

Some Future Paths for Design Professionals: DesignX and Systemic Design

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Abstract

Since 2014, an international collaboration of design scholars has organized a transition for design practice and education from a legacy orientation to product and services design towards a broad range of sociotechnical systems and complex contemporary societal issues. At the 2015 Relating Systems Thinking and Design (RSD4) Symposium, DesignX cofounder Don Norman presented a keynote talk on the frontiers of design practice and the necessity for advancing design education to address highly complex sociotechnical problems. He identified the qualities of these systems as relevant to DesignX problems, and called for systemics, transdisciplinarity and the need for high-quality observations (or evidence) in design problems. By October 2015 the first DesignX workshop was held at Tongji University in Shanghai with this collaboration to share experiences and propose directions for design education and for the newly launched design journal *She Ji: The Journal of Design, Economics and Innovation*.

A half-day workshop was conducted by the authors in Toronto at RSD5, to sustain the relationship between the RSD and DesignX communities. The relationships between systemic design, existing educational programs and the DesignX agenda were explored in a collaborative discussion. This article summarizes the experiences and insights from design leaders, educators and practitioners participating in the half-day session.

Overview

The RSD workshop started with 26 participants, who were briefed on the context for discussion, and given instructions on a suggested approach.



The participants formed five groups for open discussion over a 90 minute period, and then gave brief verbal recaps supported by sketches from their group collaborations. Each group shared tentative summaries expressing contributions to emergent issues. The focus questions are summarized as follows.

Group 1's discussion centred on social designers:

- For a *design professional*, what can a community of practice do to develop our roles as social leaders on multidisciplinary teams for change?

Group 2's discussion centred on design educators:

- For a *design educator*, what specialized expertise requires preparatory knowledge and practices enable participants (citizens) to engage and lead transformations extended from the lab and studio to the arena and agora?

Group 3's discussion centred on designers working in policy:

- For *designers working in policy*, what can and should they do that others can't do?

Group 4's discussion centred on designers engaged with stakeholders:

- For *designers engaged with stakeholders* (customers to planet), what are the value(s) associated with the products and services co-created in the bigger system?

Group 5's discussion centred on design learners:

- For *design learners*, what is the best way to continue ongoing learning with real life that includes learning by failing?

The variety of issues had not been established in advance, and were the result of self-organizing subgroups coming together for about 90 minutes.



Susu Nousala chaired the workshop. The agenda was to explore together what people know, think, feel and experience about the field of design in relation to the DesignX and Systemic Design initiatives. On the wall was a shrub (initially envisioned as a tree) of quotations on DesignX, published in *She Ji*. The quotations were proposed as inspirations for opening up different directions for discussion, whilst also providing a starting point for the participants.

The DesignX Context

The Design X Collaborative was launched in 2014 through discussions by Don Norman and several publications (Friedman, Lou, Norman, Stappers, Voûte, and Whitney, 2014) in discussion within the global design community. After a year of development within design discourses, a series of articles and responses were published in the first issue of the new journal *Shè Jì* (Norman and Stappers, 2015). DesignX was presented as an expansive space for mutual disclosure amongst design professionals to address the gap in education, practice, and methods for increasingly complex multidisciplinary design problems, for contexts identified as sociotechnical systems. The *x* in DesignX was presented as an open variable for the many possible contexts often ignored or at best underconceptualized in the practice of design as a problem-solving discipline. DesignX presented itself as an “evidence-based approach for addressing many of the complex and serious problems facing the world today.”

The journal *Shè Jì* and the DesignX symposium address an interdisciplinary gap perceived as persisting in the design disciplines since the 1970’s (Friedman, Lou, & Ma, 2015). While the journal’s title ‘shè jì’ means to “establish a strategy” the subtitle refers to design and innovation in an economic context. According the founders, the journal intent is to “reinvigorate the concept of *Shè Jì* at the level of science and technology, and at systemic and strategic levels” (Friedman, Lou, & Ma, 2015). While the “economics” of *Shè Jì* have not been established in is literature to any extent, the design context has been largely oriented toward business, social policy and other evidence-oriented sectors. The editorial intent of the journal meets DesignX in addressing the interdisciplinary gap of design research addressing complex systems.

Interest from the management and organization communities has led to design thinking, and revisiting creative inquiry and the quality of experience (Buchanan, 2015).¹

The development of design research can be integrated with in the design curriculum through cross-disciplinary teams working in communities of practice (Poggenpohl, 2015).²

The DesignX position paper in 2014 led to a series of developments, including formal articles in the inaugural issue of *Shè Jì* centred on design for complex sociotechnical systems, and reporting of the 2015 DesignX workshop in Shanghai (Norman & Stappers, 2015a).³

1 Buchanan (2015) first presented the doctrine of placements and four orders of design in 1992. In DesignX this early work has been confirmed as applications for design thinking and the problems toward which the “arts of design” have been applied: Communication (symbols), Construction (things), Interaction (action), Integration (thought).

2 Poggenpohl (2015) suggests that “based on observed changes in design focus largely due to the widespread availability of technology, design research and its role in education and practice need to be newly situated. Design itself is taking on new challenges.”

3 Norman & Stappers (2015a) discuss the range of DesignX applications as including “the design challenges of complex sociotechnical systems such as healthcare, transportation, governmental policy, and environmental protection. We conclude that the major challenges presented by DesignX problems stem not from trying to understand or address the issues, but rather arise during implementation, when political, economic, cultural, organizational, and structural problems overwhelm all else. We suggest that designers cannot stop at the design stage: they must play an active role in implementation, and develop solutions through small, incremental steps—minimizing budgets and the resources required for each step— to reduce political, social, and cultural disruptions.”

The first DesignX workshop deliberately sought adjacent disciplines relevant to sociotechnical systems, including Flach's (2015) commentary from cognitive psychology and cognitive engineering. Flach makes point of the need for engagement and learning in STS, especially reconsidering the level of commitment necessary in designing for complex systems, as designers can't expect to "sit outside the sociotechnical system and throw solutions over the fence" (Flach, 2015).⁴

In another commentary, from a human-centric design perspective, the reduced ambition of small modular steps was seen as counter to design's tradition of bold thinking associated with giant creative leaps (Myerson, 2015).⁵

In response to the two commentaries (plus a third by Jones, outlined below), the authors of the original article responded that DesignX is not limited solely to one person, one phase, nor one solution. A creative collaboration between actors and stakeholders, would include development and preparation through design education (Norman & Stappers, 2015b).⁶

The shift with DesignX could be less emphasis on the "making", and more about (a) defining that which is to be made, and (b) the content (Friedman, 2015).⁷

4 Flach (2015) states in the commentary "While I don't fully disagree with Norman and Stappers' characterization of human limitations with respect to managing complexity, and while I realize that they appreciate the important and essential contributions of smart humans in solving complex problems, I do think it is unfortunate that they single out the local rationality of humans as a special problem with respect to DesignX. One theme that I would like to see associated with the DesignX initiative is the recognition that all agents—including the smartest humans and the most powerful automators—are bounded relative to the complexities of many work domains such as healthcare. Rationality is always local, especially in a rapidly changing world."

5 Myerson (2015) wrote that "Advice from Norman and Stappers that designers should avert their gaze from the sprawling imperfections of big systems, and 'muddle through' by taking small, modular steps rather than big leaps of creative faith is probably sensible. But it goes against the grain of more than 50 years of project-based design education in which designers have been taught to think big and bold outside the constraints of any system, and to learn through trying, making, and failing."

6 Norman and Stappers (2015b) state "The problems of working in these complex systems stem from the diversity of actors present in the arena; very few are aware of all the relevant work. We called for a different kind of design education, but [Peter] Jones warns us that "Because it's unlikely that graduate design education will sufficiently touch on these perspectives and their case studies, we risk ignorance of this extraordinary developed knowledge." Design education will have to prepare future professionals for this dimension of collaboration. As Jones says, 'we might ask: if 'we' across the design disciplines are not designing for complex sociotechnical systems, then who is?'"

7 Friedman (2015) notes "Several years ago, [the late M.P] Ranjan and I were at a conference on design for social business. ... During one of our conversations, Ranjan said: 'I think we need to redefine what we are doing and think that design is not about making the object, but rather about defining what one shall make and in what context. The word 'context' for me is very important, and when we talk about context, we think about the globe, about climate change, and ecology, and so on. All these things emerge from that one square foot of land on which you are standing. Can you do something with that one square foot of land?'"

History

In the workshop, the “shrub” of *She Ji* text excerpts remained on the wall throughout the session so that participants could consult with the reference points during the discussion period. However, these points are not novel or futuristic, but are summaries of the ideas put forth over several years of prior development of DesignX.

Peter Jones shared a brief summary of history with the DesignX movement. As a participant in the October 2015 DesignX meeting in Shanghai, he had also offered a commentary (Jones, 2015) in *She Ji* that emphasized the centrality of social complexity in all sociotechnical design contexts. While the issues of systemic and design-led approaches have developed over now 45 years from Cross’ declaration of design methods for complex problems (Cross, 1972). In workshop participation, the design education group grappled with the issues of educational responsibility and next generation modes and disciplines, consistent with developing views of solidarity and addressing the complexity of innovation policy for shared societal contexts such as climate change, new economic systems, and international affairs.⁸

Norman’s nine system dynamics proposed as characteristic in sociotechnical problems were simplified as (1) social and psychological factors of system participants and designers and (2) technical and systemic factors within STS problems. With complex systems, a DesignX Theory of Change would involve recognition of (1) initial conditions; (2) knowledge of social systems by internal and external stakeholders; and (3) the time required for change to become institutionalized.⁹

Jones also touched on the intent of the workshop to act as a bridge between DesignX and the Systemic Design communities, towards continuing future discussion.

Workshop Structure

David Ing introduced a templated way for each group to frame their ideas and discussions, based on a (forthcoming) paper on service system pattern languages (Ing, 2016). As an alternative to the traditional pattern format as a “solution to a problem in context”, a service systems thinking approach advocates:

- Who and What (voices on issues);
- How and Why (affording values); and
- Where and When (spatio-temporal frames).

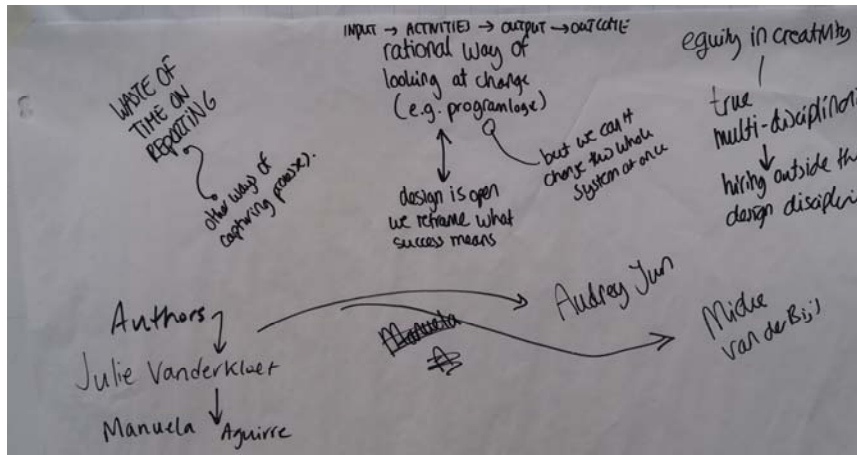
Within a discussion period of less than 2 hours, convergence on just the first item (i.e. who and what) would be considered good progress.

⁸ “The difference in the DesignX discourse was an intent toward achieving solidarity — if not consensus—that as design educators, ‘we must do something’ (Jones, 2015, p. 101).

⁹ Jones further discussed that “The most powerful knowledge for changing any system — and the minds of sponsors — lies with its deep users and stakeholders. These participants must be identified and often discovered over time.” And, “We may not have seen sufficient history to imagine and simulate the kinds of human connections that fail to obey system prototypes or expected rules. Designers rarely have to live with the consequences of their proposals, as has been seen in the wishful thinking of innovative design proposals for bottom of the pyramid problems such as clean water supplies and clean cook stoves in subsistence living conditions” (Jones, 2015, p. 103).

Workshop Groups

Participants were asked to move (i.e. sit in a seat different from that currently inhabited) and self-organize amongst common interests. The tables were pulled apart.

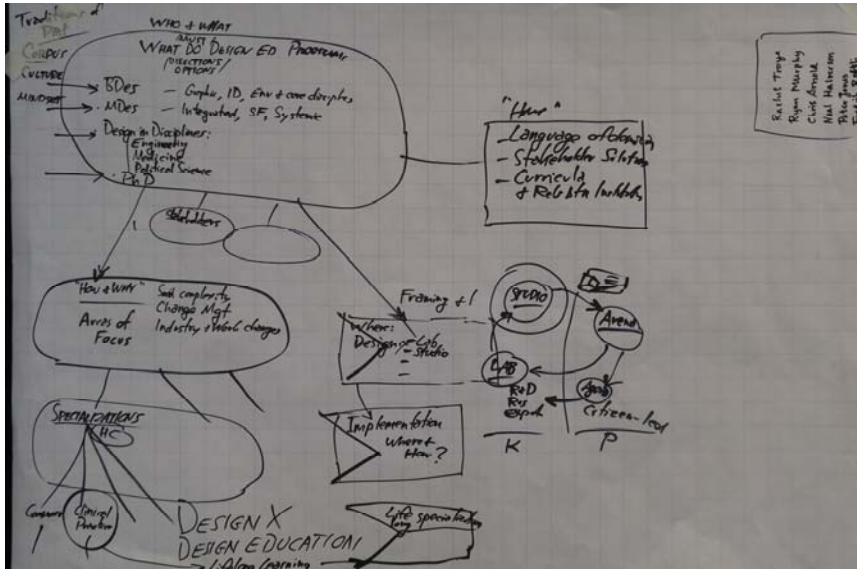


The discussion in the Group 1 table addressed emerging issues for social designers: For a design professional, what can a community of practice do to develop our roles as social leaders on multidisciplinary teams for change?

Questions and issues emerging from the inquiry included:

- Articulation of the value of design in social contexts.
- Developing an understanding of social systems.
- The necessity of inclusion and relationship building.
- Questions of facilitator roles in social design leadership, and communities of practice.
- The boundaries and identity of design as practice.





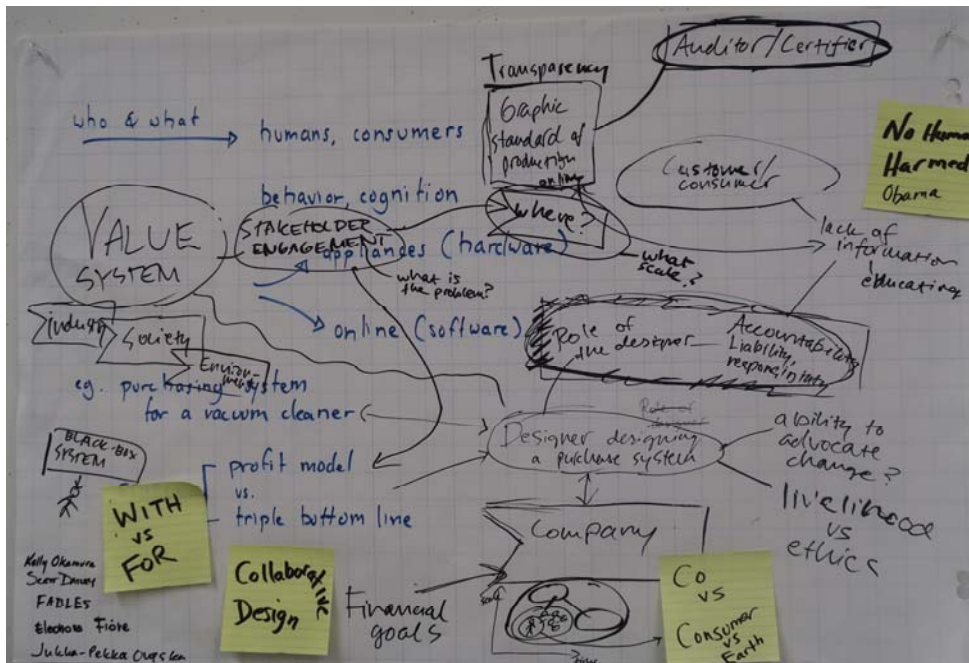
Group 2 addressed design education, exploring how DesignX problems might require specialized expertise and advanced knowledge. Particular attention was given to the gaps in current education and development, and the need to build strongly multidisciplinary approaches to design education. The group further developed the theme of engaging problem stakeholders (citizens) over the cycle from knowledge (lab and studio) to practice (arena and agora).



Group 3's discussion centred on designers working in policy:

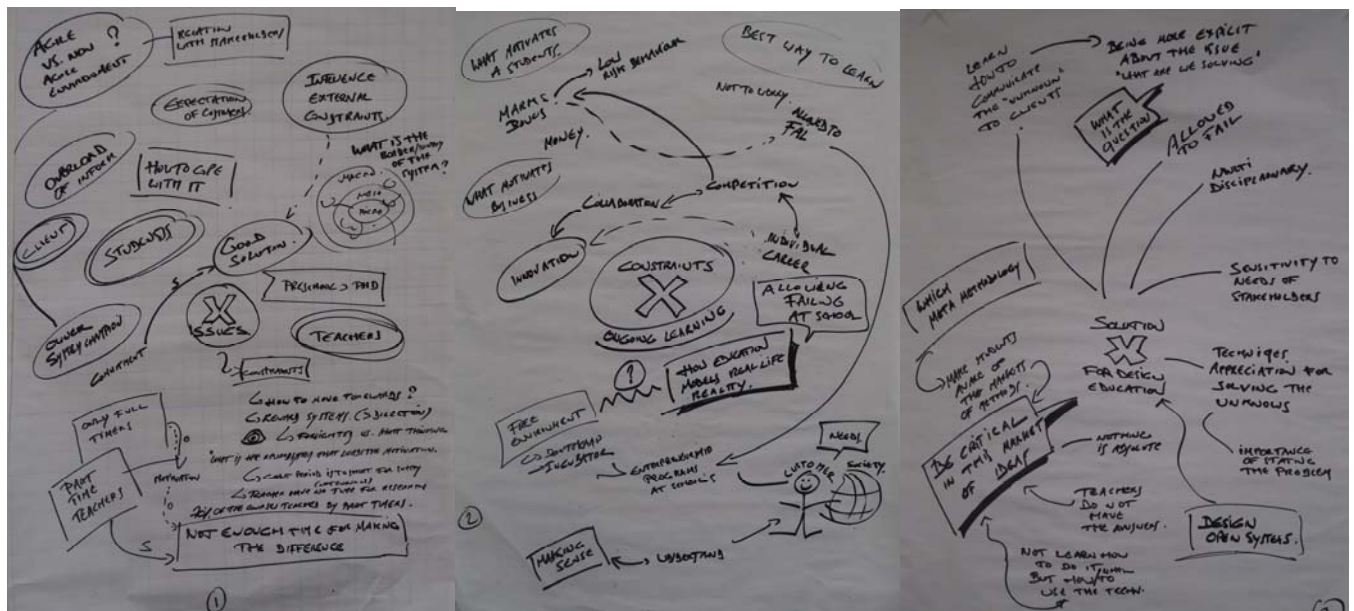
For designers working in policy, what can and should they do that others can't do?

Group 4's discussion centred on designers engaged with stakeholders:



For designers engaged with stakeholders (customers to planet), what are the value(s) associated with the products and services cocreated in the bigger system?

Group 5's discussion centered on design learners: For design learners, what is the best way to continue ongoing learning with real life that includes learning by failing?



A Discussion Snapshot

The workshop discussion highlighted the need for understanding what designers *do*, which led to discussions regarding the way designers think and act in various different contexts. This is nothing new in of itself. The questions about what are / should be / could be the best ways to perform design, to learn over longer periods of time, and to effect change, were commonly recurring themes. The discussion also emphasized the societal, particularly through systemic approaches and positioning of effective engagement for and with designers.

Regarding the societal aspects and approaches, Group 1 was concerned with the positioning of engagement through the lens of communities of practice, as an effective means to encourage change via collective and collaborative engagement. Group 4 was also concerned with engagement and positioning, but their discussion was more at meta level regarding systems based services for planet, while struggling with the “doing” question and which approaches to engage and enact.

Group 2 focused on the learning aspects through teaching and what to do to extend beyond the lab and studio for effective transformations. This echoes discussions on engagement and approaches, albeit from the perspectives of individuals training and learning to transfer beyond their circles, towards doing and engagement. Group 3 also focused on the “doing” aspect within the scope of policy, with discussions focused on what is possible for designers to do that others may not be capable of doing. This more societal focus explored engagement and approaches of what designers can do or perhaps not do.

Group 5 discussed and focused on the learning process which also included the right to embrace failure as part of the learning and doing process. This group in particular were concerned with the longer view of “doing” and “trying” which offered a slightly different perspective of other discussions focused on engagement, doing and approaches. The other groups also discussed longer range time lines, but group 5 positioned their discussion around continuous, on-going learning by doing.

In offering a pattern language structure to participants, the most immediate adopted was the first of the three parts (who and what):

- Who and What (voices on issues);
- How and Why (affording values); and
- Where and When (spatio-temporal frames).

Participants found this first part the easiest to work with, particularly within the constrained time available. With further research, this approach can be expanded and tuned for future interactions, including outlining of any group work contextual frameworks.

Next Steps and Continuing Workshop Themes?

This three-hour workshop produced a rich body of conversations that are only partially reflected in these artefacts. In the month following the RSD5 symposium, a reflection session was held with a Ph.D. cohort from the Tongji University College of Design and Innovation. It was interesting to note that the theme of what designers need to do for effective engagement can be not only about positioning, but also about the approach. An initial outcome could be to explore and expand different ways of raising this topic, via different groups, to sweep in many more perspectives that have yet to be recognized or fully appreciated.

The coauthors of this workshop report intend to continue to further this discussion. Future opportunities to expand and gain further insights into DesignX and Systemic Design with a wider audience will be sought.

References

1. Buchanan, R. (2015). Worlds in the Making: Design, Management, and the Reform of Organizational Culture. *She Ji: The Journal of Design, Economics, and Innovation*, 1(1), 5–21. <http://dx.doi.org/10.1016/j.sheji.2015.09.003>
2. Cross, N. (1972). *Design participation: Proceedings of the Design Research Society's conference*, Manchester, September 1971. Academy Editions.
3. Flach, J. M. (2015). Commentary on Norman and Stapper's paper: "Supporting Self-Designing Organizations." *She Ji: The Journal of Design, Economics and Innovation*, 1(2), 95–99. <http://dx.doi.org/10.1016/j.sheji.2016.01.002>
4. Friedman, K., Lou, Y., Norman, D.A., Stappers, P.J., Voûte, E. & Whitney, P. (2014). Why DesignX? Designers and Complex Systems. *Core 77*, Dec 6, 2014. Retrieved at: core77.com/posts/27986/why-designx-designers-and-complex-systems-27986
5. Friedman, K. (2015). The Second Issue of She Ji. *She Ji: The Journal of Design, Economics, and Innovation*, 1(2), 81–82. <http://dx.doi.org/10.1016/j.sheji.2016.01.008>
6. Friedman, K., Lou, Y., & Ma, J. (2015). Shè Ji: The Journal of Design, Economics, and Innovation. *She Ji: The Journal of Design, Economics, and Innovation*, 1(1), 1–4. <http://dx.doi.org/10.1016/j.sheji.2015.09.002>
7. Ing, D. (2016). Pattern Manual for Service Systems Thinking. *Proceedings of the 2016 International PUARL Conference*. San Francisco: Portland Urban Architecture Research Laboratory. <http://coevolving.com/commons/20161028-pattern-manual-for-service-systems-thinking>
8. Jones, P. (2015). Designing for X: The Challenge of Complex Socio-X Systems. *She Ji: The Journal of Design, Economics, and Innovation*, 1(2), 101–104. <http://dx.doi.org/10.1016/j.sheji.2016.01.002>
9. Myerson, J. (2015). Commentary on Norman and Stapper's paper: "Small Modular Steps Versus Giant Creative Leaps." *She Ji: The Journal of Design, Economics and Innovation*, 1(2), 99–101. <http://dx.doi.org/10.1016/j.sheji.2016.01.002>
10. Norman, D. A., & Stappers, P. J. (2015a). DesignX: Complex Sociotechnical Systems. *She Ji: The Journal of Design, Economics and Innovation*, 1(2), 83–94. <http://dx.doi.org/10.1016/j.sheji.2016.01.002>
11. Norman, D. A., & Stappers, P. J. (2015b). Authors' Response: "DesignX: For Complex Sociotechnical Problems, Design Is Not Limited to One Person, One Phase, or One Solution." *She Ji: The Journal of Design, Economics and Innovation*, 1(2), 105–106. <http://dx.doi.org/10.1016/j.sheji.2016.01.002>
12. Poggenpohl, S.H. (2015). Communities of Practice in Design Research. *She Ji: The Journal of Design, Economics, and Innovation*, 1(1), 44–57. <http://dx.doi.org/10.1016/j.sheji.2015.07.002>