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## Design science in health care: Co-designing an optimized patient pathway at a gynecological clinic of a large hospital in Switzerland.

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# Design Research at a Gynecological Clinic of a Large Hospital in Switzerland: A Tool to Mirror Human and Non-human System Elements (Working Paper)

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## Abstract

Motivated by bringing design research to a hospital context, this working paper applies a systems perspective to a completed design research project at a gynecological clinic of a large hospital in Switzerland.

Conceptualized as a mode of organizational research, the project focused on surfacing evidence through applying a patient experience and co-design approach. Reporting on episodes and results of the project allows expanding the notion of a design research in healthcare towards a systems thinking in design research perspective.

The systems perspective suggests to regard design research in a systemic context like a hospital as a tool that mirrors human and non-human system elements by activating the social system and by surfacing prescriptive design knowledge grounded in socialized practice.

This perspective contributes to a better understanding of the value of applying design research in a hospital context aimed at designing for health and designing for care.

*Keywords: design research, systems thinking, organizational science, co-design, patient experience, patient journey, patient pathway, evidence, design for care*

## 1. Introduction

What and how can design research contribute to innovating in healthcare?

Design research in healthcare meets complexity that is a combination of the institutional and the personal (Jones, 2013a, p. xviii). It also enters largely foreign territory as design practices are usually absent in patient-centered healthcare innovation. And if they are, they “risk the appearance of “not knowing” in an environment where confident knowing is all important” (Jones, 2013a, p. 269).

The challenges for a design thinking approach are therefore numerous. The key challenge is to demonstrate its value in creating evidence and prescriptive knowledge by emphasizing with real human beings in the context of improvement and innovation efforts in local contexts. This emphasizing ranges from gaining access to people in the hospital system to working with the people in the system, and ultimately becoming a natural part of the system.

Towards that end, this working paper looks at episodes and results of the project from a systems perspective. It suggests that design research can be seen as a tool to mirror (parts of) the existing

system to the actors involved with working in or on the system. It does so by activating human resources (patients, local care team members) and by revealing non-human resources of the personal (information on the clinic experience of patients) and social (knowledge of local care team) part of the system.

## 2. Motivation and Access

The motivation for the project was to bring design research to healthcare and specifically to a hospital context in Switzerland. It constitutes the first design research project conducted in a clinic of a large hospital in Switzerland that focuses on patient pathways and discharge management outcomes. A few known design research projects – especially from the UK, United States and Scandinavia – provided the rationale for addressing hospital directorates with the idea of applying design research and demonstrating its value for care under the umbrella of patient-centeredness. While the journey into unfamiliar territory ultimately proved to be successful and rewarding for both the research team and the hospital, the hurdles on the road to find a host for the project turned out to be numerous.

## 3. Framing

The project was framed at the intersection of organizational science and design science. The concept of the *relevance gap* as discussed in the organizational sciences (Romme, 2013) provided the angle to investigate the role and value of design as a mode of organizational research to yield evidence by means of prescriptive design knowledge. The clinic expected results that would help improving patient pathways to achieve both an optimized hospital experience for patients and economic benefits for the hospital in the context of the new Swiss DRG policy.

The project goal was to create evidence for optimizing patient pathways towards increased patient orientation. The research goal was to learn, through design research-based and methodical actions, how a high evidence base for process design optimization of patient pathways and discharge management outcomes can be generated. The research questions are related to the role of process-based *patient journeys* in research and to a context-related co-design approach with clinical staff and patients: In what way can *patient journeys* and *co-design case stories* as the outcomes of design science actions in a local design context produce a high evidence base for process design optimization of patient pathways and discharge management outcomes?

## 4. Episodes and Results

The project unfolded in 2 phases. In phase 1 – related to *patient journeys* – the research team conducted contextual, ethnographic conversations with 7 pregnant women and 26 clinical staff (doctors, nurses, midwives, breast-feeding consultant) that were on duty during child delivery. Data analysis was done by means of a Grounded Theory approach (Strauss & Corbin, 1998). This activity resulted in 19 issues that uncovered and gave evidence of moments of irritation, troubles, anger, fear and frustration and also confidence, wellbeing, comfort and feelings of security that the patients encountered in the al. These issues were visually mapped on a system-diagram that was defined by a horizontal axes representing the stages of the hospital stay (before, during, after) in line with an experience framework, and by a vertical axes representing the area of agency, i.e. hospital, the patient, and interaction between patient and staff members. The issues were supported by detailed reports on findings accompanied by quotes from patients and staff members.

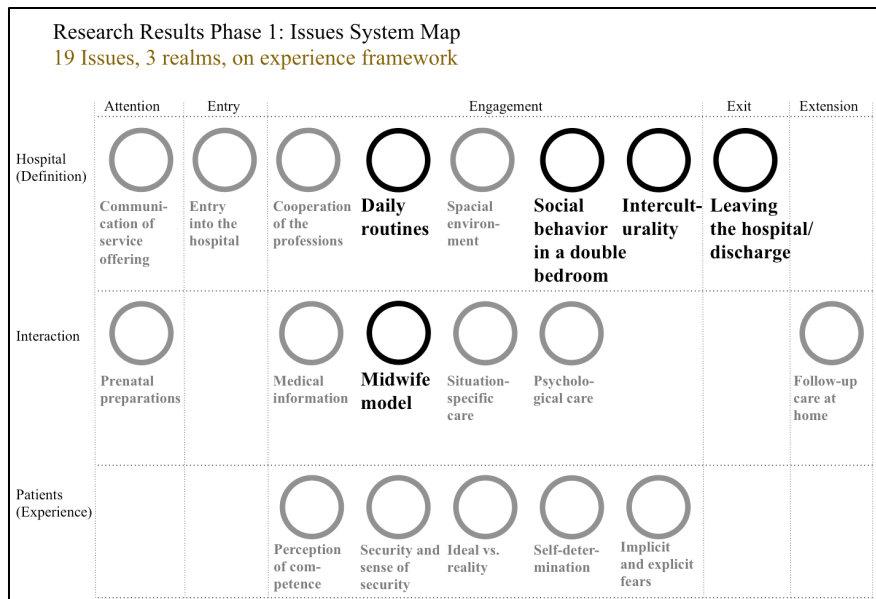


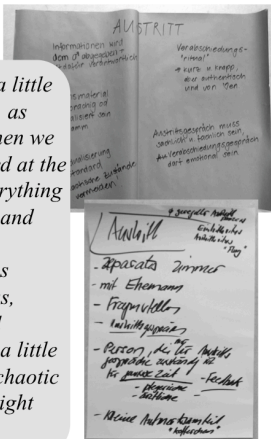
Figure 1 –Patient-centered care: Mapping of 19 Issues on a matrix structure (simplified version)

In phase 2 – related to *co-design case stories* – the research team facilitated a co-design workshop organized as a “design space” (Miller & Rudnick, 2011) with an extended care team that included 5 internal and 1 external staff and 2 former patients. Based on the system-diagram as the relevant input, this activity resulted in 5 solution concepts for the 5 most relevant issues, namely leaving the hospital/discharge, daily routines, social behavior in a double bedroom, interculturality, and midwife model. The care team combined its own knowing with the “knowing” as presented by the research team and created meaningful solution ideas.

As of December 2014 a third phase is under way, in which two solution concepts related to the issues hospital/discharge and daily routines will be further developed by the clinical team and implemented as a pilot with support of an external management consultancy. A third solution concept addressing the issue midwife model will be implemented as a result of a successfully completed pilot project.

Research Results Phase 2: Solution Ideas  
6 ideas: e.g. discharge: irritations due to organizational and medical reasons

“Well, it was a little bit cold, mmh, as opposed to when we were welcomed at the clinic and everything was prepared and booked, and everything was explained to us, discharge and farewell were a little bit ... yes ... chaotic might be the right word.”



**Patient experience-facing ideas:**

- Separate discharge (medical and psycho-social issues) and farewell (exit ritual, communicate transition from supportive environment to relying on oneself).
- Conduct discharge in separate room, not patient room (avoid disturbance).
- Discuss information related issues with partner (avoid stress for woman).
- Consider giving small gift as token of clinic’s appreciation.

**Staff process-facing ideas:**

- Define dedicated staff roles and plan distinct discharge related activities.
- Train nurses and physicians for conducting discharge conversations.

Figure 2 –Patient-centered care: from supporting quote to conceptual idea (example for issue leaving the hospital/discharge)

## 5. Systems Perspective

### 5.1. Access

From a systems thinking in design research perspective, challenges in terms of accessing and working within the hospital system were numerous:

**Competencies need to be balanced consciously.** In order for design research to unfold in a hospital context, the difference between working in the system and working on the system needs to be considered. While the design research team worked in the system towards issues and solution concepts, the external management consultancy was tasked with working on the system and towards implementation. This shift might point to complementing competencies in cross-disciplinary settings. While not further explored here, this issue might help in shedding light on possible boundaries or competencies of design research in systemic settings.

**In order to gain access to a hospital system from the outside, key personnel and team credentials are indispensable.** A cascade of doors had to be opened, ranging from the quality manager to the director of the care department and up to the hospital director and directorate, and eventually to the director of the clinic and the clinical team. The credentials of the research team manager were carefully evaluated. This eventually led to the permission to conduct the project within the larger context of a hospital-wide multi-project organizational development project already under way. While the medical and surgery departments that served as pilots for some of these projects turned out to represent hostile territory, the gynecological clinic eventually looked forward to gladly host the design research team.

**In order to work in the hospital system, different social groups need to be navigated in a prepared and conscious way.** In order for the design research team to integrate smoothly with the social space of the clinic, the patients as the most sensitive group of human beings needed special respect and attention. Supported by the director of the care department, the multi-project supported the research team in every possible way. He was in charge of recruiting the patients as the key research subjects, was in contact with the leadership team of the clinic to prepare the research teams' meetings with inpatients, organized contacts to external clinical staff, and organized the internal co-design workshop.

**The potential of design research in the hospital system is an equation with 2 variables.** One is the hospital (or healthcare organizations in general), the other is the design research team (or the design research discipline in general). Jones brings the current situation that is characterized by a big gap between the two to the point: "Design (of all disciplines) is not yet showing its impact in health services. For the most part, designers remain on the sidelines in institutions and practice, unsure of where and how to step in to make a difference. Compounding this position is the difficulty that designers are often not given the latitude to practice creatively and meaningfully in healthcare institutions. The medical and institutional care traditions do not offer a ready berth for design, and our traditional positions have little systemic impact if employed without strategic intent. Until we prove to be valuable contributing members of the care team, we risk being seen as specialists and even marginal players in the story of care." (Jones, 2013a, p. xviii).

He offers a way forward for “caring design” by shifting the focus from product to person: “The difference may entail moving from performing as contributing designers to coordinating patient-centered service projects. In these scenarios, the health outcomes of future patients are now at stake. Yet the imperative for innovation and service change means organizations will accept a higher level of creative and participatory design.” (Jones, 2013a, p. 17).

## 5.2. Issues

From a systems thinking in design research perspective, the system-diagram reflects a mix of personal, social and organizational factors that converge on specific issues.

Issues and system-diagram helped establish a key credibility of the research team in that the issues on the system-diagram represent credible “knowing”, thus avoiding the risk of “not knowing” (Jones, 2013a, p. 269), amplified by the fact that the knowing for the most part has been confirmed by the clinical staff.

The issues link to what Jones expresses as the “lived experience of health” (Jones, 2013b, p. 15) and the system-diagram relates to “transforming organizational practices by continually repositioning real human beings in the center of design and service management decisions.” (Jones, 2013a, xvii).

*The system-diagram acts for the clinical team members as a (structured) mirror through which they can reflect their practice and act towards patient-centeredness and through which they can see how patient-centeredness relates to their “coordinated work practices, organizational protocols, (and) patient communication” (Jones, 2013b, p. 26). As such it bears the potential of sharpening their consciousness regarding the clinic as a system. From another angle, the research team holds a mirror up to the clinical team members with regard to whom they are serving as human beings. This relates to the challenge for design thinking to “transforming organizational practices by continually repositioning real human beings in the center of design and service management decisions.” (Jones, 2013a, xvii).*

*The system-diagram represents non-human elements of the clinic system (issues, findings, quotes) and links to human-elements (patients and clinical staff).*

The potential of the system-diagram is that it points to potential relationships between issues and root causes of issues. Thus the map resonates with “systemic design in healthcare innovation” (Jones, 2013a, p. 272) in the way that it shows evidence of interconnectedness of the issues, and can be regarded as a basis for applying a system dynamics view to identify causal loops and mapping the “relationships between system components and their patterns of feedback.” (Jones, 2013a, p. 278). Both aspects might be investigated by means of including evidence from existing research or conducting further research. Addressing them in a more systemic way – versus in a point solution way – could support the clinical team in aligning itself in more depth and breadth with the concept of patient-centeredness as an emerging paradigm in health care.

## 5.3. Solution Concepts

From a systems thinking in design research perspective, the solution concepts reflect the capacity of an internal, local team to design solutions, given appropriate space and time as well as facilitation support.

The generation of the solution concepts helped establish process skills based credibility of the research team in that these skills represent a key asset in a system that otherwise heavily relies on standard project management approaches.

Relating to co-creation and goals, the solution concepts link to what Jones expresses as “Co-creating care” and “Design for Patient Agency” (Jones, 2013b, p. 5), the first related to how the solution concepts were generated, and the second related to the aspiring goal of patient agency.

Relating to outputs and outcomes, the solution concepts link to what Jones expresses as “Innovating points of care” (Jones, 2013b, p. 5), the focus points of interaction between patients and staff. They also relate to the idea of “designed healthcare” in the way that “the improvement of individual experience is a product of designed healthcare. Good, but not systemic.” (Jones, 2013b, p. 26) However, they are not more than individual point-solutions unless linked and related to their context, which is first of all the immediate clinic context, second the larger context of the hospital itself in terms of shared services and resources, and third the external providers. Jones refers here to healthcare “redesigned as a service system – coordinated work practices, organizational protocols, patient communication.” (Jones, 2013b, p. 26).

*The solution concepts as generated by the clinical team represent a mirror in two ways: first in that it shows that it is them who are able to innovate points of care, and second in that in order to improve the individual experience of the patient, the team does design work. From another angle, the research team holds a mirror up to the clinical team to let it experience that in order to design, one not only needs to know the local context, but also a (facilitated) process and a setting for co-creation. This relates to the challenge for design thinking inside the system. As Jones writes: “Design thinking at the social and cultural scale is collaborative and cross-organizational. Designers become conveners, sharing the process and co-creating artifacts, research methods, and local decisions.” (Jones, 2013a, p. 28).*

*The solution concepts represent non-human elements of the clinic system that have been actively generated by human-elements (extended clinical team). Based on a facilitated process and from a designing for health and designing for care perspective, the local team as part of the social system of the clinic did design work in the way design is done: by integrating diverse viewpoints and knowledge into preferred solutions aimed at generating preferred outcomes.*

The potential of the solution concepts as tangible outcomes is that they point to what is possible by making design research part of collaborative and cross-organizational work in the system. Integrating design research as a mode of organizational research more permanently into a clinic context would help clinical teams leverage design competence and skills and amplify the role of the mirror brought into play by design research. Thus a more systemic understanding of the clinic context and therefore more systemic solutions might be possible to achieve.

## **6. Conclusion**

Looking back at the design research project, how it unfolded, what it achieved, and how it seems to continue without the design research team, enables to re-frame the “design as a mode of organizational research” approach as a “systems thinking in design (research) approach (Sevaldson, 2013). It is suggested that systems thinking is reflected in the way the approach mirrors human and



non-human system elements by activating the social system and by surfacing information based on socialized practice to be used as prescriptive design knowledge towards designing for health.

By revealing *patient experiences* in research and activating human knowledge in *co-design*, this mirroring capacity could be regarded as a way to “catalyzing transitions” in various ways and on various levels.

For design researchers, “catalyzing transitions” may start with assembling and learning from the existing body of knowledge and evidence, and might continue with one’s own health seeking history and experience, as Jones put it: “If your intention is to apply design thinking and skills to make a difference in healthcare, start with your own history and perspectives. We are all health seekers. Uncover your personal interests and biases, your beliefs about life and health, and your positions on scientific evidence and the art of medicine. Unlike other fields of design and management, personal experiences and common sense may harness your motivation and inform a sense of genuine empathy.” (Jones, 2013a, p. 19).

For healthcare organizations such as hospitals, “catalyzing transitions” may start with pilots in integrating design researchers in the context of innovation pools or other cross-organizational entities tasked with improvement and innovation initiatives in order to *co-create* the value of the design approach.

This may be a way forward and at the same time giving direction for further research.

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