Future Tense: Alternative Futures as a Design Method for Sustainability Transitions

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Abstract: The limits of the modern lifestyle have been well established. What comes next? Design lacks a collective vision, or set of aspirational futures, to work towards. Increasing evidence suggests the transition towards a sustainable society must consist of sustainable lifestyles, designed and owned by individual people and communities. This research builds upon a set of lifestyle scenarios set in the year 2050, derived from the SPREAD 2050 and EUInnovatE projects, in order to explore the use of speculative methods to enable designers and future citizen-designers to reflect upon their practices and enact more radical change. The authors developed design workshops to examine the potential of speculative design applied in practice as a tool for systems change. The results have shown promise as a method for influencing a change in mindset amongst designers, and suggest opportunities for future research investigating how artefacts of change can create pathways towards a sustainable society.

Keywords: Sustainable lifestyles scenarios, Speculative design, Alternative futures, Systems change, Values-led practice

1. Introduction

The notion of the Anthropocene argues that “Earth’s most recent geologic time period has been human-influenced, or anthropogenic” (Crutzen, 2006). This is based on overwhelming global evidence that earth system processes are now unequivocally altered by humans — a diagnosis which serves as an urgent call to action to change the way we live.

Hence, innovation for the next society must tackle the transformative changes needed to achieve sustainability. Design must consider new systems that extend beyond the triple bottom line (Elkington, 2004) to address new governance structures, social systems and societal paradigms.

The definition of sustainability, still widely used today, was set nearly three decades ago as “development that meets the needs of the present without compromising the ability of future generations” (Brundtland et al., 1987).

Reaching the current sustainable development goals implies that the modern urban lifestyle will need to reduce consumption by ten times (Charter & Tischner, 2001). Sustainable design tools have met resistance in industry, and have been shown to yield only incremental improvements (Sheldrick...
This is no small feat, and will require an ambitious re-imagining of almost every aspect of the modern lifestyle (Ehrenfeld, 2008). The current context of unsustainable lifestyles and social practices has created an urgent need to develop new methods, tools and narratives (Beddington, 2010). Design can lead the effort to change society by imagining provocative artifacts, new interactions, and tools for change.

To help address these challenging holistic concepts, this research draws upon systems change, design thinking, and future studies. It explores the use of alternative futures as a method for driving more ambitious systems design in order for us all to take steps towards a better future.

2. Background

2.1 Design Methods

Manzini and Coad (2015) define our current society as being in a state of transition, a world in which everyone is constantly designing and redesigning their existence. This research is situated within this evolving context. The expert-led era of 20th century design icons has ended and user-centred design represents the first steps towards more participatory methods of design (Sanders & Stappers, 2014).

The democratisation of design brings problem-solving directly into the hands of the communities, but as yet, lacks tools for ambitious envisioning of radical change (Irwin, 2015). These communities of citizens turned innovators must cultivate a willingness to experiment in the face of ambiguity and the ability to think divergently. Tools to develop these skills are few and far between, and this is an area of opportunity for design thinking education (Hall & Bahk, 2016).

Buchanan (1992) defines design thinking as problem-solving that begins as universal in scope and can apply to any area of the human experience. Wicked problems, such as climate change or the widening gap between the rich and the poor requires a radical and systemic design approach. Futures-forward design enables thinking beyond today’s economic and social paradigms and at every level of our society. As shown in Figure 1, it is positioned as a method that begins with a collective blue sky vision that transitions towards near-term readily realisable design interventions.

![Figure 1](image)

Figure 1. Futures-forward design as a way of enabling participatory realisable research, adapted from Tonkinwise 2015.
2.2 Systemic Change

This research stems from a transitions theory of change. As defined by Rotmans, Kemp, and Van Asselt (2001), “a transition is a radical, structural change of a societal (sub)system that is the result of a co-evolution of economic, cultural, technological, ecological and institutional developments at different scale-levels.”

Socio-technical transitions are a way of understanding the different interplays between the diffusion of technological innovation and their impact on societal domains in the transition from one dynamically stable (Geels, 2011) condition to another. The literature in this emerging field focuses on sustainability transitions and has developed from evolutionary economics (Geels & Schot, 2010) through the development of the Multi-Level Perspective (Geels, 2007), a “nested multi-scaler, multi-modal hierarchy of activities” at different altitudes of a system’s structure.

![Figure 2. The multi-level perspective, adapted from Geels (2007). Used to introduce the Multi-Level Perspective as a tool for systemic reflection.](image)

Figure 2 explores the socio-technical perspective drawn from historical transitions (Geels & Schot, 2007) and the interplay between the three levels: landscape, regime and niche. The landscape is defined as the exogenous context around which other processes travel (Rip & Kemp, 1998). The regimes are the mainstream, the day-to-day ‘business as usual’; the boundary of the regime can be a sector (such as healthcare), industry (such as pharmaceuticals), domain (such as energy, food, mobility), or an organisation with a stable pattern of behaviour. The niches are networks or actors situated at the edge of the regime, where radical social and technological innovation is created or emerges (Geels & Schot, 2007).

Looking at the breakthrough of rock’n’roll (Geels, 2007), three key insights are particularly applicable in analysing the ways in which systemic change happens:

1. It challenges the myth of the hero. Breakthrough rock’n’roll came about as a coalescing of socio-cultural events and trends, as well as repeated waves of technical innovation. No single individual, not even Elvis, could have done this alone.
2. It didn’t emerge overnight, but was embedded in broader change processes at play, such as the repeated reconfiguration of different systems. Social and technical developments in the 1930s and 1940s helped set the stage for the music revolution of the 1950s.

3. Change is continuous. After its breakthrough in the 1950s, rock’n’roll continued to evolve and mature, undergoing further changes and mutations, developing new subgenres and influencing others.

This research sought to use the historical transition of rock n’ roll to inform emerging design practice, and the necessity of long-term multi-agent systemic change. While system innovation is understood as a transition of a socio-technical system to another, “primarily, but not exclusively within the context of technical innovation” (Grin, Rotmans & Schot, 2011), social innovation is understood as innovation for social good, contributing to transitions through social practices (Edwards-Schachter, Matti, & Alcántara, 2012). The myth of the hero continues to be pervasive, and there is an increasing consensus for developing a more comprehensive view of innovation, which seeks to integrate system and social innovation into a more comprehensive understanding of systemic change (Birney, 2015).

2.3. Future Studies

As Dunne and Raby (2013) suggest, “design can allow an individual to open windows on the future in order to better understand the present.” Speculative Design is a practice focused not on solving problems, but asking “carefully crafted questions” (Dunne & Raby, 2001). In the last decade, there has been increasing interest in the intersection of design research and future studies. Future studies have provided a framework for design to speculate about possible and preferable alternative futures (Dator, 2009). These approaches are now common within design institutions, however the resulting artifacts are in effect fine art, intended for exhibition in museums and galleries. This has triggered a response of design fictions that are “part story, part material, part idea-articulating prop, part functional software” (Bleecker, 2009). These objects paint a more attainable picture of a future world, though they are not typically made with any intention of being realised.

Futures and foresight methods have long been used in business and policy-making. However, the use of foresight methods in these regimes usually falls within two categories: as a prototyping method for product-service-experience innovation explorations, or as a strategy development method. The use of foresight methods in order to develop a prospective and systemic understanding of transitions for sustainability is a new area of exploration.

The futures methods, as used in business, have been critiqued as creating an uninspiring ‘flatland’ of futures (Schultz, Crews, & Lum, 2012). Design brings much needed richness to the speculative and visionary nature of futures, and experiential scenarios expand on this through performative storytelling and diegetic props (Candy, 2010). There has been a recent movement to challenge that ‘professional futurists’ are the only ones who can tackle long-term and large-scale problems, and their tools are now used more frequently outside of business (Montgomery & Woebken, 2016). Scenarios are one tool commonly used to help expand our “possibility space” by encouraging speculation of multiple and widely varied alternative futures (Miller, 2006).

The scenarios can be used as the starting point for backcasting, a method that implies an operational plan for the interim steps required to move towards a particular future scenario. This research builds upon that and aims to understand how futures tools can be used by designers and change-agents in their everyday practices.
2.4. Scenarios for sustainable lifestyles in 2050

The “SPREAD Sustainable Lifestyles 2050” provided an ideal launchpad for this research as the scenarios included rigorous quantitative analysis, originally developed through the homonymous EU-funded project between 2011 - 2012, enhanced by qualitative insights (Leppänen et al., 2013). The scenarios assume a “sustainable lifestyle”: defined as a material footprint of 8,000 kg per annum per person, reduced from an average of 40,000 kg today (Leppänen et al., 2013). They describe four diverse future societies and the individual lifestyles that enable meeting the target footprint. The scenarios are normative of the transformation type (Börjeson et al., 2006), whereby the desired target cannot be achieved without a break in the current trends and patterns.

The development process used backcasting and Delphi methods in order to develop four scenarios (Singular Super Champions, Local Loops, Governing the Commons and Empathetic Communities) oriented around technological development (pandemic vs. endemic) and society’s governing principle (meritocratic vs. human-centric).

The SPREAD 2050 scenarios have been augmented as part of the EU-InnovatE project, in order to further explore the short and long term role of users in enabling sustainable lifestyles across Europe.

The augmented scenarios are the first to leverage the Multi-Level Perspective as a prospective tool (Verhees et al., 2015) and to evaluate the roles users play in driving change along scenario pathways towards 2050.

3. Methodology

In order to achieve ambitious change, citizen-designers require new methods that cultivate a capacity for speculation. This study aims to do this by testing the interplay between design methods such as speculative design and foresight methods such as scenario explorations, in the context of the Multi-Level Perspective systems change framework. A series of preliminary workshops designed and facilitated by the authors suggest an opportunity for extended research in the role of design methods for creating future imaginaries (Patomäki & Steger, 2010) and backcasting present actions.

4. Discussion of study

4.1 Overview of research design

The co-authors designed and facilitated a two and a half day design sprint to test these methods. There were 15 participants in total including 12 post-graduate design students and 3 professionals from the social innovation sector, selected from 46 applications. Narrative inquiry, performative inquiry, and visual arts inquiry were used to investigate the participants perceptions and attitudes towards the futures defined by the scenarios (Connelly & Clandinin, 1990). Additionally, activities were derived from varied disciplines in order to achieve a comprehensive set of learning objectives.

The first evening was convened at the exhibition ‘So you say you want a revolution?’ at the V&A Museum in London. The exhibition explored how “finished and unfinished revolutions of the late 1960s changed how we live today and how we think about the future” (“You Say You Want a Revolution”, 2016). This provided introductory stimuli and situated the workshop inquiry within historical socio-technical change processes.

Consequently, we introduced the participants to the process of socio-technical change illustrated by the breakthrough of rock’n’roll (Geels, 2007) as well as the Multi-Level Perspective framework
Following an introduction to the common methods and terms of reference, the authors used incasting, or deductive forecasting (Dator, 2002) to challenge the participants to develop the features of the scenarios based on top-level information. The participants were facilitated through an improvisation exercise, whereby small teams enacted a glimpse of what it would be like to be alive in the four different scenarios in 2050, based on a limited set of scenario information (the axes, mindset and headlines, as shown in Figure 3).

![Figure 3. The scenarios headlines and mindset participants used for the improvisation session.](image)

The teams enacted the glimpses they developed, and following a round of reflection, they then received a set of visual cues describing the different pathways to 2050, as well as the state of the world in each of the scenarios. This included a summary of each scenario as well as its shadow side and brief information regarding the wealth, health, environment, economy, governance, identity and power statuses.

This information was used as springboard for the design method the authors tested, following standard design thinking stages such as brainstorming, ideation, concept creation and prototyping. The method explicitly enabled participants to explore the types of innovation needed to move towards a sustainable society by exploring the different pathways to 2050, as well as the scenarios themselves. The dual focus on both scenarios and pathways enabled participants to test assumptions about the types of innovation needed to enable sustainable lifestyles, rather than focusing on achieving sustainability as an end state.

Participants were facilitated through reflection sessions, where they used a worksheet containing a series of questions that related the content back to their individual practice and mission as agents of change. The design sprint ended with a panel presentation, where the four teams presented their outputs to guest critics from both academia and practice.
4.2 Group Outputs

The four groups were asked to create the following outputs:

1. An artefact from the future
2. A video interaction sketch
3. A poster reinterpretation of “The Whole Earth Catalog” (Brand, 1968).

The outputs were ambitious, but were designed to accommodate varied visualisation and performative skills. The first output was inspired by Candy’s experiential futures (2010), the second output was to facilitate illustration of user interaction, and the third was in response to a display in the V&A Museum exhibition. The Whole Earth Catalog’s aim to aggregate tools for survival provoked participant reflection, and was chosen as an output as it mirrored the backcasting method with a tangible historical example of an operational plan for the future.

Table 1. Insights from design outputs on how sustainable lifestyles might materialize across the 2050 scenarios.

| Outputs implications | Direct Impacts | Indirect Impacts |
|----------------------|----------------|------------------|
| **Product-Service innovation** | SS: All-knowing high-tech augmented reality personal assistant. Data mining replaces personal identity with a personal potential fulfillment rating system. GC: Global Network Platform Cafes provide citizens with a tech-free environment to anonymously discuss community issues. EC: A mechanism for harvesting and storing kinetic energy that lends itself to solo activities such as walking or group activities such as dancing. The energy ‘recuperated’ is shared with the wider local community and marks the personal contribution towards leading a sustainable life. LL: Post-labour speculative career portal for citizens with free time to be able to align with traditional crafts guilds as a value-add leisure activity. | SS: Hyper-efficient supply chains enable smart resource management and mitigate environmental impacts while furthering growth. This does not mitigate social impacts such as potential mental health crisis, or further inequality. EC: Changes in personal behaviour and mindset of individuals leads to a shift away from consumerism towards collaborative practices of production and consumption LL: The evolving nature of work reconfigures housing and mobility, as well as patterns of energy consumption. |
| **Innovation of social structures** | GC: Dominance of ‘living life online’ shifts people’s identity, impacting how society organises and how people consume; the team’s outputs show that this might also lead to a new counter-culture which seeks to resist and escape the new relational norms. LL: The evolution of work leads to hyper local trade systems, where product-service innovations in food and consumer goods are traded between specialised loops. | GC: Perceptions of one’s identity and self change. LL: The hyper-specialised and local loops and the evolution of work towards a meaningful model suggested by the team’s output, indicate a fundamental shift in how society is organised - centralised European strategy with highly decentralised and geographically-specific implementation. |
Paradigm innovation

EC: A new paradigm of empathy emerges after a prolonged period of economic collapse and loss of trust in traditional institutions.

LL: As guilds scale-up across Europe, their stories of local self-resilience spreads. Enabled by an EU-framework, regional bio-economies become mainstream, evolving the dominant narrative of economic growth towards intrinsic, personal growth and wellbeing rooted in contextual specificity.

GC: The output teases out a new governance system at play - blockchain-based ‘wikidemocracy’, in which citizens are active participants in decision-making processes.

Three of the four scenarios present worlds in which the core set of societal beliefs has shifted towards a new paradigm beyond capitalism. Given that all scenarios present extreme possible futures, they feature shadow sides in the form of indirect impacts their most dominant features could develop. The new paradigms could trigger powerful counter-cultural movements, which reject and bypass the new cultural norms.

Interestingly, all four groups speculated a collapse event triggering societal change, in spite of the fact that not all of the scenarios predicated an actual collapse. All four prototypes explored the notion of alternative currency, suggesting that a fictional context enables the design of alternative landscapes such as the overall economic system.

4.3. Implications for the practitioner: mindset

The outputs of the different team’s prototyping processes highlight the potential of designers to create systemic impact in order to further the socio-technical transitions for sustainability. Two of the scenario outputs develop outside the status quo of the regime (in the bottom-up Empathetic Communities and Governing the Commons), while two of the scenario outputs develop as part of the mainstream culture (in the top-down Singular Super Champions and Local Loops).

Furthermore, as the innovations in governance and culture needed for transition can’t be prescribed, there’s a strong interplay between the means and ends of innovation. This extends the argument for focusing on the propensity of designers to innovate for sociotechnical change and on enabling them to foster cultural change by experimenting with it themselves. This indicates the importance of the designer’s mindset, which in turn is a composition of values, perceptions, behaviours, motives, capabilities and skills.

A shift in mindset is key to unlocking behaviours and attitudes that can enable the practice of designers to be geared towards a direction of travel towards enabling sustainable lifestyles (Meadows, 1999). In turn, the assumption that mindset change can be seen both as ends and means to unlock wider cultural shifts needed for sustainability would need further testing.

4.4. Implications for the practitioner: values

In one of the reflection sessions, the participants were asked to rank the top three values that most resonated with them (Schwartz, 1992). They were then asked to think of three examples where their actions match the values they espouse, and three examples where they don’t.

It is important to note the role that value systems play in defining mindsets. Values associated with openness affect an individual’s inclination to innovate (Thøgersen & Ölander, 2002), and they are an
important driver for sustainable lifestyles, as well as a set of values associated with ‘self-transcendence’ because they are linked with an awareness of collective problems.

Figure 4 illustrates the collective values map that evolved over the course of the workshop and revealed a high overlap between the participants’ values. This raised questions around the covert embedded nature of values in their practice as designers. One participant reflected on the potential for disconnect between the designer and the user:

“[The values mapping] was particularly interesting to contrast between the values we say we have and the values we act by. I found it interesting to see how our values mapped as a group, and was provoked by the juxtaposition between the values of the designers in the room and the fact that the people we design for may hold very different values.”

In a group discussion, participants acknowledged the fact that “although often there’s a gap between the values we espouse and the values we enact” they would “make professional decisions based on their value system” (i.e. a designer whose core value is “protecting the environment” would not work or accept commissions from fossil-fuel corporations). Another participant echoed this sentiment, “It made me think about the metrics we create for...I found [the exercise] both alarming and freeing.”

**Figure 4.** The values that recurred most during the mapping exercise are situated in the openness to change and self-transcendence super-groups. Diagram based on Schwartz, 2006.

### 4.5. Implications for scenarios as a method for enabling transformative change

Scenarios play two key functions: firstly they encourage speculation across a widely varied set of alternative futures, and secondly, they enable a backcasting approach that begins with the assumption of radical long-term change.
The assumption of a drastically changed future society enabled participants to think of change as a pathway. One participant commented, “There’s always a step between an innovation and a big change in the world.” Another participant reflected on this sentiment, concluding, “Change is incremental.”

The comprehensive nature of the scenarios was given very positive feedback. One participant commented, “for a day you live in this world, you can really immerse yourself in it.” However, others found the systemic aspect of the scenarios to be quite challenging. “I kept not really being able to understand in any tangible way what this would look like at an individual level, in a family, or a town, and then the country or a nation.” The same participant then concluded, “I realised that I had to take an active decision to monitor the size at which I look at it.” Systemic change requires the multi-prong approach of addressing a problem both from a societal perspective and an individual perspective, and the participants who found this message challenging were in fact reconciling those two perspectives.

4.6. Implications for sustainable lifestyles

The study revealed three key insights for transitioning towards a sustainable society. Firstly, evolving the social conditions of society is central to the transition to sustainability. While significant technological innovation occurs across all scenarios’ outputs, changes in the social conditions of society are vital for achieving and sustaining this very low resource consumption. Scenarios are not end states - they enable people to imagine possible future pathways, with no guarantee that onward pathways will develop in sustainable or socially just directions. As the outputs of the study reflect, scenarios can depict worlds in which levels of divisiveness, inequality and deprivation are equal to, or even worse than those of today.

Secondly, new forms of governance and finance are needed in order to enable society to achieve a sustainable, dynamically stable state. Emerging models of governance, decision-making and participation in society are needed alongside new business and finance models. This is reflected in each of the four scenario groups having designed novel currency and trade systems that underpinned the artifacts and interactions.

And finally, design is both an enabler of the transition to sustainability and a key site for innovation. A multi-pronged approach is necessary in assessing the field of design, acknowledging the potential of designing sustainable product-service ecosystems as well as designing innovative social interventions and place-based systemic design. It is hence important to acknowledge the potential of designing sustainable “things”, as well as new ways of doing.

5. Conclusions and discussion

The future tense method builds on significant prior work in futures studies, systems thinking, and critical design. The unique contribution lies in the use of future scenarios as a self-reflective tool to be applied to present day practice for designers and innovators. The two and a half day format allowed for all too often neglected reflection on current events, values, and practices. The results suggest that a structured approach towards alternative futures can help designers explore the positive and negative consequences of their actions, and analogies from rock n’ roll helped validate the long-term and continuous nature of change.

There remains a significant challenge in connecting higher-level systemic futures thinking with lower-level practical action, and the lack of confidence amongst participants in both ‘doing’ and ‘thinking’ highlighted the myth of the hero. This presents an opportunity for future research to quell the
unrealistic expectations set by icon designers: through collaborative platforms to empower (extra)ordinary citizens and educational tools for interdisciplinary teamwork for young people and industry alike. The authors plan to develop tools that translate the workshop experience into the daily design practice by transforming the scenarios into experiential learning experiences for practicing designers, innovators, and other changemakers.

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