

PRoF Award abstract – Call 2015

LyingArchitecture: Informing Hospital Design about Patients' Moving Perspective

1. Research Outline

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| Acronym | LyingArchitecture |
| Project name in English | Lying Architecture: Informing Hospital Design about Patients' Moving Perspective |
| Pitch | The project's unlocks the spatial experience in motion of patients lying in a hospital bed to be able to inform architects and other actors involved in hospital (re)design. |
| Executive summary | Hospitals are complex buildings with a broad range of users. Empathizing with this diversity of users, and anticipating how they will experience the building being (re)designed, is for architects not an easy task. Therefore we developed a proof-of-concept of an information format to offer architects and other actors involved in hospital (re)design insights into patients' spatial experience . These insights are based on the perspective of different patient groups and highlight the diversity of user needs, the role of motion in patients' experience, and the meaning of the hospital environment in patient communication. By improving architects' understanding of patients' experience, the project contributes to improving future hospital buildings. |

2. Cause and context of the research

Hospital care is changing. More and more patients receive ambulant treatment (Eurostat, 2015), while in-patients stay in the hospital for a shorter, but intense period. Only a small minority stays longer than a week. From patients' perspective, many existing hospitals are no longer adapted to this evolution.

In light of this evolution, osar – an architecture firm specialised in healthcare buildings – realized the growing importance of (re)designing hospital buildings that respect patients' perspective. Effectively taking into account this perspective during design, however, is an important challenge:

- hospitals are complex buildings with a broad range of users. Empathizing with them, and anticipating how they will experience the building being (re)designed, is for architects not an easy task. Desk books for architectural practice are often based on a standardized person: a healthy, 1m82 tall male exploring space on foot (Neufert, 2000). In a hospital, however, this profile is met by only a small number of users, especially in the group of patients. Admitted patients experience space often while lying in a bed – either in their room, or when being wheeled to an examination, operation, or treatment.
- even if patients' perspective is the starting point for the (re)design of a hospital – which is increasingly the case – during the design process it often has to lay thumbs against aspects that are easier to 'prove' or calculate (Annemans et al., 2014). If hospital (re)design is to take into account patients' perspective, then architects, planners, and hospital boards need accessible, scientifically sound information about their experiences and needs.

The built environment can play a significant role in patients' wellbeing (Ulrich, et al., 2004),. Despite efforts by healthcare providers, however, for most people a hospital stay remains an unpleasant experience, in which the hospital building plays an important part. Most studies on hospital environments conducted so far try to prove the clinical outcome of one building aspect — e.g., the view through the window or presence of green (Ulrich, 1984a, 1984b). Yet, they fail to translate the results to the design of real-life settings (CBZ, 2008; Rubin et al., 1998). What remains largely under-researched is how the hospital is experienced from different patients' perspective — lying in a hospital bed, statically or while being wheeled through the building. In-depth insight into this experience is much needed to adequately equip those involved in planning, (re)designing, and constructing hospital buildings for the future.

3. Innovation results achieved

The project I aims to unlock what is much needed by architects, planners and hospital directors involved in hospital (re)design, yet difficult to access: the spatial experience of patients lying in a hospital bed — static or while moving. Providing an in-depth understanding of the relationship between the patient, the objects taking part in his/her

hospital life (e.g., the bed) and the building, is expected to contribute significantly to the realization of truly human-centred hospitals. Ultimately, we aim to provide architects and other actors involved in hospital design with sufficient evidence to design healthcare buildings that adequately anticipate patients' and other hospital users' experiences and needs.

The project resulted in a proof-of-concept of an **information format to make insights into patients' spatial experience accessible to architects** and other actors involved in hospital (re)design. To develop this format, we studied what kinds of information architects use while designing, where they search for it, and why they would use this kind of information (Annemans et al., 2014b). We then prototyped various information formats that were tested in terms of their applicability in the design process. One format is currently being developed in more detail: an interactive video that shares experiences from patients directly, and allows consulting additional information by clicking at hot spots. This format resonates with a) what we want to communicate – insights into patients' experience in motion; and b) architects' preference for information formats that are interactive and easily consultable online.

The information format communicates **new insights into how a hospital is experienced from the perspective of different patient groups**. To get a grasp on the wide diversity of hospital patients in a way that does justice to their (spatial) experience, we derived patient profiles from parameters used in hospital logistics – length of stay, standardization of the admission and care process, and the possibility to plan the admission (CBZ, 2007) – and slightly adapted these to be more experience-oriented. These criteria resulted in three patient groups at three research settings:

1. patients at a nephrology ward who were staying in the hospital for a long time and where wheeled to dialysis and back (Annemans et al., submittedb)
2. day surgery patients a) at an in-patient clinic, who were wheeled from their room to the operation room (OR) and back (Annemans et al., 2014a) and b) in a day surgery centre where patients walk to the OR (Annemans et al., submitteda)
3. patients at the emergency department (Annemans et al., submittedc).

Across different patient profiles experience seems to be shaped by interactions between spatial/material elements, social aspects and time related issues. Three aspects stand out:

- Patients with different profiles have different expectations w.r.t. the hospital building. Whereas most hospitals tend to group patients in wards according to their pathology, from an architectural point of view this does not seem to be the most appropriate. The small group of long-term patients long for a comfortable place to reside, whereas the majority of patients consider the hospital as a transit space; for the latter, the built environment matters but rather plays a supportive role in their treatment.
- Patients tend to experience hospital space *in motion*. Only for a minority the lying perspective is a static one. For most patients being wheeled around takes up a considerable amount of the time they spend at the hospital. Attention should thus be paid

not only to the patient room or examination room, but to each space where patients pass through including hallways, changing rooms, and elevators.

- Hospitals communicate their care vision to patients by what is implicitly told by the built environment, not only by what they communicate explicitly or how they educate their staff. Spatial and managerial organisation should thus go hand in hand. Only with a suitably designed environment can a care concept be fully experienced by patients as an improvement.

To obtain these original insights, the project developed a **novel, sensory-rich research methodology to gain access to patients' spatial experience while moving**. The methodology combines different techniques that allow to address the different sensory modalities involved in patients' spatial experience, and can be tailored to each patient's particular situation. Apart from face-to-face interviews with patients, techniques include participant observation, accompanied walks, photo and image production (asking patients to document their experience by taking photographs or making drawings), and video-elicitation (showing patients a video of the route they took and asking to provide subtitles).

An approved follow-up project points at the potential for other designers (product/service designers) and manufacturers active in the healthcare sector.

4. Link to the PRoF values

The project ties in with the PRoF values at different levels.

The project is motivated by **respect** for patients' perspective, and for the diversity this perspective represents. Giving architects and other actors an in-depth insight into this perspective should equip them to (re)design hospital environments that are truly human-centred.

Moreover, by documenting patients' spatial experience in motion, the project offers architects and other actors a nuanced insight into **what several values mean from different patients' perspective**.

- Documenting patients' spatial experience offers insight into whether or not they feel respected, and what aspects play a role therein. Several day surgery patients found the preoperative room a hallway rather than a place to pass time while waiting: *"[...] it bothered me that it was a hallway, not a room, a little bit disrespectful to lay people there. It seemed to serve multiple functions at once."* Whether patients feel respected, our findings show, also relates to the degree to which the hospital accommodates their relatives.
- Comfort can mean different things to different patients in different situations. In the day surgery centre patients seemed to appreciate the comfortable chairs in the lounge; during dialysis some (older) patients found a bed more comfortable than a chair; still other patients seem to find comfort in letting go of control when being wheeled through

the hospital. As a patient mentioned, "*sometimes they rode pretty fast. I liked that. I'm lying in this bed, so nothing can happen to me.*"

- The project offers a nuanced insight into what different patients consider (non-)stigmatizing in different situations, and how important non-stigma is considered compared to other values. While hospital beds might be considered as stigmatizing, some (older) dialysis patients prefer them to chairs because they are more comfortable. While being wheeled in a bed to the OR might be considered as more stigmatizing than walking, some day surgery patients prefer the former because they can close their eyes and be taken care of, while walking forces them to see all instruments, which makes them anxious.
- Our findings confirm that privacy is critical in patients' hospital experience. Yet where this privacy is most valued depends on the specific situation. Long-term patients seem to value privacy most in their room. Day surgery patients seem to prefer privacy when they feel most vulnerable, i.e., right before or after surgery. Not being confronted with being ill also can be considered an interpretation of privacy: "*That mirror [...] I don't like looking in it. It 's my face...*"
- Spatial experience, both static and in motion, holds an important social dimension: interactions with staff and relatives turn out to be an essential part of patients' hospital experience.

Some values are represented more implicitly:

- In patients' experience, safety and security appears in different guises. Some associate it with the presence of a safe in their room to prevent that private items are stolen. Others associate it with the presence of the bed during transport. Although as a patient you are well cared for, you spend a lot of time alone, whereas being transported in a bed requires that someone accompanies you, which apparently can work comforting.
- The project did not focus on intergenerational issues. However as the participating patients represented an average adult population, various generations took part in the study. Moreover, a study that spun off from the project allowed us to include the perspective of children.
- The project results underscore that truly human-centred hospital design is a matter not so much of preferences for certain colours or materials, but of more complex design concepts like flexibility and customizability. This requires a nuanced insight into how a hospital is experienced by different patient groups, which is exactly what the project set out to do.

5. Applicable IPR rules

At the start of the project a collaboration agreement was made between osar architects nv and KU Leuven represented by LRD. The agreement w.r.t. IP state:

- The IP of the background knowledge of the parties and all improvements of this are not being transferred
- Project results are when being created considered for an even portion (50/50) to be communal property of both parties.

6. Information on the partners

The project is a collaborative effort between osar and KU Leuven, supported by a Baekeland fellowship from IWT Vlaanderen awarded to Margo Annemans.

- osar is an architecture firm specialized in health care. Since 2006 it invests in research on topics relevant for their projects in close collaboration with research institutes and universities. The presented project is part of the research on “human-centred (hospital) design,” which aims to develop an architectural vision for the health care sector. Given the complexity of a hospital program and the limited knowledge available, osar decided that the research-by-design approach they took for elderly care would not suffice for research on hospital environments, and that more profound research was needed.
- At KU Leuven, the project is supervised by prof. Ann Heylighen who co-directs the Research[x]Design group, and prof. Chantal Van Audenhove who directs the Centre for Care Research and Consultancy (LUCAS).
 - Within the Architecture department, the Research[x]Design group conducts research at the interface of design research and social sciences. The 'x' in its name symbolizes the variety of interactions between research and design, as the group conducts research 'about' design, 'through' design or 'for' design. Application domains include, e.g., the design of healthcare environments (e.g., hospitals, housing for people with dementia, cancer care centres), and making built heritage more inclusive.
 - LUCAS is an interdisciplinary knowledge centre that offers research, training and consultancy in the fields of care and welfare. It brings together insights from policy, practice and research, in constant dialogue with all stakeholders. Over the years, LUCAS has become a key player in the care sector, responsible for establishing national and international standards. LUCAS exists for more than twenty years, constantly gaining expertise in various domains relating to care like elderly care, mental health care, and communication in care relationships.

7. References

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Addendum: Contact information

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