Embracing change and supporting transitions

APPROACHES TO SYSTEMIC CHANGE
IN PRODUCTS, SERVICES AND SYSTEMS

Edited by
Stefana Broadbent and Silvia D. Ferraris

DESIGN FOR
SYSTEMIC CHANGE

FrancoAngeli
DESIGN INTERNATIONAL

Design International series

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ISBN e-book Open Access: 9788835167891

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Bracing ourselves for acceleration: a design perspective on systemic transformations

Stefana Broadbent, Silvia D. Ferraris

Design is a field in constant transformation, regularly embracing new disciplines as it extends the domains within which it operates, widening its scope of action and adopting new tools to respond to the evolving demands. One of the most impactful transformations of the last few decades was the integration of human-centred approaches into design. From human-machine interaction, ergonomics, and collaborative work, the concepts extended to service design, interaction design and design innovation ensuring that a participatory approach to project development became an integral part of the methodology of most design fields. This approach not only modified design processes of products and services, but contributed to embedding the discipline more deeply into debates about democracy, policy, social services and innovation, as reflected in current collaborations between design and the public sector. As well as driving innovation and successful commercial projects, inclusive, participatory, human-centred design has become a bedrock of democratic programmes that want to ensure the fair representation of all the stakeholders involved. However, underlying this fundamentally progressive form of design was an idea

of stability and growth. Ensuring that more and more people could access services and products was predicated for instance, on the continued lowering of the price of technologies and the resources necessary to build them. The rapid availability of most natural resources, the globalised flows of production and distribution, and the access to worldwide intangible assets such as knowledge and expertise, were a given. We could rely on a certain continuity of experience from decade to decade. Climate stability, reduction of disasters, stability of institutions and continuing betterment of services were assumed as relatively constant. Social innovation could confidently depend on growing education and the increasing empowerment of people in a world that could absorb more discerning users.

We are now faced with something completely different. A level of uncertainty that, as Bruno Latour (2017, 2018) says, is so fundamental that *we don't know where to land*. Climate change is moving humanity into unchartered territories and creating uncertainty as to the directions our physical world will take, while also raising questions about our social, economic and democratic future. As described in the ONU's Sustainable Development Goals, there are widely different kinds of issues that need to be addressed urgently: climate change and the related environmental breakdowns, such as loss of biodiversity, depletion of natural resources, rising pollution and acidification of ocean waters, etc.; social and political instability, connected to the decoupling of international economic and strategic alliances, and related consequences such as wars and migratory phenomena; rising inequality in access to food, energy, education, and well-being. The awareness of these challenges is increasing at individual, social and political levels, but the complexity and interconnectedness of problems require global, coherent, and systemic transformations that are exceptionally difficult to implement. In the past, technological developments provided a feeling of progress and possible solutions to complex issues, but today even the recent new applications of AI are providing little clarity on the form and impact they will have on society in the coming decades.

The overall outlook requires a profound reassessment of the role of the designer, which is potentially more transformative than anything we have previously experienced as a discipline. From a social

and cognitive point of view, systemic uncertainty is a radical shift with few contextual anchors; including transitions that can take opposing forms, from de-growth to extreme inequalities, from a redefinition of our relationship with nature to the depletion of some material resources. There seem to be a limited number of reference points to turn to and little support from known frameworks of behaviour of social and institutional relations. This broadens the challenges for the design disciplines that have no choice but to embrace increasingly system-shifting approaches to any project they pursue in an effort to capture some of the contextual variability and support transitions towards positive directions. It can mean different things for different design subfields, from focussing on material ecosystems to more extensive impact analysis, or the systematic inclusion of new forms of data modelling. Design has strived to embrace systemic frameworks by analyzing the complex chains of material and relational dependencies for some time, however, as suggested by the Design Council (2020), the current situation requires designers to adopt a system-shifting stance rather than a system-conscious approach:

> **[...] an important question for design is how to contribute to accelerating deliberate transition (or intentional emergence), and doing so in a just and equitable way. Meeting that challenge will require us to expand both knowledge and practice. We need to develop a better understanding of how to connect innovations and propositions at these different levels to increase the pressure and opportunity for change. That will involve new 'objects' of design – for example how to design not only the products, services and operating models that exemplify a new system, but the supporting conditions and transitional activities that help a system to shift (Design Council, 2020).**

The system-shifting approach means that systemic design is not only striving to reduce adverse effects but supporting the direction of change, an objective that is well in the nature of what it means to be a designer. One of the strongholds of design, even in the face of uncertainty, is that design should always contribute to support social transitions towards a more desirable state by creating the enabling

conditions for the integration of innovative solutions in production, infrastructure, governance and practice.

This volume presents a wide and diverse range of theoretical, practical, and experimental methodological approaches that characterise a selection of the works emerging in the last few years from the Department of Design of Politecnico di Milano and that demonstrate the collective effort being made to address the incredible variety of the transitions we are facing. The complexity of the challenges, and the systemic approaches needed to address them, mean that the efforts can only be collective and multidisciplinary. No single project or single design group can take on board the demands of situations as complex as the transformation of food systems, mobility, health provision or energy transition. Collectively, however, each project can contribute to creating elements which become components of innovation that in turn can be mobilised by other systems; those *supporting conditions and transitional activities that help a system to shift*, as put forward by the Design Council. This is what we characterise as an example of collective intelligence. The basic principle of collective intelligence is in fact, to harness multiple perspectives, voices and contributions which can jointly contribute to make progress in complex domains where there are few established solutions. At the core there is a recognition that we need an ever-expanding set of expertise and lived experiences to understand phenomena but also to find appropriate solutions. The topics presented in the following chapters cover a range of design fields and hopefully show the complementarity among the research programmes and the increasing collaboration with new disciplines and methodologies.

In the field of interaction design for instance, we cannot understand what's happening in the digital world without taking into account the economic, professional, political and environmental precariousness that defines most of today's experiences. For the majority of users, online activities are based on an attempt to regain forms of control over social space, information flows and the physical environment. In this context, the opacity of algorithmic processing in a growing number of platforms and systems used by the public, reduces the feeling of agency, and therefore gives rise to fears and refusals. In particular, the profiling of individuals, which leads to the selective

presentation of information, is seen as a precursor to more serious forms of categorization that can make interactions with institutions, services or systems even more arbitrary. In this sense, the chapter by *Pillan and Ruina* whose analysis of the changing work experience puts a focus on the growing sense of precariousness workers are feeling, and calls for an ethics of well-being. On the other hand, by offering tools for predicting and analysing huge quantities of data, AI reinforces the sense of mastery and the potential for controlling the growing complexity of our world. The tension that introduces artificial intelligence, therefore, revolves around the sense of mastery and control, a tension deeply felt in the design community which is wondering how to integrate this technology without being swept away by it. The chapter by *Buratti* which proposes how to integrate AI in design processes is an attempt to harness these technologies for empowering designers. In her chapter on feminist approaches to AI, *Broadbent* also presents radical examples of AI development that are local, distributed, and driven by participation. *Colombo and Benedetti* provide an innovative take on how data can be used in participatory processes for urban regeneration; while *Andreoni and Casartelli* propose an integration of the results of neuroscience in the design process. Indeed, in the tradition of STS (Science and Technology Studies), technological development is critically examined in order to counter the deterministic positions that consider the current solutions to be the only possible routes of development and suggesting ways that would ensure that the development of artificial intelligence, for instance, could become an integral part of system-shifting design.

In the field of product and service design, tools and methods such as design thinking, envisioning, codesign, storytelling, that were adopted by other disciplines attempting to tackle complex and wicked problems, had a significant impact on business strategies and business development (Brown, 2009; Cross, 2006; Verganti, 2009) as shown by *Carella, Zurlo and Grönfeldt's* chapter. In this perspective, adopting a framework to define "meaning" also plays a role in generating product value for the final user. *Ajovalasit and Giacomin* argue for increased attention and emphasis on the part of designers to conceiving, measuring and validating meaning. However, the current large-scale challenges are pushing design to embrace an even more

systemic approach: there is a growing effort to situate innovative products in infrastructural transformations that, in turn, presume social and technical solutions. The chapter by *Corubolo* shows some of the institutional tensions and requirements that emerge in this process of experimentation. But infrastructural changes have to be supported by behavioural and social changes, and in this sense the analysis of games and gaming processes by *Bertolo* describes how some of the mechanisms can be mobilised to engage people in transformative activities. In fact, from space-making to food systems, service designers are being called upon to help redefine how complex chains of systemic interactions support citizens in creating new practices of living and working. *Sedini*, in her interviews with designers, captures their reflexivity in defining this new role. Similarly, *Arquilla and Caruso* aim to evolve the approach to inclusivity in design, updating the meaning of the concept and anticipating it in the design process by integrating it into the meta-design phase. In fact, several of the authors discuss the current role of designers, questioning the focus of their work and their design frameworks. *Ferraris* shows how the representation models of design processes have evolved over time, along with the evolution of the discipline, highlighting how design scholars constantly update their models to include new steps, methods, and tools.

Looking at all the contributions collectively, it is noticeable that each researcher is focussing on revisiting their subject of interest in the light of the new challenges, setting goals, and applying a rigorous approach to their studies. Although the topics might seem unconnected from one another, there are elements that recur.
Design researchers are certainly aware of the transformations we are immersed in, and therefore place their research in a global context, relating their goals to wider perspectives; for instance by including inputs from other disciplines such as neuroscience, or by using new technologies such as artificial intelligence, and by addressing new topics such as biodiversity. Also, they reflect on what design can bring to the table; the multidisciplinary nature of the discipline and the intrinsically flexible way of thinking and addressing problems is seen by many as particularly adapted to face complex and wicked problems such as the ones discussed here. The result might be the emergence

of new design domains focussed on systems design, just as in the last decades we saw the arrival of participatory design, sustainable design, and service design, and more recently circular design and transition design. But it could lead to the updating of consolidated design domains, such as product or communication design, through the implementation of new research tools, technologies and methods that are more firmly entrenched in system analysis, taking elements from other disciplines such as biology, climate- or data science.
In either case, design researchers might need to develop new versions of the design processes that currently involve, in very simple terms, a series of steps to investigate a problem, explore existing and possible solutions, conceive some concepts, and develop them. Every time we have seen the introduction of new design domains or the updating of existing ones, it has led to a transformation or updating of the design process models, by introducing new steps, constraints, tools, and reiterations. As representations of practice, these new models become tools for self-reflection and supports for communicating with the other stakeholders. However, scholars are increasingly questioning whether any of these approaches are sufficient to tackle the systemic nature of the challenges of the 21st century or whether an integration has become essential.
Irwin proposes a *Transition Design approach* to address wicked problems and catalyse systems-level changes, and states that «we call it an *approach* rather than a *process* because this work will require a variety of tools and methodologies, used in different ways as no single, prescribed process would be effective in all circumstances» (2018). Irwin highlights the nascent state of the proposal and encourages other researchers and practitioners to provide feedback, critique and engagement to contribute to its development with the objective of co-constituting a new area of design focus aimed at systems-level change. Irwin's proposal sets itself in a wider direction of scientific research and policy which considers that a collective intelligence approach is the only way to start addressing the transitions we are facing. Collective intelligence is understood as the enhanced capacity that is created when people work together to mobilize a diverse range of knowledge, information and solutions. When these contributions are combined to become more than the sum of their parts we talk

of an *emerging collective intelligence*. It is widely agreed that the challenges we are facing can only be addressed by radical systemic transformations, which in turn can only be the product of a collective effort characterised by the integration of multiple viewpoints and paradigms. To avoid dispersion of resources however, there is the need for some common goal or framework and the possibility of mutual learning and exchange. This book hopefully provides not only an insight into the research projects of Polimi's design department, but also a platform for exchange and collaboration.

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The volume presents a series of studies and reflections on how design is approaching the transition towards more uncertain futures. Starting from a shared understanding that we are facing radical transformations of our physical and social world, all the authors embrace a systemic perspective to position the role of design in addressing these challenges.
The chapters present novel ways of integrating new disciplines such as data analysis, artificial intelligence, neurosciences into practice and theory and explore the extension of design processes to develop new frameworks for tackling major societal and environmental changes.
One of the main conclusions of the book is that the complexity of the challenges, and the systemic approaches needed to address them, mean that the efforts can only be collective and multidisciplinary. No single project or single design group can take on board the range of transformations, collectively, however, each project can contribute to creating elements which become components of innovation that in turn can be mobilised by other systems.

FrancoAngeli
La passione per le conoscenze