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*Potentials and shortcomings through the Designscares case study*

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# Applying Theory of Change to strategy articulation cycles in design projects: Potentials and shortcomings through the Designscapes case study

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## ABSTRACT

Since the 1990s, the framework of Theory of Change has been used to address complex contexts of intervention especially in relation to planning and evaluating social practice. Theory of Change can be defined as the systematic and cumulative study of the links between the activities, outcomes, and context of an intervention. The aim of this paper is to explore through a case study whether Theory of Change can support more strategic approaches in design. In particular, the paper examines how Theory of Change was applied to DESIGNSCAPES - a project oriented, among other things, toward offering a supporting service for all those city actors interested in using design to develop urban innovation initiatives that tackle complex issues of broad concern.

*Keywords:* Theory of Change, design strategy, strategy, strategy articulation cycles, DESIGNSCAPES.

## INTRODUCTION

Classic and more contemporary studies in strategy have acknowledged that the influence of external and unpredictable factors can highly affect even the best-executed plans (Clausewitz, 1832/1984; Freedman, 2013; Gaddis, 2018; Mintzberg, 1994). When strategy is characterized as “any action that takes a direction and moves, making a system evolve with success, according to some flexible but clear rules, and adapting to changes in the environment” (Meroni, 2008, p. 33), it is clear how strategy needs to be continuously realigned in relation to the emergent properties and the complex dynamics of the context of application (Raynor, 2007). This is particularly important when taking into consideration the process of strategy articulation - i.e. that process in which strategy is explicitly identified and described in relation to key ideas, directions to follow, goals and expected results (Love et al., 2002). Rather than considering it as confined to the initial stage of a project, articulation should be viewed as a continuous process that unfolds throughout phases and cycles in which strategy is defined, executed, assessed and then adjusted, tuned, re-articulated.

A limited number of previous studies looked at how Theory of Change can support such processes of strategy articulation (Simeone et al., 2019). Theory of Change - a framework emerged within community initiatives and philanthropic projects in the 1990s (Anderson, 2004) - is increasingly used as a way to plan and evaluate complex social interventions

(Ling, 2012; Stein & Valters, 2012). Broadly, a Theory of Change approach is a process of identifying the current situation (in terms of needs and opportunities), the intended future result (expected or hoped for outcomes), and what needs to happen to move from one situation to the other (Rogers, 2008, 2014). While the need to reflect upon theories of change has been deemed as necessary to craft strategies (Mintzberg, 1994; Walton et al., 2000) and to support more impactful design interventions (Tonkinwise, 2015), the intersection between Theory of Change, strategy articulation and design remains underexplored (Norman & Stappers, 2015).

This is precisely the research avenue of this paper. The paper is centered around DESIGNSCAPES as a main case study, a European Commission-funded project oriented, among other things, toward offering a supporting service for all those city actors interested in using design to develop urban innovation projects and tackle broad problems of a complex and wicked nature. At its heart, DESIGNSCAPES acknowledges the generative potential of urban environments – or urban ecosystems (Peltoniemi & Vuori, 2004) – in which design can support collaborative and innovation processes that engage a variety of actors, including enterprises, start-up companies, NGOs, community-based initiatives, public authorities and agencies. This paper examines the way in which Theory of Change has been used in DESIGNSCAPES to articulate strategy across different phases of the project. The aim is to analyze not only the potential but also the shortcomings of using Theory of Change as a way to elaborate the complexity behind the project and to articulate fine-grained and adaptive strategies.

The paper is organized as follows: Section 1 reviews the literature to more closely look into the key concepts of strategy articulation and Theory of Change. Section 2 describes the research approach and the research context. Section 3 presents the findings of the study. Section 4 discusses the results and concludes the paper underlying the practical as well as the theoretical implications.

## 1. LITERATURE REVIEW

### 1.1. Strategy articulation and design

Strategy articulation has been viewed as a discursive practice in which representations of what the organization "has been, is, and will be doing" (Mirabeau & Maguire, 2014, p. 1219) are defined. This view posits that strategy articulation is grounded into social practices and emerges from the interactions among the involved stakeholders and from the interactions with the specific contextual conditions of application (Burgelman et al., 2018; Jarzabkowski et al., 2016; Mirabeau et al., 2018). Perspectives that acknowledge the centrality of such interactions look at strategies as unfolding "throughout the multiple processes that occur in the creative ecosystem, that is, in the organizational milieu, the market, the society and the environment" (Franzato & Campelo, 2017). As such, articulation should be considered not as solely bound to those initial phases of projects in which strategy is codified into formal descriptions (e.g., vision, mission, strategy plans) but rather it should be seen as a set of processes that continue throughout the entire duration of projects and in which "people, practices and societies enter equally onto the stage" (Whittington, 2007, p. 1578). Articulation cycles (Figure 1) are structured (not necessarily linearly) across stages (strategy definition, development and evaluation) through which strategy is continuously readapted.

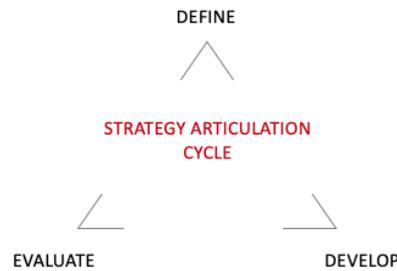


Figure 1 Strategy articulation cycle

In practice, re-articulating strategy means revising some of the core aspects of strategy along the way: goals, objectives, leverage points, allocation of resources. If strategy is characterized as finding a balance between ends, means and ways, while keeping an eye on risks as to achieve the impact needed to address a challenge (Simeone, 2019; Simeone, 2020), then the process of strategy articulation (and continuous re-articulation) has to do with finding the (possibly, ever-changing) sweet spot in which the core components of strategy are aligned.

Now, because of the central role played by the negotiations among the various stakeholders and by their potentially conflicting agendas (Mirabeau et al., 2018), the processes of strategy articulation are not necessarily linear but rather might involve multidirectional moves in which, for example, different stakeholders might have different takes on what strategy to pursue and, therefore, multiple divergent strategy articulations can occur simultaneously and within the same organization or the same project. A stakeholder occupying a certain power position might push for the definition, development and evaluation of a specific strategy. Some other stakeholders might disagree and try to propose their own way of defining and/or developing and/or evaluating strategy.

Methods and approaches to articulate strategy abound across fields as diverse as corporate (Andrews, 1971; Ansoff, 1965; Porter, 1980; Rumelt, 2011), political (Freedman, 2013) and military strategy (Echevarria, 2017). Design research has long explored the interplay between design and strategy definition, development and assessment, most often under the rubric of design management (Borja de Mozota & Wolff, 2019; Chung & Kim, 2011; Lockwood & Walton, 2008; Nixon, 2016). Some studies particularly focused on some of the nitty-gritty aspects in which design methods and approaches support strategy definition and development (Boztepe, 2018; Calabretta et al., 2016; Liedtka & Kaplan, 2019). However, although some contributions mentioned Theory of Change and praised its potential (Alter et al., 2019; Gasparki, 1979; Mom, 2007; Wahlin & Kahn, 2015), fine-grained studies exploring the mechanisms in which Theory of Change can support strategy in design remain sparse.

## 1.2. Theory of Change and its application in design

Theory of Change emerged in the mid-1990s within the Aspen Institute Roundtable on Community Change as a new, and more adequate, way of evaluating complex community initiatives working for social and political change. Carol Weiss, who popularized the term, argued that the reason why complex social programs were so challenging to evaluate was that the assumptions and theories about how change would unfold as a result of them were poorly articulated (Weiss, 1995). The consequence, she argued, was that clearly outlining the steps required to achieve a long-term goal received little attention. Theory of Change, therefore, emerged as a framework to overcome this challenge by describing “a process of

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planned social change, from the assumptions that guide its design to the long-term goals it seeks to achieve” (Mackinnon & Amott, 2006, p. 2).

Theory of Change has been used by evaluators and practitioners to understand the causal path of a project. The tool allows them to track a project accurately, to contribute to an action learning cycle and to reformulate the project on the basis of deliberation and data. Given this, Theory of Change is a strategic planning approach. It articulates and graphically illustrates the intervention logic of a project, in other words, the steps that need to be taken to realise a desired goal or impact, and the expected results of these steps.

A good number of methods are nowadays available to help crafting Theories of Change for specific projects or programs (Mayne & Johnson, 2015; Westhorp, 2012). Although these methods build on slightly different conceptual theorizations, they share the idea that a Theory of Change should articulate logical steps that lead to change. Figure 2 shows an overview of the steps needed to identify the five key elements of a Theory of Change for a specific project.

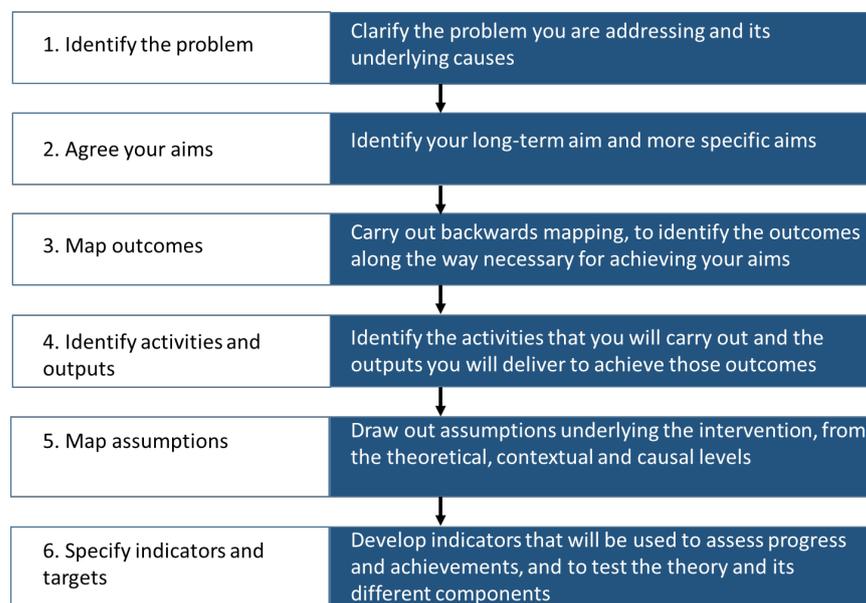


Figure 2 Steps needed to identify the six key elements of a Theory of Change for a specific project. Source: Adapted from Cullen et al., 2018

Theory of Change can serve multiple purposes although the process for drawing one up is structured. Mayne and Johnson (2015) identified ten possible purposes clustered into four types: designing interventions; managing interventions; assessing interventions; and scaling (Mayne & Johnson, 2015). Given its flexibility, it is possible to map the purposes to the strategy articulation cycle proposed in the previous section: define, develop and evaluate.

As a strategic approach, a Theory of Change process identifies and then builds a model on a set of assumptions and hypotheses about what causes a problem, what particular actions will change that problem, and the likely outcomes of these changes. In other words, it articulates a project’s ‘change journey’, and shows the theorised causal pathways between a project’s objectives, its activities, and its expected outcomes and impacts. It says: “if we take action X, then this will cause effect Y and this will eventually lead to outcome Z” (Cullen et al., 2018).

Identifying and articulating assumptions in a Theory of Change process is a particularly important step (Gujit, 2013; Mayne, 2015; Vogel, 2012). To cite Mayne (2015, p. 124), “Only when we add the assumptions to the causal links in the impact pathway, do we get a theory

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of change”. Assumptions can be broadly understood as the things we believe to be true, and often take for granted, about how change happens, the external context, the way people behave and interact. Guijt (2013), for example, identifies categories, such as: 1) causal link assumptions (e.g. the project’s resources are sufficient to deliver the planned training activities; people will turn up to the training sessions; training activities will lead to changes in behaviour); 2) “paradigm” assumptions, which relate to ideas about what creates change; 3) external context assumptions, which relate to the social, economic, political conditions that are conducive to change. While there is no standard way of classifying assumptions, the key point is that assumptions come from personal and professional values, beliefs, experience and perspectives – all of which influence the process of developing a strategy, or a project. The challenge is that assumptions need to hold true if a project is to work as hoped or expected, but they are not always valid. If left unarticulated and unchallenged, they can create obstacles to the delivery of a project.

The project definition can be revisited and refined over time, leading to the development of the strategy. After definition and refinement, a strategy can become a key evaluation tool; outcomes can be specified and measured as indicators to assess progress and achievements along the ‘change journey’, and will be used to test the theory” (Simeone et al., 2019). Data collected along the way enables these assumed causal pathways to be tested. The integral link between Theory of Change and indicator development means that Theory of Change is a useful tool for both strategic planning and continual improvement.

Whilst in principle strategy articulation and Theory of Change map onto each other well, Theory of Change has been criticised on the grounds that it might oversimplify complex contexts of interventions (Ruesga, 2010) and might not decisively contribute to clarify ill-defined issues (Stein & Valters, 2012). A way to address these issues is to keep a critical eye while taking into account beliefs and assumptions underlying a specific Theory of Change (Archibald et al., 2016) and while drawing sequences of steps and related cause-and-effect connections (Ruesga, 2010).

Design research has shown some interest for Theory of Change, mostly in relation to how it can support design projects in complex contexts of intervention (Norman & Stappers, 2015; Tonkinwise, 2015). The fine-grained mapping offered by Theory of Change has also the potential to support more analytical approaches in design management, which has for long struggled to articulate the extent that design contributes to business success, and, more specifically, whether this contribution can be measured or not (Viladàs, 2011; Whicher et al., 2011; Wolff et al., 2016). However, to date, the construct of the Theory of Change remains understudied. In order to address this gap, this paper intends to explore if and how Theory of Change can be used to articulate strategy within design projects. To do so, the paper will look into DESIGNSCAPES as a case study.

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## 2. RESEARCH METHODS

### 2.1. Overall approach

This paper builds on a case study approach (Eisenhardt, 1989; Eisenhardt & Graebner, 2007) to analyze the project DESIGNSCAPES over time (Paré, 2004) and with a certain degree of depth (Yin, 2014). Case studies have been consistently used while investigating a variety of

phenomena within real-life contexts (Berg, 1968; Breslin & Buchanan, 2008), and scholars examined the relevance and the limitations of this approach (Dasgupta, 2015).

DESIGNSCAPES is a four-year project funded by the European Commission and aimed at supporting local design-driven initiatives at a city level and beyond. The project is run by an international consortium that brings together a group of researchers with competences ranging from urban studies, design and planning, all the way up to participatory design, innovation management and impact assessment. One of the core ideas of DESIGNSCAPES – inspired by the work of Jane Jacobs (Jacobs, 1961) – is that cities offer particularly promising environments in which local design-driven projects can spur creativity and innovation, improve performance and efficiency (and hence increase the competitiveness of European organizations) and tackle wicked problems and important issues of broad concern. Indeed, Jane Jacobs's theory on cities as innovation petri-dishes was the major theoretical assumption of DESIGNSCAPES and shaped the programme to a large extent, notably by only funding projects which are based in European cities.

DESIGNSCAPES intends to build on the generative potential of these environments by (1) selecting a number of promising ideas and projects from various European cities, (2) by providing them with some direct funding and (3) by supporting them with mentoring and coaching activities on how to use design approaches and methods. To this end, DESIGNSCAPES organizes three open Calls for applications in which European enterprises, start-up companies, NGOs and public authorities can submit a description of their design-driven projects and, if selected, get funding up to 25.000 euro and get access to a mentorship program on how to use design methods and tools to support urban innovation processes. DESIGNSCAPES acknowledges that the organizations behind these design-driven projects carry out their activities not as isolated entities, but rather as components of a business and innovation ecosystem, i.e. an interconnected population of organizations in which single units are strictly interdependent and influence the whole system (Peltoniemi & Vuori, 2004). Urban innovation has to do with processes of co-creation that actively seek the inclusion of diverse actors. This is why DESIGNSCAPES is particularly interested in supporting those projects that heavily rely on collaborative processes and local communities. The 'change journey' that DESIGNSCAPES intends to spur is precisely a change in some existing business and innovation ecosystems of European cities by offering funding and support to those design-driven projects that have the potential not only to tackle local urban issues, but also to propose solutions that can be scaled and replicated in other urban environments.

DESIGNSCAPES provided a fruitful case to investigate our research question since Theory of Change was used across various stages of the project and allowed to continuously articulate, assess and re-articulate strategy over time.

## 2.2. Methods

Data to analyze the case was collected and generated using two intertwined sets of methods: (a) direct and participant observation based on ethnographically-inspired methods (Czarniawska, 2012) and carried out by three of the authors of this paper across a period of three years (2017-2020) and (b) a set of surveys carried out with all applicants of the first DESIGNSCAPES Call for applications between 6th and 19th June 2019. These surveys were sent to 50 successful and 200 unsuccessful project applicants, and the response rate was 88% for successful applicants and 17% for unsuccessful applicants.

The authors of the paper are active members of the DESIGNSCAPES consortium and directly contributed to the definition and the development of this project, also through the application of Theory of Change and the related phases of strategy articulation. This particular position as insiders gave the authors the chance to gather data during the first three years of the project by participating to key project meetings and by regularly interacting with all applicants of the DESIGNSCAPES Calls, for example in occasion of face-to-face events and online seminars and training sessions. The field material emerging from these observations mainly consisted of notes and some visuals (e.g., sketches and other visual representations produced by the applicants to present their ideas and projects). Notes from direct observations were placed in a loose, thematic narrative structure, and design artifacts were organized accordingly to coincide with this narrative. This resulted in the concise textual and visual documentation of all the material which was subsequently elaborated upon to write the draft of the final report.

This ethnographic material was combined with the quantitative data resulting from the surveys. Multiple data collection methods were used to exploit the synergistic effects of combining them via triangulation (Bryman, 2008) as to reduce the bias of a single observation in comparison of multiple data (Tarrow, 1995).

Processes of data reduction, analysis, conclusion drawing and verification were carried out (Corbin & Strauss, 2008; Miles et al., 2014). Data was subsequently examined through various iterations in which the authors of the paper were at first working independently and then sharing and integrating their considerations as to seek the highest degree of reliability (Eisenhardt, 1989; Gilmore & Coviello, 1999). While analyzing the data, the authors regularly revisited key constructs emerging from the literature review.

The research process was envisioned and carried out keeping in mind the advice proposed by Yin (2014) to improve the validity of a case research. Firstly, construct validity can be executed by utilizing a wide variety of sources of evidence as to establish reliable chains of evidence. For this research, a combination of data collection methods, from ethnographic observations to quantitative data from surveys have been used. This gave the possibility to cross-check the findings and, therefore, create trustworthiness. Secondly, internal validity was secured by identifying causal relationships and patterns in the case research and relating empirical data to existing research. Thirdly, external validity is proved by the possibility of generalizing of the study results. As this paper only examines one case, the generalization of the findings can be considered limited. Awareness of these limitations improves the external validity. Finally, reliability was improved by documenting all data used in the research into archival records eventually accessible by other researchers.

The next sections will present and discuss the findings of the research.

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### 3. ANALYTICAL DESCRIPTION OF THE CASE

#### 3.1. Application of Theory of Change

In this project, Theory of Change provides a transferable tool to enable i) the partners of the consortium to understand DESIGNSCAPES and its 'change journey', and ii) the stakeholders in the selected design-driven projects to identify the presenting problem they want to change, the desired solution at the end of their project (the project impact) and the steps required to get from problem to solution (activities, outputs and outcomes). In other terms, it

is also the main data gathering tool to assess the effectiveness and added value of design in the innovation process and its contribution to efficiency and competitiveness. Theory of Change has been used in a strategy articulation cycle as described in detail below.

### 3.2. Defining the strategy

Early in the project during a project meeting, the evaluation partner asked members of the consortium to outline the activities, outputs and mechanisms that would support the project to achieve impact in co-creation and inclusivity. There were two parallel workshops asking two overarching questions: ‘Does DESIGNSCAPES support co-creation, and does co-creation in turn lead to successful innovation?’ and ‘Does DESIGNSCAPES support inclusiveness and reduce inequalities in citizens’ access to innovation?’ By answering these questions, the partners were able to jointly articulate the key elements of the programme in terms of actions, products of the programme and what would explain how DESIGNSCAPES would eventually reach an impact.

These notes were combined and synthesised into a narrative outlining the context, activities, outputs, outcomes and impacts across the programme lifespan as well as underlying assumptions. This narrative was summarised in a Theory of Change map, shown in Figure 3 below.

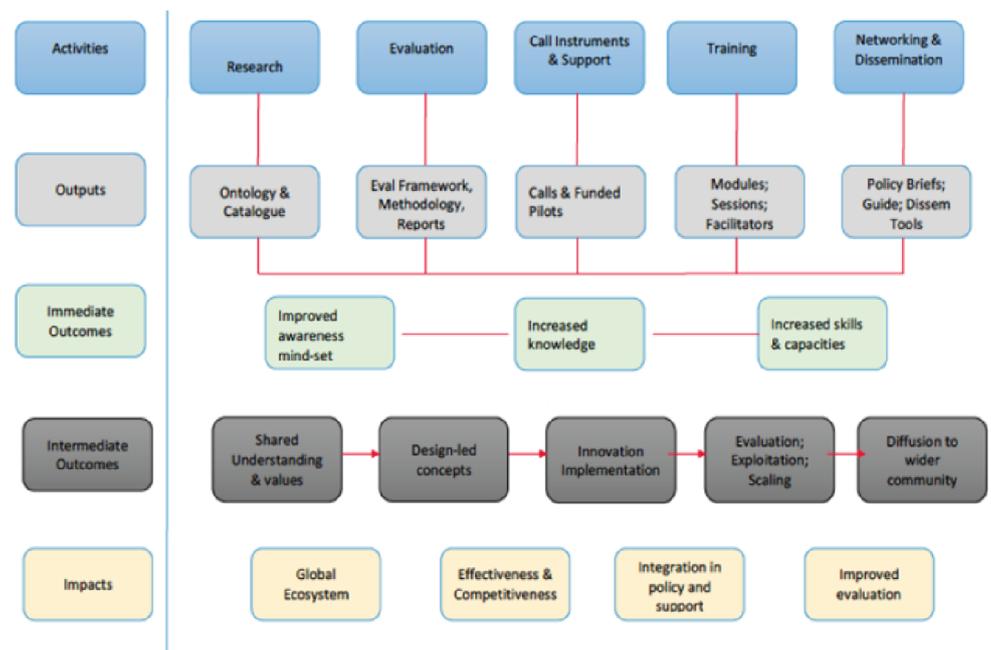


Figure 3 Initial Theory of Change for DESIGNSCAPES

This initial map demonstrated how the different strands of work combine and produce impacts. The map was accompanied by a reflection on the context and presenting problem that DESIGNSCAPES was addressing:

- Presenting problem:

*“many public sector organisations and businesses, especially SMEs, miss out on the potential to utilise design as a source for improving efficiency and stimulating growth”.*

- Context:

*The context of this problem is that the EU faces a number of pressing and ‘wicked’ problems (financial crisis; demographic change; globalization; climate change;*

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*political instability) that, together, threaten to undermine EU2020 objectives, if not the entire 'European project'.... The EU badly needs new innovations, and innovations that are 'user-driven', engaging users as co-producers in the design, development and delivery of products and services that improve performance and efficiency in the commercial and public sector, and which deliver inclusiveness and social objectives that address inequalities.*

The activities envisioned in DESIGNSCAPES attempt to redress this context through funding calls for user-driven innovations, training, networking and research. These activities then lead to distinct outputs which produce three immediate outcomes related to awareness, knowledge and capacities. Shared understanding of design-led concepts leads to better implementation and knowledge diffusion. In turn, these outcomes lead to long term impact on the global ecosystem, competitiveness of Europe and integration of policy and support for design-led innovations.

Underpinning the Theory of Change map and narrative, were a series of assumptions that were drawn out at the contextual, causal and theoretical levels, as summarized in Figure 4 below.

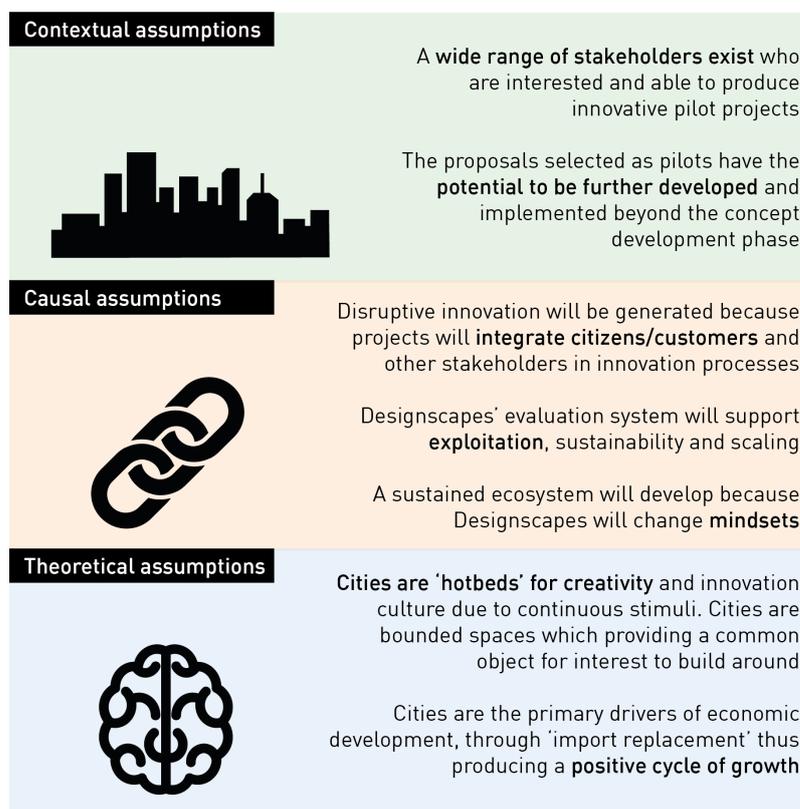


Figure 4 Summary of assumptions from initial Theory of Change mapping

The collaborative process of strategy definition implicit in this mapping exercise helped to increase awareness of all aspects of the project and, particularly, its ethos of inclusivity and co-creation. It also helped to define potential barriers to impact early in the project: for instance, "Close contact with people and organisations" and "Good communication campaign" were both seen as crucial mechanisms for further impact. The map helped the consortium realise that the current marketing and communication efforts were inadequate and that more resources and effort were needed to support the whole dissemination of DESIGNSCAPES and, particularly, to advertise the Calls for applications. The consortium

partners moved quickly to highlight this and addressed the issue effectively, eventually generating over 250 applications.

### 3.3. Developing the strategy

The second stage of the strategy articulation cycle presented in this paper is the development of the strategy. This means, particularly, revisiting the objectives and the mechanisms to reach goals, and ensure the strategy is effective and responsive to changes in the environment. In DESIGNSCAPES, this was achieved through revising the Theory of Change in response to feedback from partners and after the first of three Calls for applications had ended.

At this stage, the Theory of Change was rearticulated to clarify the most important steps for success and what needs to be done for the steps to be reached. In particular, the map outlined the causal chain more explicitly and outlined the premises that underlay each of the steps towards project impact. The mapping process focused on the underlying contextual and causal assumptions at each stage of development, to build upon the initial assumption mapping. This led to a tighter mapping of assumptions to stages, as presented in Figure 5.

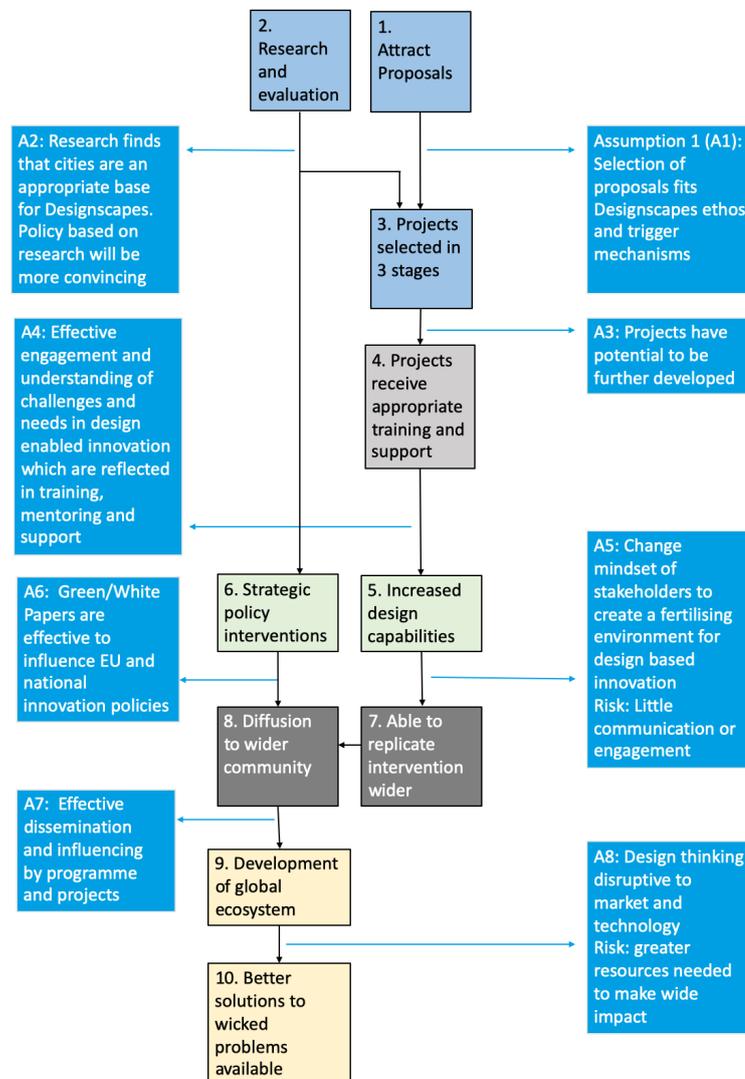


Figure 5. Redeveloped Theory of Change for DESIGNSCAPES: Colour coding is used to split the stages of the map into activities (blue), outputs (light gray), immediate outcomes (green), intermediate outcomes (dark gray) and impacts (yellow). The relevant causal and contextual assumptions that are made for each link in the chain are labelled in blue call-out boxes.

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Figure 5 can be seen in part as a design response, as many partners in the project were left confused and overwhelmed by the initial Theory of Change, which attempted to communicate all aspects of the programme simultaneously. This revised map is less complex, with a simply linear-staged outline of the project, and a granular description of the conditions that needed to be reached in order to achieve its strategic objectives. The Theory of Change articulated above splits DESIGNSCAPES into seven stages which follow the Theory of Change categories, some of which occur beyond the life-time of the project. These stages are: research and marketing; selection of design-driven projects; training and support of design-driven projects; improvement in design capabilities and policy; replication and diffusion; ecosystem development; and new robust solutions to wicked problems. Clear staging was purposeful as the initial map (Figure 3) had vague ultimate objectives which made the overarching direction of the project more difficult to communicate. The causal link between stages showed the project design with more clarity: for example, the programme assumes that without appropriate support, project staff will not be able to improve their design capabilities. The assumptions underlying the Theory of Change ladder towards wider impact are articulated for each stage.

### 3.4. Evaluating the strategy

Additional clarity in the second Theory of Change was intended in order to aid the evaluation in validating the change model. Indeed, whilst the second map describes a clear causal chain, it was not supported by primary data, instead being derived from theory and experience of the project team in programme management. In order to better understand whether the strategy described has been successful, the applicants from the first Call (successful and unsuccessful) were surveyed, and their applications were qualitatively and quantitatively analysed, partly using categories from the Theory of Change map.

The survey asked respondents how their design-based capabilities had improved since applying for the funding; in every case, there was a statistically significant increase in competence by members of funded project teams (Figure 6).

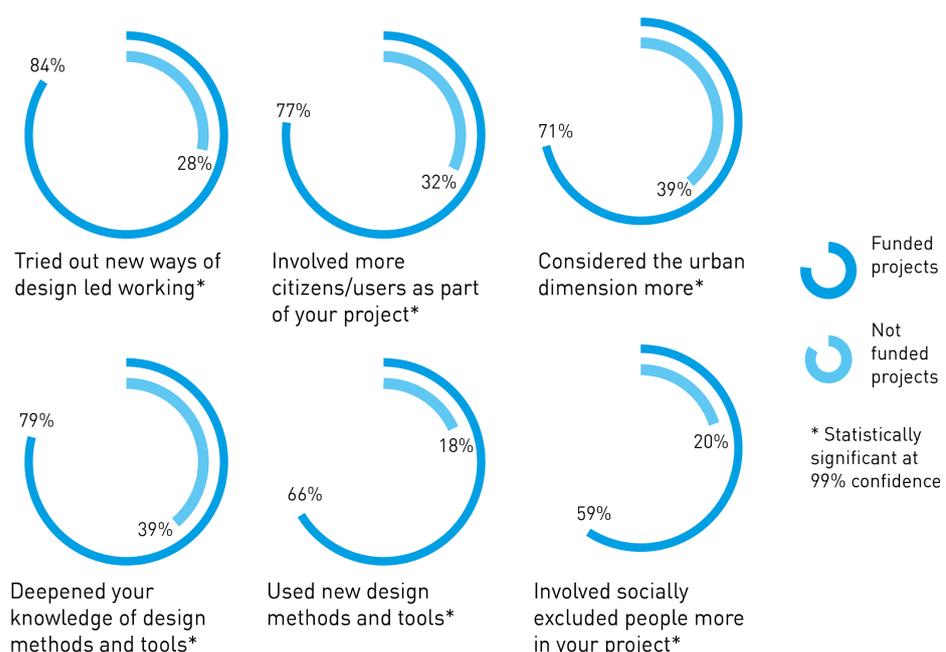


Figure 6. Extract from the survey: Percent of respondents who agree or strongly agree with the question “Do you agree or disagree that since applying for funding you have...” (unsuccessful and successful applicants)

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The survey results were particularly important in validating the model as they were able to demonstrate outcomes achieved by the project by comparing successful with unsuccessful applicants over the same time period (after the feasibility studies had all been produced by funded project teams).

In relation to the Theory of Change map in Figure 5, the evaluation of the strategy only applies to steps 1 to 5 and assumptions A1 to A3, given that training only begins in the next stage of the programme. Given the improvement in knowledge, skills and improvement by funded respondents, the evaluation survey has validated A3, that the applicants have the capacity for improvement. It has also led to a change in understanding how the strategic aims will be achieved: with no training and minimal support, the project teams were able to increase their design-based competences through the experience of using design tools and fitting with the ethos of the project. This implies that step 3 can lead directly to step 5 without training and support being provided.

### 3.5. Redefinition

After the first stage of evaluation, the evaluation has found that the overall design logic of the early stages of the programme has worked: the programme team have been able to attract a sufficient volume of high-quality applications, select appropriate applications, and inculcate co-production and inclusion as central values. The early activities and mechanisms have been shown to be effective, though with some unresolved issues and along different causal pathways. For instance, successful applicants' greatest difficulty was in engaging stakeholders for co-production activities which was not anticipated, nor was increase in design capacity predicted from stage 1 of the programme.

Whilst DESIGNSCAPES has so far shown that funding can improve design capabilities of the team, this does not validate further up the casual chain, specifically how design-informed co-production leads to social change in cities and whether non-professional designers can produce disruptive innovations. To date, DESIGNSCAPES has been agnostic towards the applicants' approaches to co-production and their level of design experience. However, research has shown that co-production is often unsuccessful unless a wider approach that takes into consideration the strategic, socio-economic, cultural, psychological and organizational components of the design process is adopted (Berger, 2019; Buchanan, 2004; Ehn et al., 2014).

The emergence of these issues implies that starting the strategy articulation cycle early has forced the programme leaders to further refine and develop the Theory of Change model and allowed further recalibration. Using Theory of Change in a strategy articulation cycle has also raised questions which may have been ignored if the strategy and tools had not been continuously checked. These questions include: which design capabilities require training and which improve with experience alone? There was no assumption articulated about the design experience of the funded project or which co-production methods should be prioritized. Will design experience be a key factor in achieving the ultimate aim of the programme of disruptive innovation? Which co-production configurations are most effective in producing workable innovations? These questions provide the context for the next cycle of strategy definition and testing on DESIGNSCAPES.

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## 4. DISCUSSION AND CONCLUDING REMARKS

The aim of this paper was to explore if and how Theory of Change can be used to articulate strategy within design projects. The analysis of the DESIGNSCAPES project provided evidence of the potential of Theory of Change to iteratively articulate strategy through progressively refined visual maps, which display assumptions and causal relations between the key components of strategy.

Our understanding is that Theory of Change can complement the wide array of tools currently in use to articulate strategy in design. A number of them see articulation as related to defining key elements such as a vision (“why should we act?”), an intent (“what should be done”) and a plan (“how will we do it and who should be involved?”) (Boyer et al., 2011) or to expressing the relation between diagnosis of a problem, a guiding policy and a set of related coherent actions as a linear logical flow (Rumelt, 2011). In our case, the visual nature of Theory of Change made it for an integrative helpful tool to (a) represent the relations among key components of strategy, (b) to elaborate the assumptions and hypotheses behind the main stages of DESIGNSCAPES and the causal relations among them and (c) to fully render the complex interactions occurring during the envisioned ‘change journey’.

The strategy articulated by Theory of Change (Figures 3, 4 and 5) has a reticular nature. Stages, assumptions and risks are mapped throughout a journey in which it is possible to see dependencies and linkages. The Theory of Change provides a spatially distributed articulation in which the temporal dimension (i.e. the progression from one stage to the other) is plotted as to show stages as simultaneous, interdependent or sequential. The distribution of elements in the space signals a movement in time but also grades of separation among core components of strategy. Arrows signpost bridges and directions to follow. Different colours identify categories of objects. In future versions of the Theory of Change, we will more fully explore the potential of visual language – playing with scale, colours, textures, grids, layers and transparency to represent at a more fine-grained level how key components of strategy interact.

The staging of Theory of Change is also worth consideration. Theory of Change requires participants to be specific to hone an intervention in a clear and explicit way. This is often difficult to do at programme inception when the wider ecosystem that an intervention will be working within remains largely unknown. This is why using Theory of Change within a strategy articulation cycle is particularly valuable: as a project is designed, it can be planned, reformed and tested using a Theory of Change framework. Using Theory of Change in this way allowed DESIGNSCAPES to articulate strategy at different levels of refinement in relation to the needs of different phases of a project. Possibly, such integration worked particularly well precisely because it allowed the management to represent strategy at varying levels of abstraction and to translate such strategy for different stakeholders.

Despite these advantages, we also identified some possible shortcomings. First, Theory of Change may lead to oversimplifications. As a model of reality, in fact the intention of Theory of Change is to simplify. Whilst this is inevitable to an extent, when Theory of Change is used by non-experts to represent project stakeholders’ views and not query the assumptions underpinning their views, Theory of Change is not sufficient to understand complexity. It is possible to produce Theories of Change which address the interdependencies of actions and the complexity of solving wicked problems to a significant extent if the Theory of Change facilitators ask pertinent questions addressing complexity, and the stakeholders selected

have strong contextual knowledge and are able to represent a system. Yet even in the case of DESIGNSCAPES, where the evaluator and project stakeholders collaboratively defined the Theory of Change, ultimately, the evaluators were interested in uncovering and reasoning the underlying logic of the stakeholders, not uncovering and reasoning the way social systems operate.

Second, a related criticism of Theory of Change lies in the framing process. Theory of Change does not map a system but maps a particular intervention from the insider perspective of those who developed the project. Therefore, the Theory of Change map models the inter-subjective understanding of an intervention by the project stakeholders. Theory of Change does not have a 'neutral' voice, instead it is constrained by the limits of knowledge and understanding of teams, particularly when funders of a project prioritise representing their own interests and do not welcome detailed questioning of their assumptions. The lack of reflection on the main theoretical assumption, that cities are the ideal location for design-enabled innovation (Jacobs, 1968), demonstrates that the initial stages of the Theory of Change have focused primarily upon operational assumptions and the assumptions at the social systems level have only been questioned to a limited extent. However, as the project develops and further evidence on the effectiveness of the model is collected, assessing the theoretical assumptions will become possible.

Given this, Theory of Change is not infallible or even necessarily reliable as a predictor for a project pathway. The assumptions outlined in a strategy are made without hindsight so it is difficult to predict which assumptions will become most relevant to project success. Indeed, the reliability of a specific Theory of Change is a useful data collection point because if the theory maps poorly to 'reality' it can be an indication that the underlying premises of a project are erroneous in some way. This is a particular risk when the context is highly multifaceted as with DESIGNSCAPES as complex systems invariably produce unintended outcomes that cannot be mapped early in a strategy articulation cycle.

However, the identification of poor assumptions and links where the causal logic breaks down in a map highlights a further strength of the Theory of Change approach: its iterative nature. In DESIGNSCAPES, the Theory of Change is revisited frequently, by the evaluation team, as a whole consortium at face to face meetings and during the data collection process. This allows the project team to understand where key blockages and success factors are so that the project team can adapt to circumstances and data as it is uncovered, rather than spend the funding period making similar mistakes.

#### 4.1. Implications for theory

The study sits at the intersection of distinct research streams focusing on (a) social studies, especially as linked to community initiatives and philanthropic projects, which were the original context of application of Theory and Change and (b) the application of strategy in design research. While trying to theoretically bridge these two streams, this study has explored the potential of Theory of Change as a tool to articulate strategy within design projects. We were particularly intrigued by how the spatial and temporal representations used in Theory of Change can help map causal connections among the key strategic components of a project. We argue that these visual representations provide a high level of granularity in the articulation of strategy even though some shortcomings – tied to way in which complexity is framed and, eventually, oversimplified – need to be considered.

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## 4.2. Implications for practice

In the past two decades, Theory of Change has been consistently used in social interventions and philanthropic projects. However, within design, Theory of Change is seldom used. We hope that this paper may spark some interest and that design practitioners can see the value of applying Theory of Change, especially while operating in complex context of interventions and measuring the outcomes of design-based initiatives. The visual dimension of Theory of Change may make it for a quite appealing tool to designers.

## 4.3. Limitations and future research

We acknowledge that the use of a single case study can constrain the generalizability of the research implications. In addition, another possible limitation is the fact that the context in which DESIGNSCAPES operated was mostly anchored to Europe as a main territory of application. Possibly, applying Theory of Change in design projects tied to different geographic, social and cultural contexts might lead to different outcomes.

Another limitation is that DESIGNSCAPES is still ongoing and further evaluation processes are envisioned for the next year, particularly in connection with outcome data, which will be used to valid the model and its assumptions. This will also give us the opportunity to more closely assess some of the critiques presented in academic literature against Theory of Change (e.g. that it might oversimplify complex contexts of interventions). In the meantime, we look forward to receiving integrations and critique that can broaden our horizons and lead to the production of further studies.

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