easier if

> individually making environmentally friendly changes isn't clashing with the bigger systems and structures. (Student S, spending an hour outside every day)

A survey respondent summed this up with the statement simply put: "Creating a sense of group affiliation that facilitates change is important." (Survey respondent F, 2018). Integral Theory supports this finding, recognizing how hard it can be to go against the cultural current to advance a novel practice or a new paradigm, and acknowledging the importance of small supportive sub-cultures in which to experiment with new ways of being. The shared website for blogging and the weekly seminars provided this subculture, and the students clearly noted the importance of such a social haven, where they would be sheltered from strange looks, overt challenges, or possible ridicule. This allowed them to metaphorically flex their wings like newly fledging birds before flying into the wider culture.

12.6.4 Culture has a gravitational pull

Culture can pull individuals in different directions. It can restrain and discourage the thought-leaders who attempt to promote new ideas, just as it can inspire and challenge those who are resistant to progressive change. Some students reflected that one of the most challenging parts of this experiment was managing other's reactions to their choices, especially when these "others" were people close to them. Learning how to navigate the subtleties of cultural norms and relations in a skillful, compassionate way is part of the transformation process. The following quote reflects the push and pull of culture and social relations, pointing to the sensitivity with which one has to go about implementing change:

> When it comes to other's reactions to my choice of becoming vegan, this has been the most challenging part… The most uncomfortable part has been situations when I have turned down good food made with love by the people I care about the most. For instance, my mom made waffles for the whole family, that I didn't eat, and my father came to my room when I was studying and brought me a cup of hot cocoa, which I had to turn down. These situations show that each individual does not live in a vacuum, but that we all make up a part of a collective that we care about and have to relate to… At the same time, it is exactly my relationship to the rest of the world that inspires me to become vegan." (Student V, vegan diet) (Translated from Norwegian)

New ideas may at first provoke resistance, but they can eventually introduce people to new ways of being and new ways of doing. This quote shows the possibility for meeting others halfway, navigating cultural norms and assumptions within a concrete social setting:

> Telling my parents about the challenge gained a lot of questions about 'why?' I explained about the environment and how our diet has an impact on it and they disagreed. It became clear that they saw our world as [a] playground with separate enclosures and Norway [as] a small contributor to pollution. Clearing oneself of responsibility and handing out guilt to others is not typical of my family alone but is a part of how many Norwegians compare and measure instead of changing.

> They understood the experimental part of the challenge, but probably not the [reason] why. To my surprise they agreed to engage in a vegetarian meal every Monday for the four-week period and it felt like a small victory on behalf of the world. (Student T, vegetarian diet)

In other cases, students found that they downplayed or suspended their challenge out of regard for another person's background or out of respect for their worldview. The following quote speaks to the power of the social domain to inhibit experiments with changes that challenge "social imaginaries," social-ancestral contracts, or the moral attractors:

> During the cChallenge I caught myself not wanting to challenge my grandparents and instead chose not to tell them about the experiment. This led to me eating different dishes with dairy. I also did this when I had dinner with others, because I didn't want to feel like a burden. With my grandparents, however, there was an extra factor present because I didn't want to end up in a discussion with them, since I knew that they would think the whole experiment was stupid. This is because we have grown up with different traditions and opinions. My grandparents grew up on a farm and beef and dairy was a much more important part of their diet than it is in mine. They have more of a traditional worldview than me. (Translated from Norwegian) (Student U, vegan diet)

Overall, many students experienced a tension between expanding their circle of care to embrace more people and species in response to larger global issues and inadvertently offending or hurting people in their immediate social sphere of family and friends.

12.6.5 Discussion

Drawing on the key insights from the experiment, woven with the insights from the three theories we have raised here, we now summarize our findings on some potential ways that experiential approaches can catalyze change. First, the cCHALLENGE experiment provided an opportunity for participants to feel an enhanced sense of agency and empowerment. This is often accompanied by an awareness of the cultural and institutional systems and structures that support certain behaviours and limit others. Second, the cCHALLENGE introduced a process whereby people could recognize their immense potential as individuals to enact change through the various networks and relations formed with others, as well as their ability to impact the institutions of which they are a part. This relationship between the individual and the collective is forged through dialogue and interpersonal connection. Third, the cCHALLENGE provided a process in which participants became aware of their own assumptions and understandings of change. No matter how small and brief the experiment, participants gained experiential insights on the challenges and possibilities for social change, while at the same time remaining humble to the challenge ahead. Fourth, the collective reflection and sharing of both successes and failures was key for turning the experiment from a novel experience into new and operationalized knowledge about how social change can happen, including how being part of a small subculture and experimenting with new practices can be a helpful conduit for shifting individual behavioural changes into the wider social and cultural context.

Turning to further implications of this experiment for other change efforts, it becomes apparent that an understanding of *how culture actually changes* is often a missing piece in discussions of transformation, particularly in the development of future emissions scenarios. Some approaches to cultural change use the cultural substrate as a means of informing, inspiring, and engaging people with climate change and sustainability issues. While this has some important aspects to it, such an approach tends to be top-down, considering people as "objects" to be transformed, even in participatory approaches that include stakeholders and interest groups. As a result, it can only go so far in actually fostering cultural change (Stirling 2015). An alternative approach to cultural transformations, as described in this paper, focuses on people as the *subjects of transformation*. This involves seeing people as creative agents who are capable of working collectively to shift systems to achieve shared goals, transforming not only themselves and their carbon footprints, but also entrenched economic systems and power relations—not just individually, but collectively through social movements (Brand 2016).

The difference between "changing people" versus recognizing "people as change-makers" represents two contrasting views of cultural change. It also leads to very different conclusions regarding cultural tipping points. In the former, cultural transformations emanate from an elite group that imposes its visions and solutions for sustainability onto "the masses," whereas with the latter, every person is seen as a potential agent of change with the capacity to shift systems and cultures (Sharma 2017). Freire (1970) described the former approach as cultural invasion and the latter as cultural synthesis, recognizing that all cultural actions serve either domination or liberation and create dialectical relations of permanence and change. Building on this distinction with theoretical and practical examples from a short-term change experiment carried out by university students, this section has discussed some important dynamics on how to reckon with and release the power of culture in transformations to sustainability.

12.7 Conclusion

In this chapter, we have shown how deliberately experimenting with change has the potential to support the emergence of cultural tipping points, particularly if it is carried out in a supportive setting that takes into consideration lessons from cognitive and developmental sciences. To fully understand and evaluate the potential and limits of experiments such as the cCHALLENGE, more in-depth follow-up studies will be necessary. Regardless of whether a change experiment materializes in sustained action over time or not, promoting a deeper understanding of and engagement with the cultural field can help support transformations to sustainability. Situating the individual as a change-maker is an important starting point for generating solutions to the climate change challenge.

There may be implications of this work for climate change engagement efforts, which we recommend as areas of further study. As one example, in the face of climate change, this informal study suggests that what may be more important is to find ways to help people manage new practices and a new worldview within their existing cultural frames. This help could come in the form of dialogue-supporting public spaces or political processes in which citizens can explore how the climate challenge relates to their own lives and those of others. Researchers and practitioners alike have a unique responsibility to not only inform but to facilitate such processes, paying attention to their own assumptions about what transformation involves. This calls for less "control" and more guidance and support to allow new perspectives and emotions to find a home within a larger, culturally-influenced landscape.

Climate change introduces a complex emotional terrain that many are struggling to manage, both individually and culturally (Head 2016). Managing dissonance, grief, fear, and uncertainty takes energy that could be transmuted into agency and action that transforms the social discourse. Discussing the deeper cultural shifts needed for systemic transformations to sustainability, Gerst *et al.* (2013:131) remark that, "The social agency for fostering such a systemic shift seems not yet on the world stage; indeed, it is difficult to imagine a Great Transition without the emergence of a vast cultural and political citizens' movement for one." As we have argued in this paper, activating individual and collective agency can be a powerful lever for social change, and a potent way to generate the cultural tipping points needed to realize transformations to sustainability.

References

Benhabib, S. 2002. *The claims of culture: equality and diversity in the global era*. Princeton, N.J: Princeton University Press.

Bentley, R. A., Maddison, E. J., Ranner, P. H., Bissell, J., Caiado, C. C. S., Bhatanacharoen, P., Clark, T., Botha, M., Akinbami, F., Hollow, M., Michie, R., Huntley, B., Curtis, S. E., and Garnett, P. 2014. Social tipping points and Earth systems dynamics. *Frontiers in Environmental Science*, 2 (35), 1–7.

Bourdieu, P. 2002. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Brand, U. 2016. How to get out of the multiple crisis? Contours of a critical theory of social-ecological transformation. *Environmental Values*, 25 (5), 503–525.

Castilla-Rho, J. C., Rojas, R., Andersen, M. S., Holley, C., and Mariethoz, G. 2017. Social tipping points in global groundwater management. *Nature Human Behaviour*, 1 (9), 640–649.

cCHALLENGE, 2018. *HOME* [online]. cCHALLENGE. Available from: https://www.cchallenge.no/ [Accessed 7 Aug 2018].

cChange, n.d. *cCHANGE* [online]. Available from: https://cchange.no/about/ [Accessed 10 Jul 2018].

Centola, D., Becker, J., Brackbill, D., and Baronchelli, A. 2018. Experimental evidence for tipping points in social convention. *Science*, 360 (6393), 1116–1119.

Cook-Greuter, S. R. 2013. Nine levels of increasing embrace in ego development: A full-spectrum theory of vertical growth and meaning making., 36 (7), 275–281.

Dalby, S. 2015. Geoengineering: The next era of geopolitics? *Geography Compass*, 9 (4), 190–201.

d'Ancona, M. 2017. *Post-Truth: The New War on Truth and How to Fight Back*. 1 Edition. London: Ebury Press.

Freire, P. 1970. *Pedagogy of the oppressed*. New York: Herder and Herder.

Friedlingstein, P., Andrew, R. M., Rogelj, J., Peters, G. P., Canadell, J. G., Knutti, R., Luderer, G., Raupach, M. R., Schaeffer, M., van Vuuren, D. P., and Le Quéré, C. 2014. Persistent growth of CO2 emissions and implications for reaching climate targets. *Nature Geoscience*, 7 (10), 709–715.

Gerst, M. D., Raskin, P. D., and Rockström, J. 2013. Contours of a Resilient Global Future. *Sustainability*, 6 (1), 123–135.

Giddens, A. 1986. *The Constitution of Society: Outline of the Theory of Structuration*. Reprint edition. Berkeley: University of California Press.

Habermas, J. 1996. *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*. Cambridge: Polity Press.

Head, L. 2016. *Hope and Grief in the Anthropocene: Re-conceptualising human–nature relations*. New York, NY: Routledge.

IPCC, 2014. *Climate Change 2014: Synthesis Report of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge UK and New York, USA.

Kahan, D. M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L. L., Braman, D., and Mandel, G., 2012. The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*, 2 (10), 732–735.

Kegan, R. 1998. *In Over Our Heads: The Mental Demands of Modern Life* [online]. Boston, MA: Harvard University Press. Available from: http://www.hup.harvard.edu/catalog.php?isbn=9780674445888 [Accessed 24 Feb 2017].

Kriegler, E., O'Neill, B. C., Hallegatte, S., Kram, T., Lempert, R. J., Moss, R. H., and Wilbanks, T. 2012. The need for and use of socio-economic scenarios for climate change analysis: A new approach based on shared socio-economic pathways. *Global Environmental Change*, 22 (4), 807–822.

Lieberman, M. D. and Eisenberger, N. I. 2009. Pains and pleasures of social life. *Science*, 323 (5851), 891–891.

Manuel-Navarrete, D. 2010. Power, realism, and the ideal of human emancipation in a climate of change. *Wiley Interdisciplinary Reviews: Climate Change*, 1 (6), 781–785.

Mezirow, J., 2000. Learning to think like an adult. *Learning as transformation: Critical perspectives on a theory in progress*, 3–33.

Milkoreit, M. 2017. Imaginary politics: Climate change and making the future. *Elementa Science of the Anthroposcene* [online], 5 (62). Available from: https://www.elementascience.org/article/10.1525/elementa.249/ [Accessed 20 Feb 2018].

Norgaard, K. M. 2011. *Living in Denial: Climate Change, Emotions, and Everyday Life*. Cambridge, Mass: The MIT Press.

Nyborg, K., Anderies, J. M., Dannenberg, A., Lindahl, T., Schill, C., Schlüter, M., Adger, W. N., Arrow, K. J., Barrett, S., Carpenter, S., Chapin III, F. S., Crépin, A.-S., Daily, G., Ehrlich, P., Folke, C., Jager, W., Kautsky, N., Levin, S. A., Madsen, O. J., Polasky, S., Scheffer, M., Walker, B., Weber, E. U., Wilen, J., Xepapadeas, A., and de Zeeuw, A. 2016. Social norms as solutions. *Science*, 354 (6308), 42–43.

O'Brien, K. 2018. Is the 1.5°C target possible? Exploring the three spheres of transformation. *Current Opinion in Environmental Sustainability*, 31, 153–160.

O'Brien, K. and Sygna, L. 2013. Responding to climate change: The three spheres of transformation. *In*: *Proceedings of Transformation in a Changing Climate*. Oslo, Norway: University of Oslo, 16–23.

O'Neill, B. C., Kriegler, E., Ebi, K. L., Kemp-Benedict, E., Riahi, K., Rothman, D. S., van Ruijven, B. J., van Vuuren, D. P., Birkmann, J., Kok, K., Levy, M., and Solecki, W. 2017. The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century. *Global Environmental Change*, 42, 169–180.

Raftery, A. E., Zimmer, A., Frierson, D. M. W., Startz, R., and Liu, P. 2017. Less than 2 °C warming by 2100 unlikely. *Nature Climate Change* [online], advance online publication. Available from: http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate3352.html?foxtrotcallback=true [Accessed 16 Aug 2017].

Réquillart, V. 2015. Small changes in diet can make a big difference to greenhouse gas emissions. *The Economist* [online]. Available from: https://www.economist.com/free-exchange/2015/11/26/small-changes-in-diet-can-make-a-big-difference-to-greenhouse-gas-emissions [Accessed 30 May 2018].

Riddell, D. 2013. Bring on the re/evolution: Integral theory and the challenges of social transformation and sustainability. *Journal of Integral Theory and Practice*, 8 (3/4), 126–145.

Rogelj, J., den Elzen, M., Höhne, N., Fransen, T., Fekete, H., Winkler, H., Schaeffer, R., Sha, F., Riahi, K., and Meinshausen, M. 2016. Paris Agreement climate proposals need a boost to keep warming well below 2 °C. *Nature*, 534 (7609), 631–639.

Ryan, R. M. and Deci, E. L. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55 (1), 68.

Schlitz, M. M., Vieten, C., and Miller, E. M. 2010. Worldview transformation and the development of social consciousness. *Journal of Consciousness Studies*, 17 (7–8), 18–36.

Sharma, M. 2017. *Radical Transformational Leadership: Strategic Action for Change Agents*. North Atlantic Books.

Stirling, A. 2015. Emancipating transformations: From controlling 'the transition' to culturing plural radical progress. *In*: *The Politics of Green Transformations.* London: Earthscan, 54–67.

Stokke, K. and Selboe, E. 2009. Symbolic Representation as Political Practice. *In*: Törnquist, O., Webster, N., and Stokke, eds. *Rethinking Popular Representation*. London: Palgrave Macmillan UK, 20.

Swart, R. J., Raskin, P., and Robinson, J. 2004. The problem of the future: Sustainability science and scenario analysis. *Global Environmental Change*, 14 (2), 137–146.

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., Stern, P., and Weber, E. 2009. Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. *American Psychological Association, Washington* [online]. Available from: http://www.apa.org/science/about/publications/climate-change.pdf [Accessed 16 Mar 2017].

Torbert, B., Fisher, D., and Rooke, D. 2004. *Action Inquiry: The Secret of Timely and Transforming Leadership*. San Francisco, CA: Berrett-Koehler Publishers.

United Nations General Assembly, 1948. Universal declaration of human rights.

van Vuuren, D. P., Riahi, K., Calvin, K., Dellink, R., Emmerling, J., Fujimori, S., Kc, S., Kriegler, E., and O'Neill, B. 2017. The Shared Socio-economic Pathways: Trajectories for human development and global environmental change. *Global Environmental Change*, 42, 148–152.

von Heland, J. and Folke, C. 2014. A social contract with the ancestors—Culture and ecosystem services in southern Madagascar. *Global Environmental Change*, 24, 251–264.

Waddock, S. 2015. Reflections: Intellectual shamans, sensemaking, and memes in large system change. *Journal of Change Management*, 15 (4), 259–273.

Werners, S. E., Pfenninger, S., van Slobbe, E., Haasnoot, M., Kwakkel, J. H., and Swart, R. J. 2013. Thresholds, tipping and turning points for sustainability under climate change. *Current Opinion in Environmental Sustainability*, 5 (3–4), 334–340.

Wilber, K. 2000. *Integral Psychology: Consciousness, Spirit, Psychology, Therapy*. Boston: Shambhala.

Wilber, K. 2004. Excerpt D. The Look of a Feeling: The Importance of Post/Structuralism. [online]. Available from: http://www.kenwilber.com/Writings/PDF/excerptD_KOSMOS_2004.pdf [Accessed 24 Feb 2017].

Wilber, K. 2006. Introduction to the Integral Approach (and the AQAL Map). [online]. Available from: http://www.kenwilber.com/Writings/PDF/IntroductiontotheIntegralApproach_GENERAL_2005_NN.pdf [Accessed 30 Oct 2016].

Xie, J., Sreenivasan, S., Korniss, G., Zhang, W., Lim, C., and Szymanski, B. K. 2011. Social consensus through the influence of committed minorities. *Physical Review E*, 84 (1), 011130.