

Essay: The remarkable similarities in emerging Design research approaches and emerging Sustainable Development approaches

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INTRODUCTION

We, today, as a global society face a multitude of challenges such as climate change, an aging population, public debt crisis and an instable economic system. Most of these challenge are addressed on an international and national level. World leaders acknowledge the immediate danger of these traits to the sustainability of our society. Take for example the Climate Agreements of Paris in 2015 where 195 countries signed their intentions to combat climate change. These agreements are unprecedented (van Raaij & Hotse Smit, 2015) and illustrate the serious intentions of the global community in overcoming these challenges. Overcoming a challenge means adaption to the situation, doing things different and thus transitions must to be made.

According to Rotmans, Kemp & van Asselt (2001) "Transitions are transformation processes in which society changes in a fundamental way over a generation or more". Governments can play a role in the development of a sustainable society. Governments could exercise Sustainable Development to bring about structural change within society. The development entails the management of "sensitivity to existing dynamics and regular adjustment of goals to overcome the conflict between long-term ambition and short-term concerns" (Rotmans, Kemp & van Asselt (2001).

A Transition involves the creation of novelty, may it be created unintentionally through emergence or on purpose through a design process. The most noticeable efforts to contribute to this transitions could be found at local levels. It is in communities, cities, towns or elsewhere new answers arise to combat the global challenges we face. These design processes for transition actively involve stakeholders, but they are relatively new in the field of Sustainable

Development. New participatory approaches in Sustainable Development involving a broad range of stakeholders, such as well-meaning citizens, started to emerge around the 90's (Rotmans et al, 2001).

Although participatory approaches are new in de field of Sustainable Development, they have a longer history in the field of Design research. Participatory design, or nowadays better known as Co-creation or Co-design, goes back to the early 70's. Furthermore, Co-design itself is seeping into the field of management of transitions. New approaches involving collective creativity of multiple stakeholders are starting to emerge, and the shift from user-centered design to co-designing is changing the landscape of the design practice. The design discipline itself has high hopes this shift will lead to more sustainable way of living (Sanders & Stappers, 2008).

This essay explores numerous approaches to Sustainable Development and Design Research. It explores two different approaches to Sustainable Development –Backcasting and Transition management –and three Design Research approaches towards/for Sustainable Development. Design processes involving stakeholders are well-established in the field of Design research. Therefore, this essay will add knowledge from the Design Research field to these two Sustainable Development approaches.

This essay is structured as follows. In section 2; a small introduction and comparison of Backcasting and Transition Management is made. Followed by an explanation why the field of Design Research is relevant to both approaches in section 3. Section 4 will explore how both fields could strengthen one-other. Section 5 will present a case and the final section this essay will concluded and present some early recommendations.

SUSTAINABLE DEVELOPMENT APPROACHES

One way to bring transitions in a society is through the management of niches in a multilevel

perspective. Niches are small groups of actors that develop novelties at the micro-level (e.g. hydro-engines) out of expectations or visions. These niches, when potent enough, will affect and/or replace overarching regimes on a meso-level. Regimes are a more diverse set of actors and normative beliefs, values and activities (e.g. combustion engines or energy in general) and they act accordingly. Regimes are affected by landscapes at the macro level. This level holds an external set of elements (e.g. deep cultural patterns, macro-political developments, natural phenomena). Landscapes are out of direct influence of niches and regimes, in fact they dictate the conditions for niches and regimes. Changes in the landscapes are transitions and often take decades (Schot and Geels, 2008).

Transition Management

One of the approaches that manage changes at the landscape level is Transition Management. It emerged in the last decade as a new approach to enable governments to set in motion a transition by pressuring the dominant reigning regimes. Transition management explores different pathways towards a long-term vision in order to act correctly on the short term. It is based on participatory learning and experimenting (Quist et al., 2010) and it enacts transitions by involving all stakeholders on the local level in planning and executing a series of projects. Lessons learned from these projects are internalized. Different pathways to the future are revisited and the stakeholders act accordingly to bring about change

Backcasting

Backcasting approaches transitions by “generating a desirable future, and then looking backwards from that future to present in to strategize and to plan how it could be achieved” (Vergragt & Quist 2011: p. 747). Backcasting is useful in complex societal problems. Its process is aimed at envisioning alternative futures and setting agendas accordingly. Backcasting in its basic form ends at the agenda setting, however additional follow-up steps could be taken. The Backcasting approach is done with a variety of stakeholders owning or affected by the problem.

Comparison

Transition Management and Backcasting do have similar objectives, but differ in some key aspects. This section will list the similarities and differences of both approaches.

Transition Management and Backcasting do have quite a lot of similarities. These similarities are listed below. Both approaches are:

1. addressing the environmental, economic and social component of sustainability;
2. considering the demand-supply chain, production and consumption systems;
3. participating on a local level with different stakeholders (Quist, 2013).

As this essay is focused on stakeholder involvement a closer look at these similarities are of importance. Regarding the stakeholders both Transition management and Backcasting are aimed at:

1. creating a shared vision of the future;
2. higher order learning by involvement of the stakeholders;
3. turning long-term visions into short-term actions and agendas;
4. addressing stakeholder commitment to results and agendas (Quist et al. 2010).

Both approaches are thus focused on stakeholders and are aimed to generate agendas valued by each stakeholder.

There are several important differences too:

- Backcasting doesn't specify if novelty should arise on niche or regime level. Transition Management implies that novelty starts at niche level and if it's potent enough it could replace the dominant regime.
- Backcasting is rooted in social systems theory. Transition Management is rooted in transition theory and is thus explicit about novelty starting at niche level.
- Backcasting is focused on delivering an inspiring future vision, analyses that vision and links that vision to certain pathways. Transition management, besides constructing the vision, is also focused on the process taken to arrive at the vision. Backcasting doesn't have this additional focus.
- Transition management tries to achieve both improvement of the current system alongside system innovation. Backcasting is merely focused on system innovation.
- Backcasting emphasizes the creation of a shared vision. Following up on that vision and its realization are less important in Backcasting. Transition Management, however, has this realization as one of its key aspects.
- Transition Management is more explicit about using experts and lead-users during participatory practices (frontrunners).
- Finally, Backcasting shows a larger methodological diversity than Transition

Management. But Transition management has a stronger more focused profile (Quist et al. 2010).

Backcasting and Transition Management are fairly similar regarding the creation of a future vision and participation of stakeholders, but the key difference is the concrete and actionable outcome of Transition Management. One could argue Backcasting is essentially one of the very first steps in the transition management process.

CO-DESIGN

Co-design is a paradigm of design that entails active involvement of stakeholders in the design process. Although co-design originates from user-centered design and therefore operates at the micro-level with local actors, a shift can be seen towards application on a higher level. Classical product design in the early 80's was tasked with designing for people as the rise of the electronic devices demanded a comprehensive interface. Over time, designers were working on larger-scale projects like healthcare systems and airports. The need to know what to design emerged from the rising complexity of the 'design space' the designers found themselves in. The late 90s spawned a great number of approaches on how to figure out what to design. Nowadays the problems we are facing are larger and more complex than ever. But connectivity among people is also larger than ever. This enables designers to work with people. This can especially be seen in the newer approaches, such as systems, service and social design (Sanders & Stappers, 2014).

Design approaches more related to Sustainable Development are starting to emerge as well. Hence, some names even coin directly towards transitions. The list below is a selection of four different emerging approaches.

- Transition design: "Transition Design focuses on the need for 'cosmopolitan localism', a lifestyle that is place-based and regional, yet global in its awareness and exchange of information and technology" (Irwin, 2015). This domain of design draws upon theory of Sustainable Development.
- Transformation design: "Transformation design is looking for new ways to change our behaviour and society through new forms of innovation. The existing user-oriented approach of design must therefore be extended to one that is society-oriented" (Jonas, Zerwas & Anshelm, 2015).
- Utopia design: Utopia design aims at designing through the creation of scenarios and systems very different from our present (Jonas, Zerwas and Anshelm, 2015).
- Social Implication Design: A design method to exploit the unique value of the artefact to counteract social problems (Tromp & Hekkert, 2014).

All these domains have two things in common; they make use of future visions about society as a starting point for the design process and draw upon systems sciences, ecology and/or behavior sciences to increase their impact. However, their

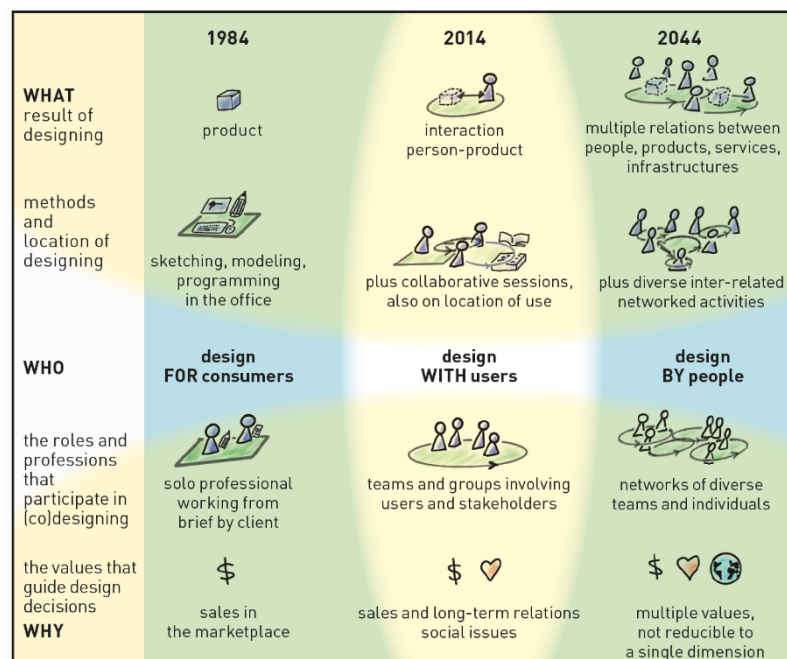


Figure 1, Graphical representation on the development of the Design field regions (Sanders and Stappers, 2014)

origin of operating is still rooted at the niche level. Lis Sanders and Pieter Jan Stappers (2008, 2014) label these domains as Co-design, designing with people.

Leaping into the future, the design field will also be actively working on large systems, such as energy infrastructures, and across multiple regions (Sanders and Stappers, 2014). Design Research will thus operate in the same context as Sustainable Development. See figure 1 for the transition of Design.

CO-DESIGN AND SUSTAINABLE DEVELOPMENT

The recent embrace of system innovation in design and participatory approaches in Sustainable Development creates an interesting dynamic between both fields. Moreover, by including participatory aspects in the field of Sustainable Development possibilities open up for collaboration between Co-design and Sustainable Development.

To get a notion of the opportunities between the fields of design research and Sustainable Development, a comparison is made. Due to the limited scope of this essay a comparison is only done with Backcasting and Transition Management for Sustainable Development and Transition Design, Transformation Design, Utopia Design and Social Implication Design for Co-design.

The similarities between Co-design and Sustainable Development are:

1. The premise to combat large scale societal issues.
2. The involvement of stakeholders in at least the problem definition and future envisioning.
3. The operational activities are mostly at micro-level, but with clear attempt to affect the regime and landscape as well.

However, clear differences are present as well:

1. The approaches origin from a different perspective: putting in motion a transition versus enabling people to behave differently.
2. Sustainable Development is inclined towards the creation of policies, goals and agendas. Co-design favours the creation of products, services and systems (creation of artefacts).
3. Sustainable Development is also operating on a regime and landscape level, whereas Co-design is mostly present in the niches.

4. Co-design has a deep understanding of how to go about participatory methods, but has little experience with system innovation.
5. Sustainable Development in its turn has a great understanding of how to set in motion a transition but has a relatively small understanding of involving stakeholders on a local level.

Clearly both fields share partly the same vision on actively involving stakeholders in transformation processes. Although the aim of the outcome regarding artefacts may be different, the overarching goal to combat great societal issues remains the same.

CASE

To combat climate change and accommodate the climate goals set by the Dutch government in 2011, the government initiated a regional project to create a smart grid heating system in the province of South Holland. This project is named "Warmterotonde". The aim is to create a network of piping connected to numerous different energy technologies in order establish a sustainable heating infrastructure ("Warmterotonde," 2016). Community, government and industry are involved. However, one important party was left out: the greenhouse industry. The greenhouse industry had already established a good business relationship with parties from the industry providing heat. Greenhouses need a tremendous amount of heat for agriculture ("Investeren in", 2015).

The lack of participation of the greenhouse industry resulted partly in a tedious attempt to get the heat industry to participate in the Warmterotonde projects, because they were protective of their partnerships with greenhouses. This could have been countered if not merely experts and lead-users were involved in the project. A participatory approach involving all relevant stakeholders is key to enacting a transition...

CONCLUSION

The timing of the emergence of participatory approaches in both Sustainable Development and design research appear to be simultaneous. Clear and distinguishable approaches in both fields emerged around 00's. The shift for Sustainable Development to include stakeholders in the process and the shift within the design research to work on large scale challenges, creates a new territory where both could benefit.

Within both fields different approaches emerge with similar premises. Although Backcasting can be regarded as a step within Transition Management, both approaches have their roots in different sciences. Respectively, transition theory and social systems theory. Co-design as an overarching domain has its roots in product development and behaviour science.

Novelty arises largely at the micro level and is therefore important for transitions. Co-design and its emerging approaches could be the bridge in enabling stakeholders to participate in the creation of transitions. Collaboration between these fields may result in a more coherent approach on all levels towards transformation processes.

Recommendations regarding the Co-design field would be to look at how to include policy making within the design process to ensure a multifaceted approach. Furthermore, the exploration on how to perform networked design by coupling different groups in different locations could benefit the overall effect on regimes.

Regarding Sustainable Development, more specifically Transition Management and Backcasting, the improvement of higher order learning by using design approaches may affect to over whole impact of the projects. Furthermore, including not just experts and lead-users (frontrunners) but 'regular folks' could improve the trustworthiness of the created problem definition and shared future vision, because this participatory practice than represent society better.

All approaches departed from different starting points, but seem to converge at a remarkably similar body of thought; the inclusion of different stakeholders to define a shared problem and envision a shared future to bring about change and to combat global issues.

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