Graduation Plan for AE students

Personal Information

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Studio

Studio:	Architectural Engineering
Teachers:	*Monique Smit* (Architecture) *Alexander Koutamanis* (Thematic Research) 3rd to be announced (Building Technology)
Argumentations of choice of the studio:	Interest in bringing together user processes (healthcare) and intelligent building processes in an integrated architectural design

Title

Healing Environment for a Neonatal IC Unit

Graduation Project

Problem Statement

In current hospital buildings, great challenges for contemporary health care materialise: an aging population, and an incremental demand for complex health care that delivers high quality at an affordable price (Grift & Velden, 2013). As such, concepts of architectural layouts for hospitals have become obsolete: these are based on traditional configurations, which do not account for current challenges in health care (Evitts, 2007).

This research focuses on the challenges for designing a new Newborn (Neonatal) Intensive Care Unit (NICU). Newborn intensive care is care for critically ill newborns requiring constant nursing, complicated surgical procedures, regular respiratory support, or other intensive interventions (Hardy, 2005). Presently, the neonatal intensive care unit (NICU) population is increasing attributable to recent social and demographic trends such as teenage pregnancy, technological advances in neonatology, and fertility medicine techniques causing multiple births and low birth weight neonates. As a result of the increased use of NICUs, many hospitals are remodeling their facilities (Hardy, 2005).

Research Objective

In the past decennia, the effects of the physical environment on the healing process and well-being have proved to be increasingly relevant for patients and their families as well as for the medical staff (Huisman et al., 2012). Therefore, this research paper aims to contribute to finding tangible grips for architects to implement the concept of healing environment for designing a (department in) a health care facility. Thus the research objective is to create a better understanding for the architect of the (technical) needs of Healing Environment in an architectural design for a NICU.

Research Question

"How can a NICU design be made, in which the architect foresees on technical and spatial requirements to create an architectural design based on the principles of Healing Environment?"

Design Case
In Amsterdam, the two academic hospitals, *VU Medisch Centrum* (VUmc) and the *Academisch Medisch Centrum (*AMC*)* admit to the current changes going on in health care, and see alliancing by means of merging both facilities on one location as their ambition (on the long-term) (Grift & Velden, 2013). The centralising of both facilities will develop in four steps, relating to four core healthcare themes: *Mother-Child Centre (conveying a NICU) , clinical neurosciences, oncology and acute care*.

Primary goal of the established collaboration between the AMC and VUmc is to give an improved quality guarantee for specialistic healthcare, in a healthcare facility that is apt for future change (Grift & Velden, 2013). By concentrating specialistic healthcare on one location, the patient is guaranteed with the availability of knowledge and expertise in complex and rare diseases.

Design Objective
The design objective chosen concerns a new accommodation for the NICU positioned on location of the AMC hospital(Grift & Velden, 2013). This intensive care unit provides in a complete concentration of newborns and mothers within the intensive care, high care and medium care (Grift & Velden, 2013). The centre will be partly build as a retrofit within the existing structure and partly build as an expansion on the existing building structure (Valk, 2015). The design objective concerns the design of the complete delivery of the NICU.

Overall design Question
"How can a new Neonatal IC Unit for fusion of the AMC and VUmc be created, that addresses the challenges of contemporary health care in a design based on Healing Environment?"

Deliverable
- **Architect's manual (Research)**: this thesis research delivers a manual for architects that gives insight into the different building elements (i.e. rooms, configurations, architectural elements) for a NICU. It describes which (possible) design choices have to be foreseen, and what trade-offs have to be made in order to convey healing environment principles in the design.
- **Test case (Design)**: an architectural design for a NICU for Amsterdam, that showcases improved choices on basis of a visualised trade-off

Thematic Research Focus
The thematic research aims to explore the possibilities for the architect to create design variants on basis of an understanding of the spatial and technical requirements that stem from Healing Environment principles. These principles are categorised by "Themes for the Quality of the Built Environment" (van der Schaaf, 2009) from which it can be understood what design choices the architect (amongst other designers like the engineer or interior architect) has influence on.

Methodology
1. Case Study healthcare designs: providing insight in the layouts and components of current healthcare designs
2. Interviews: validation and confirmation of practical feasibility of found solutions.
3. Literature study: learning about healthcare (designs) from theory
4. Research by design: validating theories or assumptions by testing it in an architectural design.

Planning

- Apr	- P1 presentation	presentation of this research proposal
	- start-up research	finding the essentials for mother-child centre architectural design – interviews, set-up of case study
- May	- research	case study: demarcating the design components, study how these can be integrated
- May/June	- research by design	studying variants, catalogue
- Jun	P2	*presentation of research*
- Oct	P3	*Developing architectural design*
- Dec	P4	*Finishing architectural design*

Literature

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