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Codifying Systemic Design: A Toolkit

Philippe Vandenbroeck, shiftN, Kristel Van Ael, Namahn

Abstract

In this paper we want to reflect on the use of toolkits as a codification strategy to fuel an expanding practice of 'systemic design'. This critical reflection is rooted in the real-life experience of bringing together two different sets of skills in the development of a Systemic Design Toolkit. Designers and concept-driven system thinkers belong to different epistemic communities. While these fields of practice are arguably in the process of converging, in actual practice it proves to be a challenge to transcend their governing epistemological differences. What pragmatically unites these practitioners is their ambition to successfully codify a vast and layered knowledge base. A Systemic Design Toolkit is argued to offer promise as a 'boundary object' between the epistemic communities involved in creating the toolkit (the designers on the one hand and the conceptual system thinkers on the other) and between the toolkit developers and toolkit users. The paper closes with a tentative list of design criteria for systemic design toolkits.

Introduction

In this paper we want to reflect on the use of toolkits as a codification strategy to fuel an expanding practice of 'systemic design'.

Over the last decade toolkits have been enthusiastically embraced by designers. For instance, the IDEO Human Centred Design Toolkit (2009) is one of the most widely cited and linked social design resources (Brown & Wyatt 2010). It has been a model for the many other design-oriented toolkits that have seen the light of the day since. In 2015 IDEO.org launched a new evolution of the HCD Toolkit – "The Field Guide to Human-Centered Design" – that encapsulates 57 design methods, a set of worksheets, and a collection of case studies from projects that show human-centered design in action (IDEO 2015).

The authors of this paper are part of a team that has recently proposed what is probably the very first Systemic Design Toolkit (Namahn, shiftN 2016). Our collaborative action research project led us to reflect on the role of toolkits in support of this particular design orientation.

Why would we want to critically reflect on what seems to have been accepted as a legitimate and efficacious codification strategy, fully coherent with the inclusive spirit and principles underlying social and participatory design? The answer is rooted in the real-life experience of bringing together two different sets of skills in the development of this Systemic Design Toolkit. Kristel is a trained designer who, as a management partner, has been co-developing the professional practice of a Brussels-based design studio Namahn. When Kristel joined the studio it was consolidating a leadership position in the area of UX design. Since, the studio has been pushing its practice into the design of product-service systems, cognition and behavior and workflows and processes (Flanders DC, 2017). More recently, Namahn has shown the ambition to extend their professional reach into design of more complex socio-technical systems.

Philippe is a co-founder of shiftN, a boutique consultancy that has traditionally focused on supporting decision-making processes in organisations that grapple with strategic issues. Initially shiftN relied on futures techniques such as scenario planning to support this work. As many of these issues transcended the scope of a single organisation, it was natural to integrate participatory techniques into these interventions. Later the systemic nature of shiftN's work was brought explicitly in relief by adopting approaches such as group model building and Soft Systems Methodology. shiftN started to collaborate with designers in the development of serious games to support intra-organisational learning processes. Later an effort was made to articulate the spatial implications of sustainability-related challenges. This led to a string of collaborations with (landscape) architects and urban designers. Finally, the increasingly data-rich environments in which shiftN worked required the integration of data and information visualization techniques in its interventions.

So, in a way the historical development of Namahn and shiftN form each other's mirror image. Namahn's development reflects the evolution of the design discipline more generally over the last two decades. This has been characterized by an increasing scale of design-led interventions: from graphic to product to service to environment/systems design. Concomitantly, also the ambition of the design process has changed: from creating artefacts to shaping conditions for change (Sangiorgio, 2014). From its very inception shiftN's focus was on supporting change in complex socio-technical systems. Its approach was research-driven but the team has sought to integrate a progressively broader palette of participatory and designerly approaches in its work. This development retraces a broader trend in the governance of complex socio-technical systems, as exemplified in the emergent discipline of transition management that has sought to couple foresight practices to the on-the-ground nurturing of 'bounded socio-technical experiments' (Fischer-Kowalski & Rotmans 2009).

Epistemological Frictions

Despite this convergence in professional practice the two partners have, inevitably, projected different sentiments and expectations on the Systemic Design Toolkit. True to their designerly ethos, Namahn has always enthusiastically embraced toolkits as a vehicle for participation and consolidating practice leadership. The Systemic Design Toolkit is just the most recent milestone in a trajectory that has spawned multiple tools and toolkits (such as a Product-Service Design Toolkit co-developed with researchers from the Product Development University of Antwerp (Baelus et al. 2016)). shiftN had not ventured into this territory before. True it had been developing 'learning games' for many years, some of them with a rather wide scope. For instance, one of these developments aimed at training research scientists in big picture 'statistical thinking'. But in that case the 'game' was an open process that pivoted around a set of generic principles of statistical thinking designed to help scientists reflect on and negotiate the inevitable trade offs between resource economy, statistical power, and pharmacological relevance (Vandenbroeck et al. 2006). As a rule, in an attempt to help its clients to grapple with wicked problems, shiftN relied on meta-methodologies such as scenario planning and transition management. These offered a flexible canvas to integrate systems thinking, dialogue and design (Vandenbroeck 2012). It seemed to shiftN that a 'toolkit'-based approach was not necessarily an adequate response to the increasing scope and complexity of design challenges as it could be associated with unwarranted and unwanted simplification, compartmentalization, and the presence of more or less rigid protocols to guide the supported design activity. Namahn on the other hand considers a toolkit as the cornerstone of a co-creation approach, enabling participants to grasp the underlying systemic principles by doing.

The real-life friction between designers and concept-driven systems thinkers has been studied before. For instance, Susanne van 't Klooster (2007) has described in her work how hard it is to establish a genuinely synergetic working relationship between foresight professionals on the one hand and urban designers on the other. She explained the difficulties in meshing the two approaches by the fact that these two professional groups hold very different cognitive frameworks about time and the future. She distinguishes between a 'historical-deterministic perspective' and a 'discontinuity perspective'. In the former the future is seen as a logical extension of trends discernable in the past and present. In the latter there is room for fundamentally different conceptions of the future. In the various cases discussed by van 't Klooster these different, and mostly implicit temporal repertoires were at the root of persistent frictions between scenario developers (van 't Klooster 2007).

Conceptions about time are only one dimension of the epistemological rift between systems thinkers. Both designers and conceptual system thinkers rely on concepts. But the notion of 'concept' to which designers hark back is not the Kantian 'Begriff' – key to a strategy of abstraction and classification – but a more ancient understanding that sees it as performative, an act of the creative imagination. Urban designer Paola Vigano' refers to the 16th century painter and architect Giorgio Vasari when she holds that "creative productivity, aesthetic inventiveness and figurative content are all at the centre of the concept." (Vigano' 2010).

The Codification Conundrum

The frictions between epistemic communities cannot be glossed over when developing a systemic design agenda. It is these frictions that form the background to the codification conundrum that we have been confronted with when developing the Systemic Design Toolkit. We visualized the conundrum as an equilateral triangle with each of the corners marking an ambition of a codification strategy. Ideally, when codifying a particular knowledge base we want to maximize the supporting knowledge artifacts' 1) ease of diffusion, 2) power to explain and their 3) power to sustain continued intellectual engagement. The first ambition allows to address a large group of potential users. The second ambition aims to disclose the underlying knowledge base in an effective way. Finally, the third ambition wants to make sure that those users have the possibility to adapt the toolkit to local settings. Distinct types of knowledge artifacts respond differently to this challenge of multi-criteria optimization. We might want to make a distinction between the following types of knowledge artifacts, ranked from explicit to implicit:

- Tools: in its most general sense a tool is a mediating artifact, situated in a particular socio-historical context, that forms an integral part of human action. Here in its conceptual form we define it as a 'method', or a set of instructions to realize a specific outcome.
- Methodologies: a set of ongoing principles which can be adapted for use in a way that suits the specific situation in which it is used (Checkland and Poulter 2006).
- Meta-methodologies: methodologies with a particularly wide field of application and/or able to functionally integrate with or connect to several methodologies.
- Epistemologies: a theory concerning means by which we may have and express knowledge of the world (Checkland 1993).
- Sensibilities: the cultural norms and psychological predispositions that lead us to adopt certain epistemologies.

Where do toolkits fit into this typology? A toolkit is a modular collection of tools. Toolkits use a model of a design process and provide tools at key decision-making points to help the user engage with a theoretical framework and apply it in the context of their own practice (Conole and Oliver 2002). The modular architecture of toolkits means that the user is not confined to a standard, linear protocol. It can be used in a piecemeal fashion or in a non-linear or iterative way as and when needed. That would position toolkits at the level of a methodology as embodying the 'logos' behind a distinct method. But then we might argue that toolkits also differ from methodology in the sense that they make a more tentative claim to expertise. Conole and Oliver hold that

“Rather than attempting to be authoritative or definitive, toolkits are predicated on the basis of utility. Specifically, they are judged on how useful the system of classification used to represent the underlying knowledge base is in terms of supporting decision making (...) it is the user, not the designer, who decides on the legitimacy of the representation. The descriptive systems, the frameworks drawn upon in the toolkit, simply act as a starting point that can be debated, adapted, revised and so on.”

Therefore a toolkit opens up a modus operandi that is polyrational, modular, and playfully nonlinear. Conole and Oliver (2002) position toolkits as *“a mid-point between facilitated, uncritical development of resources and a deep engagement with fundamental issues and theories. They are not intended to replace expertise, although they are intended to reduce the need for prior expertise before practitioners are able to engage with fundamental issues in a meaningful way. As such, they can be viewed as a stepping-stone between uncritical and autonomously critical engagement with an area.”*

A Systemic Design Toolkit therefore offers promise as a 'boundary object' (Star & Griesemer 1989) between the epistemic communities involved in creating the toolkit (the designers on the hand and the conceptual system thinkers on the other) and between the toolkit developers and toolkit users.

Toolkits are by no means the only strategy that could be adopted to meet the multiple exigencies of the codification conundrum. The Frame Innovation approach proposed by Kees Dorst is an interesting example of a different take on this challenge. As a methodology it moves along a distinctive nexus - from 'paradox' to 'field' to 'theme' to 'frame' - to support an intellectual movement that meshes synthesis, contextual analysis, lateral thinking and abstraction to yield novel perspectives on a problematic situation. The methodology proper is supported by a collection of 'principles' that appeal to practitioners' dispositions to be assertive, open and reflective (Dorst, 2015).

Design Criteria for a Systemic Toolkit

In order to maximize a systemic design toolkit's appeal as a boundary object and its effectiveness to find an acceptable performance across the multiple criteria posed by the codification conundrum we propose a tentative list of design criteria. We distinguish four categories of criteria: its capacity to be substantially relevant (i.e. to appropriately reflect a relevant knowledge base, in this case systemic design (Jones 2014)), to support sustained intellectual engagement, to invite participation and, finally, its capacity for 'ensoulment' (Jung et al. 2009).

Design criterion 1: Substantive Relevance

- In its overall shape the toolkit should hint at an overarching 'systemic design' methodology.
- It should modulate between levels of abstraction (from micro to macro; from user to system).
- It should foreground concepts such as feedback, leverage points, emergence, ...
- It should generate 'whole system' perspectives by various forms of systems mapping.

Design criterion 2: Capacity to support sustained intellectual engagement

- It should allow for open-endedness and adaptation to local settings.
- It should allow for combination of tools in various 'use scenarios'.
- It should include tools with an emphatically heuristic bent, i.e. intended to raising questions and opening up novel avenues of inquiry.
- It should not work towards 'a solution' but a portfolio of interventions.

Design criterion 3: Capacity to invite participation

- It should provide access to relevant expert knowledge.
- In engaging with hands-on devices and 'design games' it should shift the design process into users' everyday practice.
- It should include elements that invite users to be explicit about their own boundary judgments or those of the actors in the system they want to serve.
- It should provide access to a repository of documented 'use cases'.
- Its distribution model should be low threshold: ease of access, low cost.

Design criterion 4: Capacity to foster dialogue

- It should foster mutual understanding of the different perspectives based on social, economic, political and cultural points of view.
- It should stimulate dialogue by being 'the artefacts of conversation'.
- It should help to change the language, fostering to generate a new language suited to the desired future (Pangaro, 2002).

Design criterion 4: Capacity for 'ensoulment'(Jung et al. 2009)

- It should allow users to develop a 'sense of rarity' (through distinctive graphic design, by offering scope for personalization, customization, and by allowing (to keep track of an) idiosyncratic accumulation of experience).
- It should cultivate 'aficionado appeal' (through its capacity to sustain a 'social imaginary' at the intersection of toolkit designer and toolkit user, embedded in a community-of-practice).

References

1. Baelus, C., De Roeck, D., Dewit, I. & Van Ael, K. (2016) *'Toolkit. Product Service System Design.'* University Press Antwerp. Brussels.
2. Brown, T. & Wyatt, J. (2010) *'Design Thinking for Social Innovation'*. Stanford Social Innovation Review. Winter 2010, 30-35.
3. Checkland, P. (1993) *Systems Thinking, Systems Practice.* Wiley. Chichester.
4. Checkland, P. & Poulter, J. (2006) *'Learning for Action. A Short Definitive Account of Soft Systems Methodology and its Use for Practitioners, Teachers and Students.'* Wiley. Chichester.
5. Conole, G. & Oliver, M. (2002) *'Embedding Theory in Learning Technology Practice with Toolkits'*. Journal of Interactive Media in Education, 2002 (8), 1-28.
6. Dubberly, H., Esmonde, P., Geoghegan, M., & Pangaro, P. 2002. *'Notes on the Role of Language and Leadership in Regenerating Organizations.'* In S. M. Inc. (Ed.): Dubberly Design Office.
7. Dorst, K. (2015) *'Frame Innovation'*. MIT Press, Cambridge, MA.
8. IDEO (2015) *'Design Kit: The Human-Centred Design Toolkit.'* ideo.com/post/design-kit
9. Fischer-Kowalski, M. & Rotmans, J. (2009) *'Conceptualizing, Observing, and Influencing Social-Ecological Transitions'*. Ecology and Society, 14(2):3
10. Flanders DC (2017) De Henry Van de Velde Design Awards 2017.
11. Jones, P. (2014). *'Systemic design principles for complex social systems'*. In G. Metcalf (ed.), Social Systems and Design, Volume 1 of the Translational Systems Science Series, pp 91-128. Springer Japan.
12. Jung, H., Bardzell, S., Blevis, E., Pierce, J. & Stolterman, E. (2011) *'How deep is your love: Deep narratives of ensoulment and heirloom status.'* International Journal of Design, 5(1), 59-71.
13. Kimbell, L. (2013) *Mapping Social Design Practice: Beyond the Toolkit.* mappingsocialdesign.org/2013/11/19/mapping-social-design-practice-beyond-the-toolkit/
14. Monastiridis, S. (2016) *'Experimenting with Systemic Design - Contributing to the design of a Systemic Design Toolkit'*. Thesis for the Aalborg University.
15. Sangiorgio, D. (2014) *Bringing Complexity into Service Design Research. Systemic perspectives in Design for Services.* Presentation at Systemic Design Symposium, Oslo.
16. Star, S.L. And Griesemer, J.R. (1989) *'Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39'*, Social Studies of Science, vol. 19, no. 3, 387-420.
17. Vandenbroeck, P. (2014). *'Working with Wicked Problems'*. King Baudouin Foundation, Brussels.
18. Vandenbroeck, P., Wouters, L., Molenberghs, G., Van Gestel & Bijmens, L. (2006) *'Teaching Statistical Thinking to Life Scientists a Case-Based Approach'*, Journal of Biopharmaceutical Statistics, Vol. 16, Issue 1.
19. Van 't Klooster, S. (2007) *'Toekomstverkenning: ambities en de praktijk. Een ethnografische studie naar de productie van toekomstkennis bij het Ruimtelijk Planbureau (RPB)'*, Uitgeverij Eburon, Delft.
20. Vigano', P. (2010a) *'I territori dell'urbanistica. Il progetto come produttore di Conoscenza'*, Officina Edizioni, Roma.=