

# Towards a Bubbling Hospital Atmosphere

*Rays of Light to Enhance Orientation and Reduce Stress*

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**DRAFT**

As we learned from the various hospital users involved, a hospital visit, whether being it just a doctor's appointment or an actual admission, has a sincere impact on our emotional wellbeing. Most hospitals today are environments with a very specific look and feel, very uniform and rather anonymous, quite different from the spaces we daily inhabit. The scale of these institutional building outrages that of most other programs. Often an entire building block or more is occupied. Although various architectural interventions try to deal with the consequences of density, the need for functional square meters often results in a building with little contact with the outside world, with many rooms and a complex array of corridors lacking daylight. Also the interior design of many hospitals adds to this disorienting atmosphere, to often the walls and ceilings are white creating a uniform sterile appearance. New hospital designs are often inspired by other complex programs such as airports or train stations. This kind of highly technological places often generate a feeling of estrangement (Pallasmaa, 2005). On the one hand, when designing a hospital indeed similar problems, concerning functionality and logistics occur, on the other hand, the mental state of the visitor of a hospital is mostly very different from people using for example an airport. These non-places (Augé, 1995) mainly focus on the transit of people, guiding them from one place to another (Adey, 2011). Distraction to pass the, sometimes inevitable, waiting time is in places like airports offered by services and shops along the way. Places to retreat from the public space are scarce. However, the patients participating in the workshop frequently expressed the need for such spaces. These spaces that could be used to rest, such as waiting rooms, are in most hospitals rather dull and depressing. Often situated inside the building along a busy corridor or filling an empty corner, they do not provide the kind of space where you can voluntarily sit down to come to yourself. Additionally, the hospital building is frequented by all kinds of users. We should not only differentiate between employees, visitors and patients, even when focusing on one of these groups, such as patients, we encounter a wide variety. Individuals can have all kinds of permanent or temporally impairment, using a wheelchair or other aids influencing their spatial experience. Or people come alone or accompanied by relatives or friends, impacting the space they inhabit or the social support they need or not.

## **Bringing the outside in**

Research about the impact of architectural elements on the well being of patients and other hospital users can be situated in different fields. Traditional Evidence Based Design (EBD) studies aim to provide clinical evidence for the impact of spatial element such as presence of daylight and green, windows and views, acoustics, air quality, and orientation and routing (Berg, 2005; College bouw zorginstellingen, 2008; Rubin & Center for Health Design, 1998; Ulrich et al., 2004). Despite the proven impact of these aspects, as also Cor Wagenaar mentioned in his lecture at the symposium, there is more to a healing environment than what can be measured. We experience our environment through our senses (Pallasmaa, 2005; Rasmussen, 1964). How a place feels, smells, sounds, and looks determines our relationship with the world around us (Ingold, 2000). As such, a more profound understanding of our sensory experience could add to a better insight in which spatial element add to the well being of users.

An important element that lacks in a traditional hospital environment and closely relates to all three fields mentioned above is the relation from within the building to the outside world. This relationship consists of different elements. A view through a window influences patients recovery from surgery by reducing stress levels (Ulrich, 1984a), a view on (outside) green could reduce use of medicine by providing psychological benefits (Ulrich, 1984b).

Providing an outside reference, improves peoples orientation within the building. As studies on way finding and routing address lack of orientation as an important stressor, providing clues on where one is situated related to the outside environment adds to the reduction of stress. Apart from clues on spatial location, also the orientation in time is an element which is often lost or neglected within the hospital (Annemans et al., 2011). Daylight entering the building gives us an idea of the time of the day and the season. Additionally, rays of light entering the building provide multiple sensory experiences, not only the intensity of the light changes during the day, also the feeling of the sun on the skin or the sound of rain could influence one's state of mind.

### **The intimacy of being outside**

By opening up the walls of the hospital, we provide patients the opportunity to escape, even for a second, from the distressing environment of the hospital. Currently hospitals consist of a rather uniform set of spaces, freely accessible for patients and visitors. As such they deny their most important users the opportunity to choose between sitting somewhere private or public. Providing choice empowers patients, increases their mental strength and thus adds to their well being.

The bubbles offer a type of additional space, an alteration of the uniform hospital environment that connects them to the outside world. You feel like you are not inside the hospital anymore, but outside. Depending on the moment of the day and the year, the atmosphere in the bubbles can be very diverse, bright daylight during daytime of a starry sky at night. Bright light, or a clear visual relation with the outside, could give the impression of an increased exposure. Although at some place this could be the case (f.e. at ground floor level), in other places this is not necessarily true. Being outside the hospital walls (literally) could also be interpreted as a way of retreating from the clinical environment, a city view by night can be considered very intimate by some. The bubbles do not stand on their own, they are part of the hospital building as a whole. Depending on their size and location they provide a different level of privacy just like other space are more or less private.

The feeling of privacy is closely related to the possible exposure to the people surrounding you. Experiencing the light of the sky on your own can be a very relaxing private experiencing. Moreover, as we learned from the patient we followed, the notion of privacy does not implicate necessarily being on your own. Having a space to retreat with the people close to you can be experienced as very intimate. As long as it is clear that no one outside your comfort zone is watching, a space is considered private. Being outside the hospital will only add to the feeling of escaping the opposed presence of strangers around you.

## Where to relate to the outside world?

As we aim to reduce patients stress levels, the bubbles should be located at those places where the occurring situations trigger an increased feeling of unease. As mentioned above, lost of orientation in space and time could be an important factor, but also typical settings related to medical processes such as waiting areas or busy transit spaces could increase stress. More concrete places that could need a powerpoint are:

- places which have a lack of orientation (f.e. hallways with lots of corners and turns) > to be measured based on the distance from the last connection to the outside (entrance of exit doors, windows)
- places which have a lack of natural light/daylight/view outside (f.e. waiting rooms inside the building) > to be measured by distance to the outside wall.
- Places which have a lot of traffic of different kinds of people, which can deliver a lot of stress due to crowding.

Obviously the locations of the powerpoints will be different for each hospital building. A hands-on approach towards the hospital, whereby the exact location is only defined after really getting to know the building is essential.



LACK OF DAYLIGHT DIAGRAM - THE MORE BLUE THE LESS LIGHT ENTERING



PEOPLE DENSITY DIAGRAM - THE MORE RED THE MORE PRESSURE OF CROWDING



LACK OF ORIENTATION DIAGRAM - THE MORE PURPLE THE MORE DIFFICULT TO ORIENTATE INSIDE THE BUILDING



### OVERALL DIAGRAM - IDENTIFYING THE POINTS OF PRESSURE



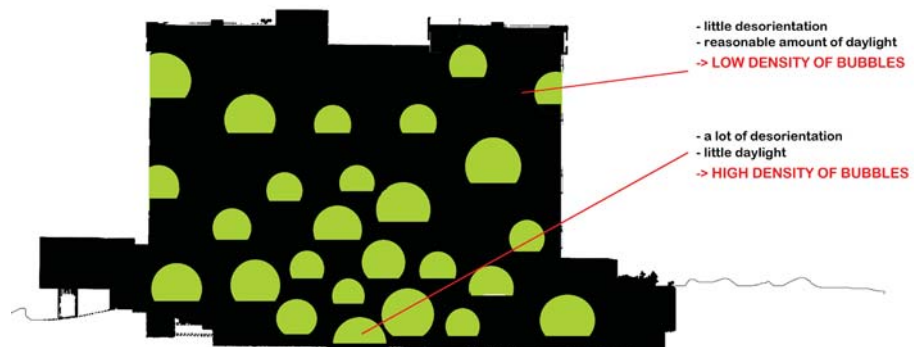
## PLACING OF POWERPOINTS

## How to relate to the outside world?

The motto for the bubbles is “Bringing the outside in.” As said this could relate to different elements of the outside. It could be the view, or the daylight rhythm. Bubbles that actually puncture the outside walls obviously can have a one on one relation with what is happening outside. Here one can feel the sun, enjoy the view and situate oneself in relation to the environment.

To provide the same sensation at a location inside the building, far away from the outer façade, more creative measures should be taken. A projection from the skyline combined with a light intensity according to the time of day and the season could in this case be a possible solution. When the sun is setting outside, the sun is also setting in the bubble, and this changes with the season. At night a starry sky will be projected inside the bubble. In this way the light is dynamic and its intensity at its peak at 12' o clock. A full projection of the (urban) landscape around the hospital, could give people a sense of orientation. However, as we do not want to betray the persons in the bubble as to where in the building they are, deep inside, or close to the façade, the inside bubbles should be clearly a representation and not try to fake an actual view.

*(I am not sure about what we agreed on this part. Is the view in the bubble a representation, or not? I think this is an important discussion. The images I put below are focused on the idea that the view in the bubble corresponds with the outside view.)*



Section of a hospital with bubbles. The view in the bubbles correspond with the view outside.





## Architectural quality and design criteria

Our original idea as a result of the workshop existed of no more than simple boxes that could be added to the facade of the hospital. From the inside patients could benefit from additional interior spaces with plenty of daylight, from the outside, the hospital would get a more open images, sharing ongoing activities with the outside world. Although these ideas are still valid, the aspired quality shifted towards the provision of a (literal) alteration of the existing architectural environment. Therefore, the bubbles should be clearly different from the existing hospital building in appearance. Shape, size, and materialisation can add to that.



Inspiration: Soap bubbles, Source: <http://graphics.ucsd.edu/~iman/SoapBubbles/>

### Shape

Whereas traditional hospital spaces follow a stark grid to provide a spatial answer to the functional organisation of the hospital, the form of the bubble should be different. By designing them as organic volumes, they break free from the confined, boxed uniform environment of the surrounding building.

Previously we stated that the bubbles inside the building should be suitable for a representative projection of the outside sky(line). This aim can only be achieved if a 360° shape. The sky does not have walls and corners.

One could even state that round shapes are more natural, as such holding an implicit reference to more natural creations.



### Size

As we found out from the patient we followed during our workshop, it made a considerable difference that he could experience the whole 'healing process' together with his friends and family. Being alone or together with others strongly influences how one experiences the hospital. Therefore, size and interior organisation of the bubbles should aim to suit different amount of people. By doing so we give people the choice between having a private bubble, and therefore having a private skylight experience, or sharing a bubble to experience it together.



### Materialisation

We could imagine, the bubbles being made out of a polyethylene structure which is put under pressure, and therefore stable. Like the façade of the Munich Allianz arena. With overpressure, we can make sure the bubbles keep consisting of fresh air and are not a source of infection. Making it like this also takes acoustics into account. Things that need to be taken into account into the design of this bubble are further:

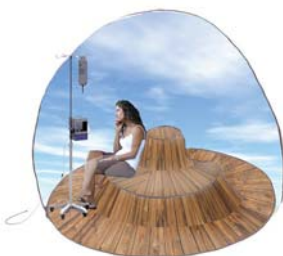
- sustainable

By creating a light and easy to mount structure, it is just a matter of creating cavities and insert the bubbles, which could be mounted into the existing structure of the hospital without too much alterations.

- Hygienic properties

In materialisation and detailing, the high hygienic properties of the hospital should be taken into account.

- Patient safety is something which should be not underestimated
- Further Technical and Functional requirements, like how are we going to project our environments inside the bubble, is this a LED structure or a Beamed surface. To really create alterations there will be as well the addition of sound. And optionally the sound.



## Measuring quality

Given the twofold inspiration for the intervention, both integration aspects proven to have clinical outcomes and sensory rich experiential ones, the assessment as well should focus on both quantitative and qualitative evaluation. Stress reduction in patients could probably be measured by registering blood pressure and heart rates. However, given the entanglement of environmental elements, both spatially and socially, this may not be an easy task. More straightforward will be to register certain easily countable amounts like the number of people using the “bubbles” or the interruptions of staff being asked where one should go. Obviously the success rate of the bubbles will largely depend on their (architectural) quality. Both readability and attractiveness will be key elements for the frequency of use. These too can be analyzed to learn more on which spatial qualities influence a wholesome environment. Focus groups or even ethnographic research, both before and after the intervention, could provide us with more nuanced and rich information, not only generating data on whether but also on how and why the initiative is successful (or not).

## Conclusion

A hospital visit is for many patients a stressful and unpleasant experience. The hospital building itself plays an important role in this perception. The many functions and the complex organisation often result in uniform, disorienting buildings, where, as a patient, you can feel very small and unimportant. Uniform lighting and a labyrinth of corridors, halls, and elevators even reinforce problems of disorientation and unease, causing feelings of stress and anxiety in already vulnerable people.

With the introduction of the bubbles, we would like to introduce an alternative for this uniform environment. As the buildings we know today lack daylight and due to their scale hold many space that lost the relation with the outside world, our intervention would like to bring both back in. We aim to bring the outside in! The bubbles should be seen as the antipode of the rest of the building. Instead of uniform lighting all they long, they reflect the light setting outside, as such providing a constantly changing setting. People are offered the choice to enter a different kind of space, size and interior design can differ. However, what all the bubbles have in common is their organic, round shape, clearly communicating that once you enter you step outside the functional grid of the hospital.

As most hospital spaces are presently not articulated or suitable to retreat, we hope the addition of the bubble could be a start to alter peoples' mindset by providing an alternative to the existing environment.

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