Human and the Machine

another take on a hospital architecture

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Introduction

Current development in the healthcare sector shows a clear emphasis on the financial aspect of running the hospitals. We can trace this to the 1970's crisis and economic stagnation when many economists started introducing neoliberal views on economy.[1] In the Netherlands it led to slow erosion of the welfare state. In 1990's policy of "the purple coalition" significantly reduced number of beds and staff to stop increasing spending in healthcare.[2] In 2005 Dutch government almost completely shifted healthcare services to the private sector in order to cut costs and increase quality of services through competition of healthcare providers. Mergers between smaller institutions that are trying to stay afloat, construction of new big facilities outside the cities were land is cheaper or accelerating shift towards outpatient care and telemedicine are all signs of neoliberal outsourcing. "*The hospital director became manager. The doctors became staff. The patient became client*" [3] To picture this market-based trend, I quote a question asked by investment bank *Goldman Sachs* in the biotech research report: "*Is curing patients a sustainable business model".*[4] We can argue that hospitals reflect the mechanism in society, culture or economy.[5] If healthcare is market-driven, its architecture shows that.

The pandemic, although it has shown severe shortcomings and un-preparedness of our healthcare system, many specialists from the research sector predicts a further acceleration of the abovementioned trends in order to compensate financial exhaustion.[6] Emphasis on a outpatient care and telemedicine as ways prevent spread of contagious diseases by lowering contact between people favourably coincides with shifting responsibility for one's health from health-provider onto individual.

The most popular notion in healthcare design discourse is Evidence-Based Design which, by using "*best available evidence*" usually in the orm of measured clinical outcome, revolutionized the healthcare design. The popularity of EBD finds its explanations also on the economic side. If architecture has a positive impact on patients health and can lead to short-stay or reduction in medication, it can also lead to savings. Late criticism of this thinking points to the dismissal of qualitative input or

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[1] Nicola Smith, "neoliberalism," *Encyclopedia Britannica* (2019), https://www.britannica.com/topic/neoliberalism.

[2] Alex de Jong, "The Netherlands: Neoliberal Dreams in Times of Austerity - New Politics," *New Politics* XIV, no. 54 (2021). https://newpol.org/issue_post/netherlands-neoliberal-dreams-times-austerity/.

[3] ""The current crisis had exposed the structural shortcomings of our healthcare systems"," @dezeen, updated 2020-04-22, 2020, accessed 03.04.2021, 2021, https://www.dezeen.com/2020/04/22/coronavirus-shortcomings-healthcare-systems-reinier-de-graaf/.

[4] "Goldman Sachs asks in biotech research report: 'Is curing patients a sustainable business model?'," @CNBC, updated 2018-04-11, 2018, accessed 03.04.2021, 2021, https://www.cnbc.com/2018/04/11/goldman-asks-is-curing-patients-a-sustainable-business-model.html.

[5] B. L. Hansen, Architectural thinking in practice: A qualitative study of architectural practice seen from the view point of a refl ective practitioner, 2018, http://resolver.tudelft.nl/uuid:d7709179-c5e0-4020-9c7a-b7c9c5a2d011.

[6] "More hospital consolidation is expected post-pandemic," Helthcare Financial Managment Assosciation, 2021, accessed 24.03.2021, 2021, https://www.hfma.org/topics/news/2020/08/more-hospital-consolidation-is-expected-post-pandemic.html..

narrowness of research focus and calls for incorporating broader qualitative studies in healthcare design.[7]

While researchers and architects worldwide discuss post-covid hospital architecture's future, they often talk about capacities, flexibility, new technological requirements or infection prevention.[8] This outbreak – preparedness discourse which is purely functional and EBD which bases itself only on strict clinical input, do not consider information about socio-psychological aspects of good healthcare architecture examples. If hospitals are going to develop in a direction when physical contact would be limited to a minimum, or where the pandemic leaves a significant stigma on hospitals as unsafe places, then arise questions about extreme isolation, fear and exhaustion. Taking this observation and recent critique of EBD, I want to focus on more undervalued problems like the experiential and social aspect of future changes in the healthcare built environment.

Considering outlined before trends in healthcare architecture and my design choice, I want to answer the question:

Which experiential and social qualities should be woven into the architectural brief of the modern hospital to ensure the positive experience of those who interact with it?

How can hospital architecture accommodate, different and often contrary needs of its users?

How can the physical environment facilitate bonding, empowerment and mechanisms of care?

[7] Mahbub Rashid, "The Question of Knowledge in Evidence-Based Design for Healthcare Facilities: Limitations and Suggestions," *HERD: Health Environments Research & Design Journal* 6, no. 4 (2013), https://doi.org/10.1177/193758671300600407.
[8] Christoper Booker, *How the pandemic is reshaping hospital architecture and design*, podcast audio, PBS NewsHour Weekend, accessed 15.03.2021, 2020, https://www.pbs.org/newshour/show/how-the-pandemic-is-reshaping-hospital-architecture-and-design.

Figure 1. Artistic interpretation of functional/technological aspects and cultural social beliefs about “healing environment” (Collage by author).

Theoretical framework

The hospital architecture's classical historiography speaks primarily about either technical advancement of architecture and beauty or progress in medicine and how these theories were applied to design.[9] Worth mentioning is that architecture historians and thinkers like Micheal Foucalt attribute the beginning of the hospital we know to the age of Enlightenment. Especially French philosopher wrote about the change of hospital from a place of dying to a place of cure.[10] Discussing the new concerns about improving the population's health in the 18th century, he introduced the term of "*Les machines a guerir*" – curing machines – a new hospital institution that served a collective purpose. [11]

Rapid technological advancements of the turn of the 19th and 20th centuries, like introductions of X-ray or the discovery of germs has dramatically technologized hospital architecture. Foucault discussions about the medical gaze, power and discipline[12] run parallelly to broader criticism of modernism, capitalism, objectification of human body and marginalisation of patients. Interestingly, the neoliberal economy mechanism that were applied healthcare and turned patient to a client somehow facilitated the changes in hospitals architecture. Although we can find first attempts into more humane environments in 19th century or modernism, it gained much bigger ground in late 20th century concepts of patient-centredness when patient-client well-being became a rising priority. Result was creation of hospital spaces by allusion or even illusion of hotels and shopping malls with the use of their segregation principles that prohibited patients from seeing negative process in hospital. [13]

Hospital architecture was also extensively examined in terms of its social relations. Researchers like Thomas Marcus or Kim Dovey has produced substantial research into how power, control or coercion materializes in buildings. They focus on clearly negative aspects of architecture's ability to frame relations between people; however, they acknowledge also the notions of bonding and empowerment, even if it is not a primary lens to them[14]. Looking at how architecture can produce positive relationships is then a valuable research goal.

Dramatical technologization of hospital architecture clearly fall into the bag of techno-scientific practices. Interesting is a feminist approach of authors like M. Puig de la Bellacasa to technoscience which incorporates notion of care to uncover marginalized by techno-scientific thinking practices. [15]Furthermore, this critique of technoscience applied to profit-led architectural practices points out the overlooked ones that aim to "*enduring the society as a whole*" and show another view on sustinability.[16] In architectural practice, this implied valuing sustainability that is tied more to the vernacular and traditional rather than highly technological. [17] In my opinion, this riticism also provides arguments for exploring practices beyond the techno-scientific domain, the ones that are more cultural and local.

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9 Noor Mens and Cor Wagenaar, *Health care architecture in the Netherlands* (Rotterdam: NAi Publishers, 2010).
10 Michael Foucault et al., "The incorporation of the hospital into modern technology," in *Space, Knowledge and Power: Foucault and Geography* (2012).
11 Michel Foucault, "La politique de la santé au XVIIIe siècle," in *Les Machines à guérir : aux origines de l'hôpital moderne*, ed. Michel Foucault (Bruxelles: P. Mardaga, 1979).
12 Michel Foucault, *The birth of the clinic* (London: Routledge, 2003)..
13 Victoria Bates, "'Humanizing' healthcare environments: architecture, art and design in modern hospitals," *Design for Health* 2, no. 1 (2018/01/02 2018), https://doi.org/10.1080/24735132.2018.1436304.
14 Kim Dovey, *Framing places : mediating power in built form*, 2nd ed. ed., The architext series, (London: Routledge, 2008).
15 Maria Puig de la Bellacasa, "Making time for soil: Technoscientific futurity and the pace of care," *Social Studies of Science* 45, no. 5 (2015/10/01 2015).
16P. Rawes and D. Spencer, "Material and rational feminisms: A contribution to humane architectures," in *Architecture and Feminisms: Ecologies, Economies, Technologies* (2017).
17 P. Rawes, "Situated architectural historical ecologies," in *Forty Ways to Think About Architecture: Architectural History and Theory Today* (2014).

However latest feminist approach do not values one approach over another. Peg Rawes uses distinction in to rationalistic and affective in order to critically engage with both of them[18]. Therefore looking into architectural care practices rejected by scientific design of healthcare could complement the second.

Nonetheless in techno-scientific world of healthcare predominant is evidence based design. Neoliberal aggressive emphasis on evidence – based medicine[19] required using evidence also in design. Roger Ulrich and his study of the impact of patient's window view on their well-being gave ground to anchoring dependency of hospital design decisions on measurable clinical outcomes.[20] We can see it as The late criticism of evidence-based design includes its mechanism to universalize solutions, diminishing patient subjectivity and solely depending on quantitative data with the rejection of the qualitative input.[21] This critique calls not for the abandonment of EBD but to complement its solutions with the ones coming from less tangible aspects of the built environment. We can here also draw a parallel to critical engagement of both affective and rationalistic practices.

Often, especially outside academic fields, the term EBD is treated almost as a synonym of "*healing environment*". What "*healing environment*" is hard to grasp, and some research proves that. Kirk Hamilton, a prominent EBD researcher, defines a healing environment as the one which is an effect of EBD and which healing or curing qualities were scientifically proven. [22] In their research into the Maggie's Centres, researchers from KU Leuven use the WHO definition of health, which includes physical, mental, and social well-being and emphasizes the two later parts as recommendations for design and research.[23] Birgitte Hansen proposes to understand the "*healing environment*" as a social construct. She bases it on cultural or social beliefs and assumptions of what healing is (Figure 2)and shows that designers use them to inform their designs. Hansen furthermore points out the need for more qualitative research into the notion of healing environments.[24]

[18]Rawes and Spencer, "Material and rational feminisms: A contribution to humane architectures.".
[19] Michele Eliason, "Neoliberalism and health," *ANS. Advances in nursing science* 38 (01/31 2015), https://doi.org/10.1097/ANS.0000000000000055.
[20] Cor Wagenaar and Noor Mens, *Hospitals : a Design Manual* (Basel/Berlin/Boston: Walter de Gruyter GmbH, 2018), https://ebookcentral.proquest.com/lib/uvic/detail.action?docID=5155807, 1 online resource (272 pages).
[21] Rashid, "The Question of Knowledge in Evidence-Based Design for Healthcare Facilities: Limitations and Suggestions."
[22] B. L. Hansen, "Why use research to inform design," *Berlage Papers*, no. 31 (2009).
[23] Margo Annemans et al., *What makes an environment healing? Users and designer about the Maggie's Cancer Caring Centre London* (2012).
[24] Hansen, Architectural thinking in practice: A qualitative study of architectural practice seen from the view point of a refl ective practitioner.

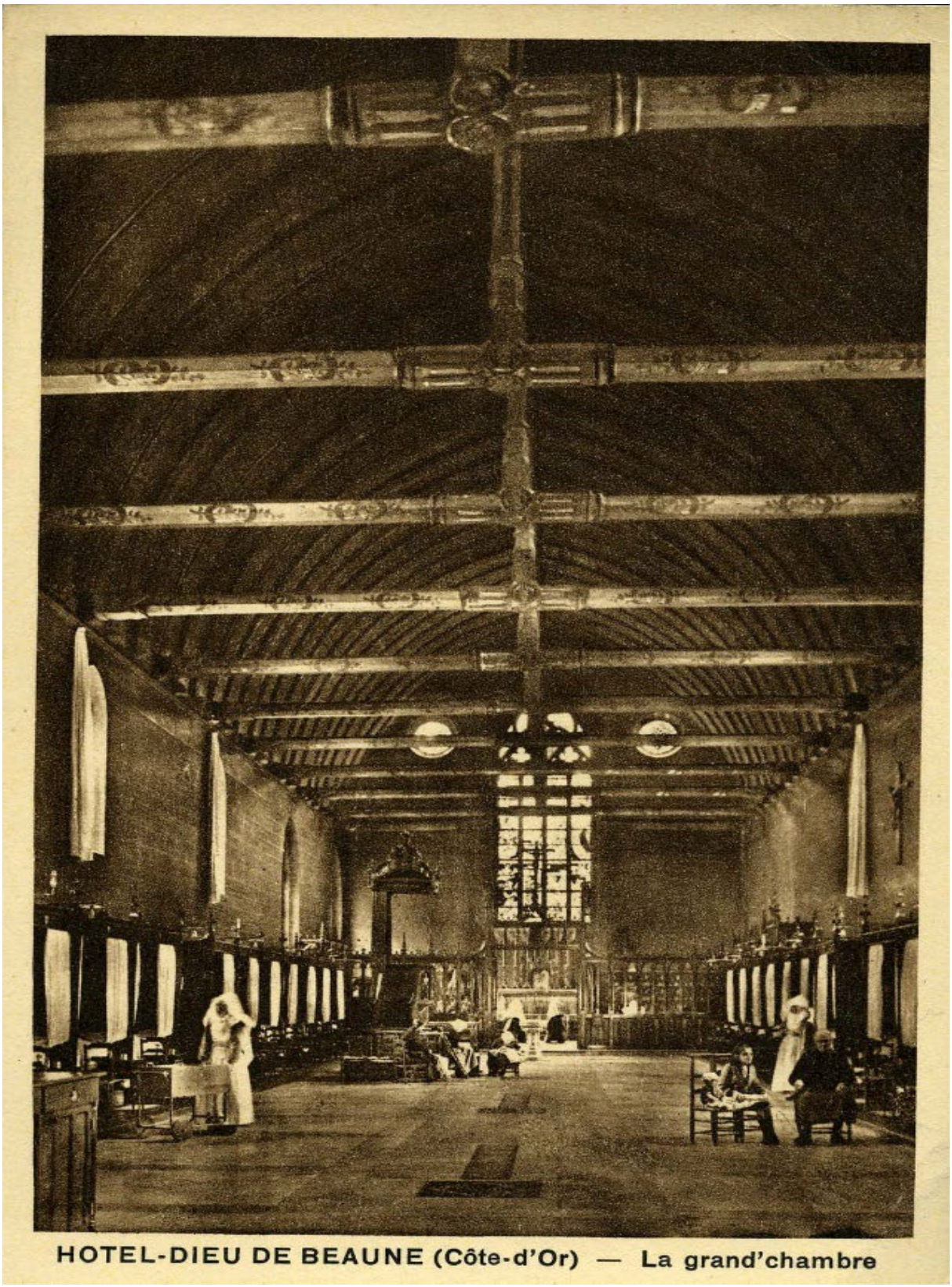


Figure 2. Hotel Dieu de Beaune - example of the forgotten care practive

Methodological positioning

The Evidence-based design usually focuses on a specific target group (group of patients with similar traits) in a specific place. This research's legitimacy lies in measuring the impact of the environment on clinical outcomes (like blood pressure or stress levels), and it usually measures a single aspect. [25] Some authors point out that this idea of using only quantitative methods dangerously reduces the physical aspect of architecture to numbers. In her research about danish hospitals, Hansen uses two interesting for me qualitative lenses –one of the social relations and one of the experiential aspects of architecture. [26]

To explore the ability of architecture to form social relations, authors like Thomas Marcus or Kim Dovey used space syntax. These are methods of diagramming space arrangement and patterns of people behaviour which allows to connect aspects of space and society in the analysis.[27] Marcus and Dovey also focus on language and narrative description as a way of complementing their research. They look at written sources like briefs and guidelines, trying to uncover relationships related to physical forms.[28] The look at the various dimensions like private/public, formal/informal, sightlines and rituals, boundaries and territoriality or hierarchies.[29] Their spatial syntax methods have a strong position in understanding how each space in a building and its entirety can frame power relations between people. However, it is too rational by reducing architecture to a simple diagram which does not look into social and experiential processes that could be a part of a healing.

The experiential lens adapted by Hansen looks at the subjective world of architecture experience. She studies spatial and material characteristics of architecture and in this regard she discusses questions about *Bachelard inspired* poetic experiences, memories, cultural beliefs and myths. To map this experiential aspects for a qualitative design, her research-method is based on verbal statements, visual material and field trips to studied objects.[30] Due to the emphasis on studying subjective experience, this methods helps to extend our knowledge how architecture affects our being beyond prevalent generalisation of how people feel in space. Furthermore it provide another layer to socio-psychological examination of healthcare spaces.

Valuable information about experiential and social aspects of architecture can be access through sampling users observations. That would encompass seeking answers how architecture impacts their feelings or emotions through its physical qualities and how their position within the structure of a hospital relates to others. Sources would include analysing non-interactive sources like diaries or relations[31]

While we take a diagrammatic approach of a space syntax or discuss the architecture with their users we should have in depth understanding of its physical aspects. The study of the form and aesthetic, in plan, section and elevation and aesthetic would help uncover the meanings that physical aspects could have on a social relations and experience. It is also a matter of in depth understanding of architecture

[25] Wagenaar and Mens, *Hospitals : a Design Manual*.
[26] Hansen, Architectural thinking in practice: A qualitative study of architectural practice seen from the view point of a refl ective practitioner.
[27] "Overview," UCL Space Syntax, UCL, 2021, accessed 24.05.2021, 2021, https://www.spacesyntax.online/overview-2/.
[28] Thomas A. Markus, *Buildings and power : freedom and control in the origin of modern building types* (London: Routledge, 1993).
[29] Dovey, *Framing places : mediating power in built form*.
[30] Hansen, Architectural thinking in practice: A qualitative study of architectural practice seen from the view point of a refl ective practitioner.
[31] Linda N. Groat and David Wang, *Architectural research methods* (2013).

as a point of reference to these studies. Further research is conducted to explain the context, use, purpose, and other relevant factors that cannot be inscribed in drawings. Each case study is embedded in a broader context of its specific typology development to provide a universal understanding of qualities permeating the typology in general, rather than only focusing on the particularities of one specific project.

Method for examining an experiential aspect of architecture deals with the complicated problem of subjectivity. Each user's experience results from the multi-layered reality of social and cultural context, personal history and memory, moods and atmospheres in a physical space. It is a pool of endless possibilities.[32] Analysis of available user feelings and observations alone without grounding them in a physical setting can be misleading. Therefore each oral information should be placed in a context not presented only in text.

In my project to answer the questions of experiential needs, I will examine architectural examples in the case study. I will use both the techniques of form study and space syntax. If possible, I will look at the available written information about the project or relations of it various users – from staff, patients to visitors if possible. I will superimpose drawings, images and 'thick' description to present and organize results.

When dealing with subjective perspectives, especially in the experiential part of the study, we must know that their number can be limitless. This research will not exhaust them all. Instead, it is another endeavour to spark a change in healthcare architecture discourse and contribute to a trend that tries to look beyond numbers. It is important to note that every choice I make here is subjective, especially in qualitative research of subjective information. The question is how we can critically look at our position as researchers concerning the position of examined subjects.

I will follow two case study inquiry lines – the historical and contemporary. In each, it will be valuable to look at two different sets of examples. I would like to pursue medieval poor-relief institutions in historical research and prominent examples of humane modern healthcare architecture like hospitals and the architecture focused on *care* like rehabilitation clinics, care homes, or care centres. centres.

Following latest feminist perspective, this research want to look from both rationalistic and affective perspectives. The idea is to engage with both of them critically. While working with such complex healthcare architecture, the multilayered approach that will use different lenses could help avoid fragmentation and singularity of results. Through the re-examination of its physicality, reconstruction of use and user experiences analysis will paint an image of how these elements interact.

[32] Hansen, Architectural thinking in practice: A qualitative study of architectural practice seen from the view point of a refl ective practitioner.

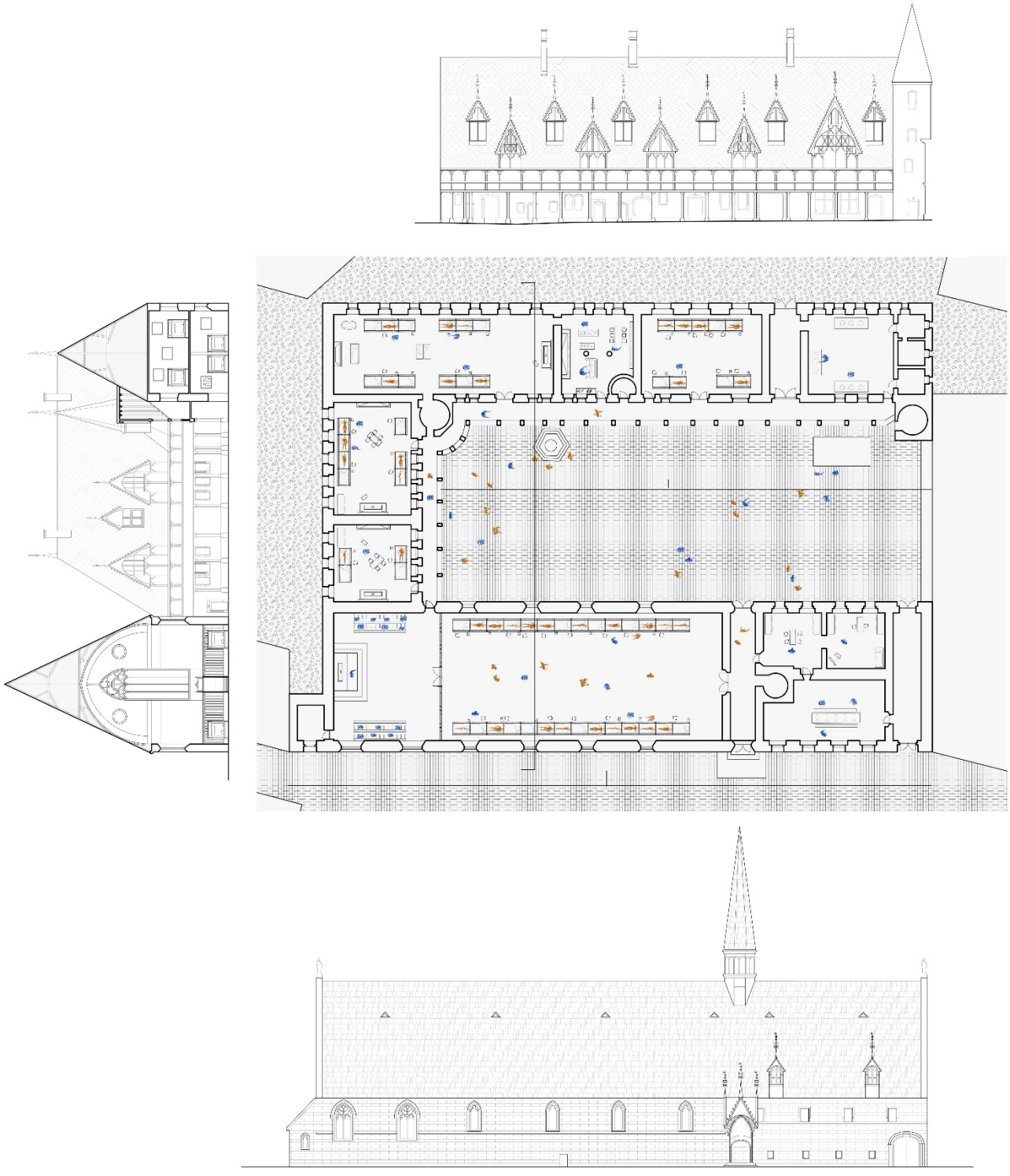


Figure 3 Plan, Section and eleation of Hotel Die de Beaune (Drawings by author)

Historical Case Studies

Hotel Dieu de Beaune

Introduction

Hotel Dieu de Beuane is an example of a western European urban medieval hospital, a charitable institution offering help to sick and poor people with various needs. However, the primary purpose was the soul's salvation – of both sick, caregivers, founders, and public. Curing the ailments of the body was back then a secondary thing.

For centuries in western Europe, caring for the sick belonged in the domain of the convents. Generally speaking, the convent rules required monks to welcome people in need. Historians arguethe starting point in this architectural typology in a famous plan of Sankt Gall that included a separate unit – infirmary, for caring for the sick within the monastic complex. Later in monastic compositions, the infirmary building would consist of a three-nave hall for the sick with a chapel and supporting functions. These structures would be secondary to the main complex and located on the east in courtyard organization. Chosen example for the case study is the next in the evolution of this type. With specific changes in urbanization and population, the late medieval cities would need direct care provision, and caring functions expanded beyond isolated monasteries. Hotel Dieu in Beaune is an urban institution[33]

Figure 4. Courtyard of the Hotel Dieu De Beaune

[33] Quim Bonastra and Gerard Jori, "El uso de Google Earth para el estudio de la arquitectura hospitalaria (I): de los asclepiones a los hospitales medievales," *Ar@cne* (01/01 2009).

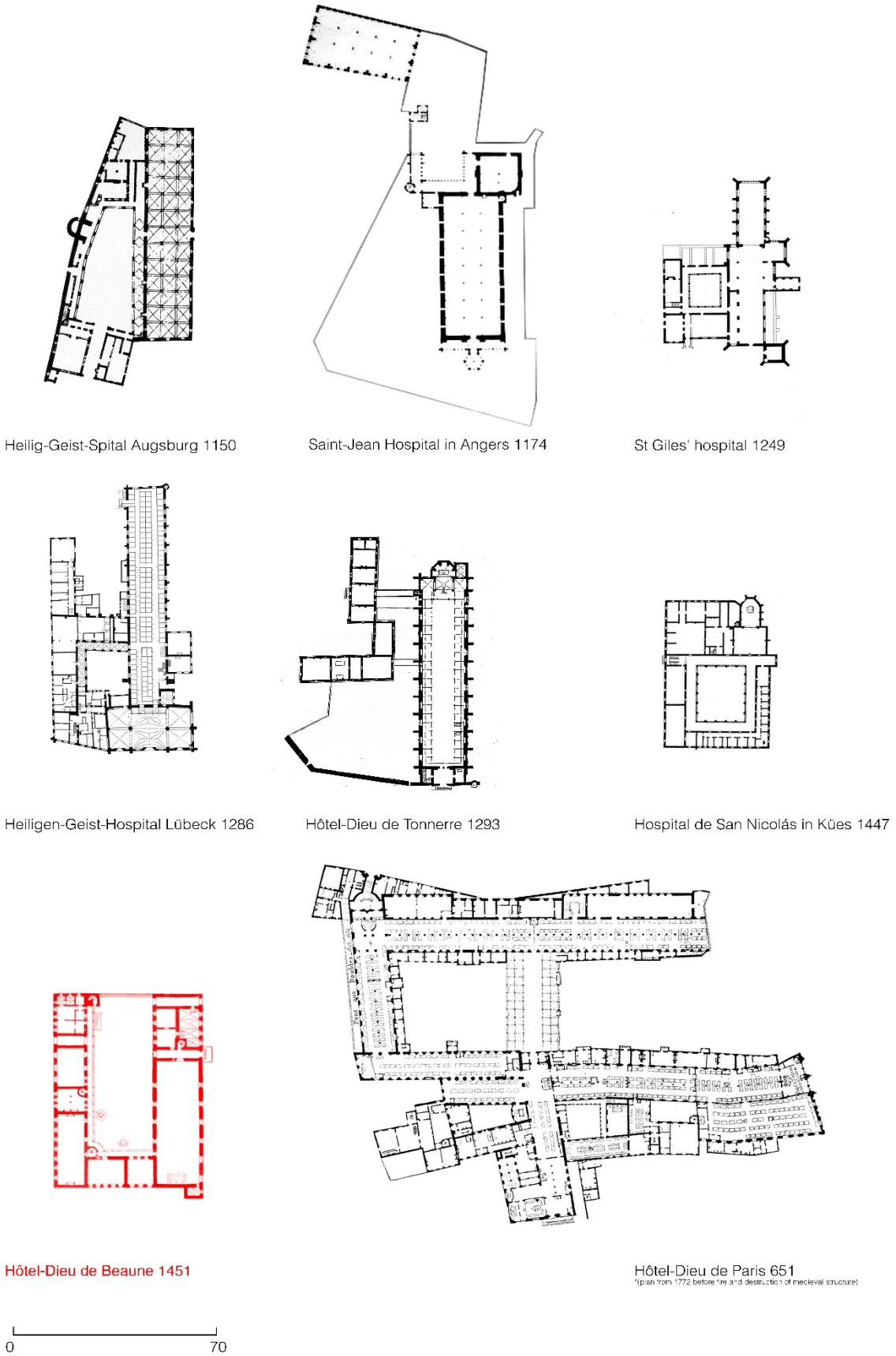


Figure 5 Plans comparison of the western European medieval hospitals.(Figure by author)

The Location and the foundation

Nicolas Rolin, an important figure of 15th century Burgundy founded the hospital. It was a response to the growing number of people in need that were crowding in the city, but also founding a hospital was a way of saving the Rolin's soul.[34] Chancellor considered two cities – Autun and Beaune[35]. He chose the latter because it had fortifications that ensured its safety. Secondly, Beaune was a seat of parliament and ducal justice; therefore, we can also attribute the political reason.[36] Finally, the city granted Rolin a plot in the city with the right to divert the waters of the local river.[37] Therefore, river Beuzais flew under the hospital, increasing its sanitary safety.

The layout

The complex consists of a church–like structure located along the street, with a chapel, a hall for the poor, and nuns' premises on the two levels separated from the rest by the entrance vestibule. Two other sides of the courtyard would house rooms for wealthier patients, kitchen, pharmacy, and room for seriously ill, all distributed on two floors, where the paying patients and library with archive would take over the second floor entirely. Presented plans show the state after some alterations. There is a belief that more individual rooms for paying patients were in the original structure.[38] Gallery run along these parts connecting the rooms and the chapel. The barn with wine press enclosed the courtyard

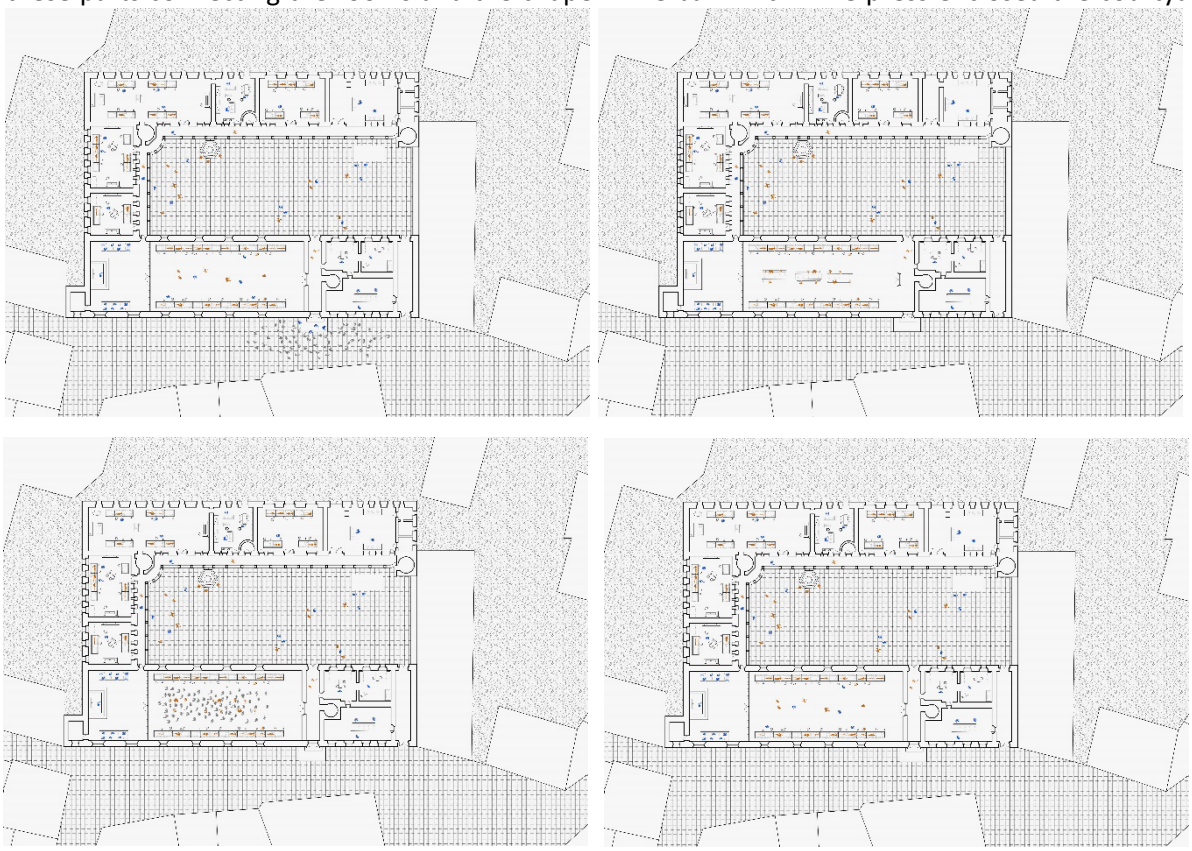


Figure 6. Collective activites in the Hotel Dieu de Beaune (Drawing by author)

[34] P. J. Kuyjer, "Het Hotel-Dieu te Beaune, een middeleeuws ziekenhuis," *Nederlands tijdschrift voor geneeskunde* 101, no. 36 (1957).
[35] Kuyjer, "Het Hotel-Dieu te Beaune, een middeleeuws ziekenhuis."
[36] L. Gelfand, "Piety, Nobility and Posterity: Wealth and the Ruin of Nicolas Rolin's Reputation," *Journal of Historians of Netherlandish Art* 1 (2009).
[37] Bruno Francois, "Transmission par la conservation. Les hospices civils de Beaune et leur mus??e de l'H??tel-Dieu," *Revue de la Societe francaise d'histoire des hopitaux*, no. 140 (2011).
[38] Francois, "Transmission par la conservation. Les hospices civils de Beaune et leur mus??e de l'H??tel-Dieu."

on the fourth side. To the 19th century, a shed with benches stood at the front for the poor gathering for the alms. [39]

Analysis of the social aspects

Space syntax analysis shows a general trend in medieval hospitals, where the sick would be placed near the entrance, to say, being more available to the public. The deepest in the building would be treasury rooms and secondary rooms of the pharmacy. According to the chaplain Boudrot, the sick in the great infirmary were profiting from closeness to the public life and noises from the streets, whereas more severely ill and paying required calmness found on the other side of the courtyard. [40] In principle, even distribution along the courtyard allows equal access to each room and functional zones. Some space had access to it through additional circulation space. However, visually the courtyard is not connected to the infirmary, and only a few other rooms would have windows on its side. Important functions like the kitchen occupies space between patient wards which grants quick distribution of food and vestibule near the hall of poor and nurses premises allow the latter access control. The courtyard and infirmary would also be the building's most public and collective zones. The courtyard is the first big interior we see when we enter the vestibule, apart from hall of the poor on the left side. It is a communication and orientation space. Later additions included a small balcony for the priests, and the patio served as a place to gather and listen to the preacher. [41] It could also house small chores[42], like washing patients in the bathing shed, collecting water in the well, or keeping poultry. Few written sources point out that the patients themselves used it as recreation space by resting in the sun or under a gallery that sheltered them from rain and harsh sun.The small plinth on which the columns stand was also used to sit.

The hall of poor is a church-like hall, with 72m in length and 14m in width, it is the highest space of the whole building. It takes the majority of the eastern side of the courtyard and ends with the chapel and

Figure 7. The hall of the poor

[39] Étienne Bavard et al., "L'Hôtel-Dieu de Beaune, 1445-1880," (1881), http://catalog.hathitrust.org/api/volumes/oclc/8546809.html.
[40] Bavard et al., "L'Hôtel-Dieu de Beaune, 1445-1880."
[41] Albert Vandal, *La Fete-Dieu a Beaune* ([Lieu de publication non identifi??).
[42] Anna Stina Malmborg, "Hospice de Beaune--ett palats f??r de sjuka," *Lakartidningen* 97, no. 24 (2000).

the alter presenting the Last Judgment. [43] The perforated screen separates the patients from the performing the mass. Like in many medieval hospitals, the sick were placed in spaces of religious ceremonies, and in Beaune, their beds, small wooden cubes, were facing the altar. Sickens becomes a collective experience with spiritual meaning. Many point out another collective experience of the infirmary. During mealtime, the tables stood between the beds to feast. Francois points out the hall's inspiration in great civic ceremonial halls, space for feasts, and rendering justice.[44] Montgomery calls it space in-between, shared area among the users – something that modern hospital architecture lacks[45]. Great infirmary also on special days welcomed crowds that seek indulgences, and therefore public participated in the ceremony along with the sick, weaving another group into collective experience. [46] Another space of gathering was, without a doubt, a street. Every morning nuns would give alms to the poor [47], and the shed was standing in the front for that purpose. Care of the hospital extended beyond its walls.

Its close location to the river that flowed under the courtyard points out the hygienic solutions. It provided water to the well and took all the dirt. [48] To sustain itself financially, apart from various estate, Hotel - Dieu produced wine, for its own use and for sale. It along with the space of healing is a space of production. This aspect spatially locates itself in the barn that enclosed courtyard from the north side.

Experience

On the outside, the hospital had rather a defensive character as the response to dangerous times of its foundation. [49] Very much different is the appearance of the internal courtyard. It has a rich, glazed roof with ornamented windows. The gallery is wooden on a stone plinth. Many visitors and users paid much attention to this roof, which provided changing sensations thanks to its reflectiveness. Transitioning from the town street, starting under "levitating awning" via the sober and somewhat dark vestibule to richly decorated courtyard must have an element of surprise to the visitors, and creates distinct architectural experience during the walk through. Architecture of the courtyard generated various sensations throughout the day. Air and light flew into the room and gallery through the big louvers. It scale is small and humane, in section the gable roof of the gallery seem to embrace the user.

Regarding sensorial experiences, an interesting perspective comes from the diaries of Violet Paget. Writing about the spirit of places, she sees Hotel Dieu's genius loci in the kitchen and, coming from there, the smell of baked apples. Indeed the centrally placed kitchen with direct access to the courtyard would have that effect. [50] Following its inspiration from festive halls, the hall for the poor had sculpted and painted beams. The altarpiece itself was a special commission, and art had a special place in the whole institution. The patients look at the altarpiece almost all the time. Many other rooms would have their altars and paintings. The interiors were also richly furnished and decorated. A certain amount of luxury was given to the institution caring mainly for the poor. There is a theory that wealthy visitors seeing beautiful wards for the poor and the rich would be inspired to support it financially. Modern hospitals like the Mayo Clinic in Rochester also uses this donor friendly mechanism [51]

[43] Jean-François Cordier, "Lieux d'Assistance et d'Hospitalité au Moyen Âge," *Bulletin de l'Académie Nationale de Médecine* 202 (11/01 2018), https://doi.org/10.1016/S0001-4079(19)30170-0.
[44] Francois, "Transmission par la conservation. Les hospices civils de Beaune et leur mus??e de l'H??tel-Dieu."
[45] Terry Montgomery, "Cultivating the 'In-Between': Humanising the Modern Healthcare Experience," *Architectural Design* 87, no. 2 (2017), https://doi.org/10.1002/ad.2160.
[46] Bavard et al., "L'Hôtel-Dieu de Beaune, 1445-1880."
[47] Kuyjer, "Het Hotel-Dieu te Beaune, een middeleeuws ziekenhuis."
[48] Bavard et al., "L'Hôtel-Dieu de Beaune, 1445-1880."
[49] Malmborg, "Hospice de Beaune--ett palats f??r de sjuka."
[50]Vernon Lee, *The tower of the mirrors, and other essays on the spirit of places* (London; New York: J. Lane, 1914).
[51] S. Baron, "Book review: Medicine and Magnificence: British Hospital and Asylum Architecture 1660–1815 " *BMJ* 322, no. 7292 (2001), https://pubmed.ncbi.nlm.nih.gov/11312246.

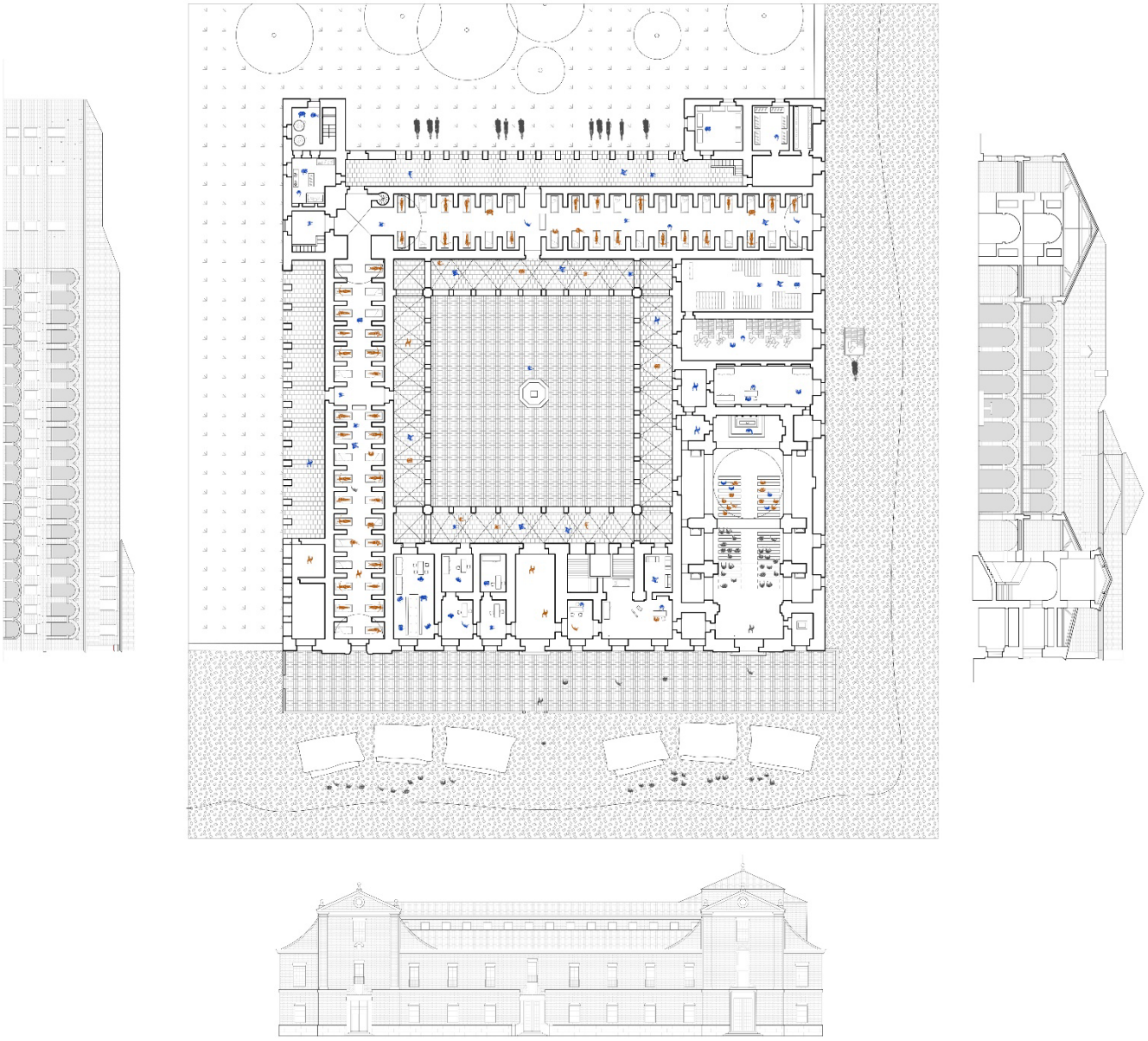


Figure 8. Plan, section and elevations of Hospital Simon Ruiz in Medina del Campo. (Drawings by author)

Medina del Campo.

The second case study is a renaissance hospital, part of long typological evolution that originated with Alberti and Filarete in XV century Italy. [52]This set of examples is an effect of a need to reform healthcare provision, primarily through the centralization of smaller establishments—origin story true both to the famous Ospedale Maggiore and the hospital in Medina del Campo. The Hispanic king, Philip II reform, prompted the change in the latter. [53] Starting with Filarete, all these examples would promote a colonnaded courtyard plan, usually cross-shaped wards with the altar at the junction and incorporation of loggias.[54]

To ensure the salvation of his soul and commemoration of the family name, wealthy merchant Simon Ruiz founded a new hospital in Medina del Campo at the end of the XVI century.[55] Therefore, like in the previous case study and other examples, the hospital becomes a place of his burial and remembrance. The new institution merged around 13 smaller ones, and its mission was to serve all kinds of sick and poor and not exclude anyone except poor with fever and wounds that received care in the only hospital left in the city.[56] The city gave a site outside the walls due to lack of space, flooding, and sanitary issues.[57] Simon Ruiz ordered design from Jesuit architect Juan de Tolosa who was also related to the designers of the El Escorial.[58]

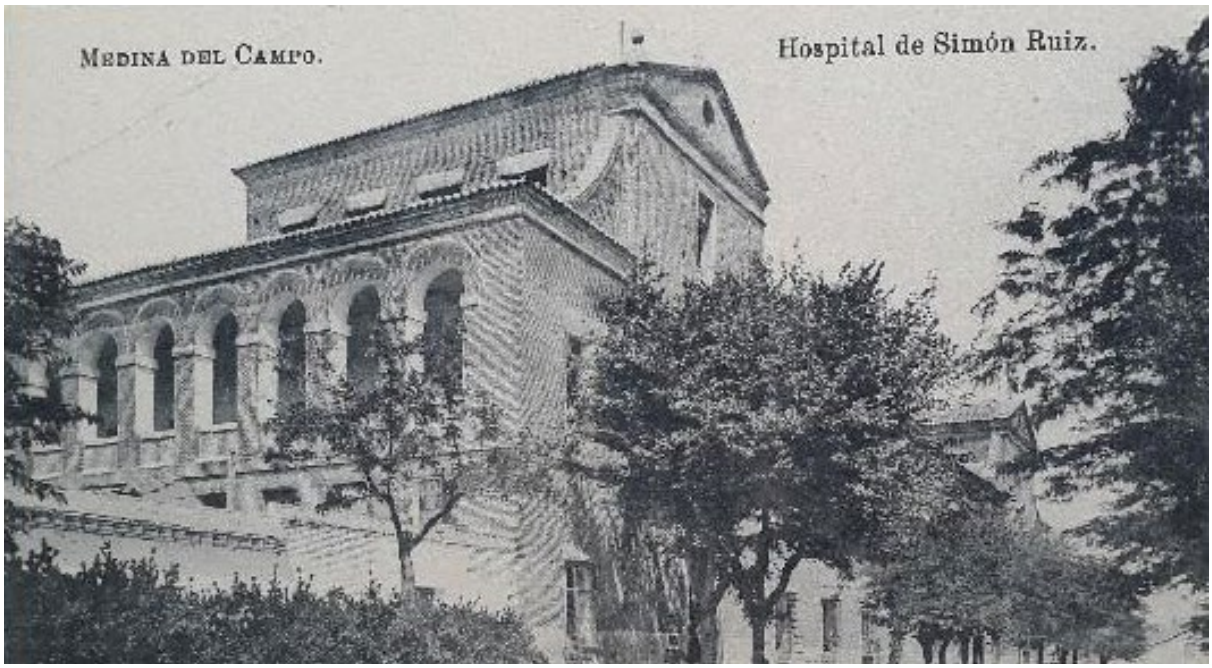
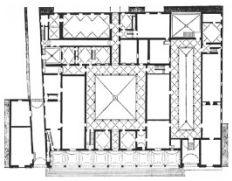
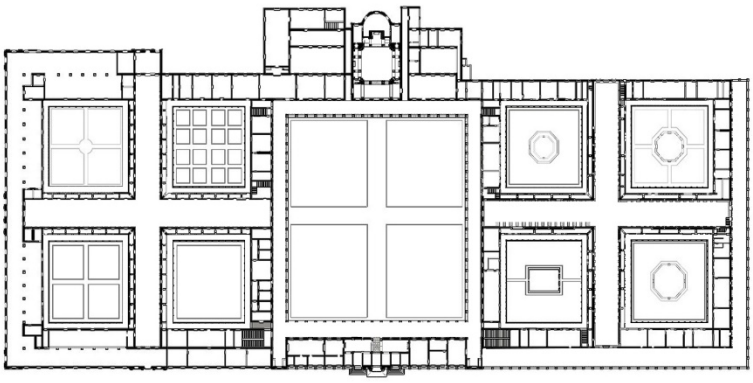


Figure 9. View from the street towards the city.

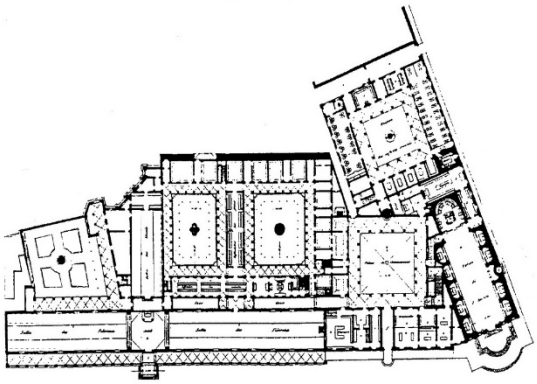
[52] Juan Carlos García Pérez, "El mecenazgo de simón ruiz en medina del campo (valladolid)" (info:eu-repo/semantics/bachelorThesis, 2019), http://uvadoc.uva.es/handle/10324/45179.
[53] Marina Pariente Lorenzo, "Hospital general de Simón Ruiz en Medina del Campo. Rehabilitaciones de hospitales españoles del siglo XVI" (info:eu-repo/semantics/bachelorThesis, 2020), http://uvadoc.uva.es/handle/10324/45084.
[54] Antonio Paniagua García, "El Hospital General de Simón Ruiz de Medina del Campo - Una gran obra de mecenazgo " in *Conocer Valladolid 2016 : X curso de patrimonio cultural*, ed. Eloisa Wattenberg Garcia (Valladolid: Ayuntamiento de Valladolid, 2018).
[55] Fernando Campo del Pozo, "Hospital y Fundacion Simon Ruiz en Medina del Campo (Valladolid)," (2006), http://dialnet.unirioja.es/servlet/oaiart?codigo=2815382.
[56] Carlos Vaquera Puearta, "El Hospital Simon Ruiz: una referencia en Medina del Campo," (2018), http://uvadoc.uva.es/handle/10324/44525..
[57] García Pérez, "El mecenazgo de simón ruiz en medina del campo (valladolid)."
[58] Paniagua García, "El Hospital General de Simón Ruiz de Medina del Campo - Una gran obra de mecenazgo ".



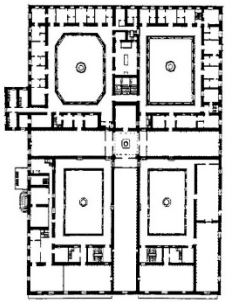
Ospedale degli Innocenti
Florence 1419



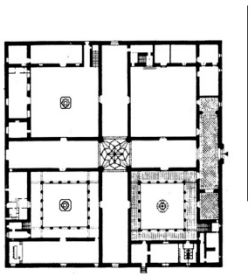
Ospedale Maggiore Milan (Filarete desing 1456)



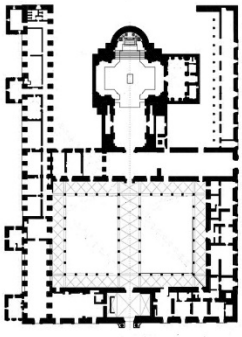
Ospedale Santo spirito in Sassio 1473



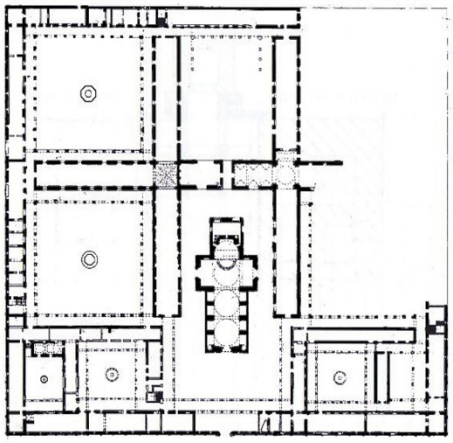
Hospital de los Reyes
Santiago de Compostella 1501



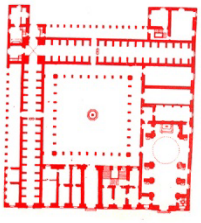
Hospital Real Granada 1511



Hospital de Tavera Toledo 1541



Hospital de la Sangre in Seville 1546



Hospital Simon Ruiz
Medina del Campo 1591

Figure 10. Plan comparison of the renaiscance hospitals. (Collage by author)

The hospital stands outside the city fabric; however, it faces the major road leading to the Salamanca Gate and neighbors one of the road markets. Therefore, the building itself is not entirely isolated from society. The building occupies one of the corners of the large plot of land whereon the rest of the land we can find the orchard, garden, cemetery or small chapel.[59] A brick wall surrounds the whole area belonging to the hospital. As placed in the open landscape, the building is oriented to soften the impact of prevailing winds and provide sufficient ventilation of the wards, on the other hand. The exact mechanism could apply to the sunlight.[60]

A long fenced terrace separates the front of the building from the public zone of the market. There are two doorways, one leading to the church and the other to the entrance vestibule of the hospital. A single, asymmetrically placed courtyard organizes building functions. Each wing has a different width, which certainly improves the distribution of various functional zones.[61]

The building has two primary levels, wherein some parts also have a usable attic level. The most important part – the church with sacristy behind occupies the corner closest to the city, and its space occupies a wing of the largest width. The administration and staff are spread all over the floorplan. The highest in the hierarchy – chaplains and administrators work and live on the ground floor front on both sides of the entrance vestibule, and administrator quarters have separate access to the church. The lower staff has its quarters on the second level of the front or out back behind the wards. Patients are

Figure 11. Section through the church.

[59] Pariente Lorenzo, "Hospital general de Simón Ruiz en Medina del Campo. Rehabilitaciones de hospitales españoles del siglo XVI.".
[60] García Pérez, "El mecenazgo de simón ruiz en medina del campo (valladolid)."
[61] García Pérez, "El mecenazgo de simón ruiz en medina del campo (valladolid)."

placed in two wards for each sex and separated on two levels – contagious above and noncontagious below. Additional quarters above sacristy are for people that wanted to keep their treatment a secret. Poor and pilgrims found shelter on the mezzanine level of the ground floor loggias behind the wards. Supporting functions like kitchen, food storage, or pharmacy are on the crossing or ends of the wards on both primary levels and intermediate levels. Two ample storage spaces with a separate door on the side street are between sacristy and ward. The attic level served as a drying space for clothing.[62]

If the courtyard is a shared space between patients, visitors, and the staff, the meeting of the hospital residents and the public happens in the church, not much in the ward – although this is still a collective space with its small altar[63] but without patient non-relatives. The temple had a door for the public at the back and patients from the side. The decorative grille separated two groups. Moreover, as it is the only double-level interior, access to the church is provided on the second level, so the staff and the contagious patient can access separate terraces above the chapels and choir directly from their floor.[64] Therefore, the church is a place of healing of the soul, remembrance and burial, and social interaction between all users.

Functionally projects perfectly deal with the separation of different groups in plan and section. We see division by sex, contagiousness, type of care, types of staff. Here it follows Filarete's postulates. [65]The administration front enables access control and adapts to the admission process (incoming patient enters via a vestibule, registers, and confess in the administrator's office.[66] Supporting and nursing quarters are close to the patients. However, some of them are located deep within the building. Patient beds are not immediately accessed from the entrance like in medieval examples, but the internal courtyard introduces an offset from the outside. Space syntax diagram shows the church as the closest interior and the nursing/supporting quarters as the furthest. Patient wards are in-between these two zones.

When the administrative front has both windows on the courtyard and main façade, wards are enjoying loggias overseeing the landscaped plot of the hospital and porticoed renaissance courtyard. Two-level loggia with nine arches on each side of one level surrounds the patio. It serves as circulation, a zone between inside and outside, and a space for recreation, healing and caring. It is separated from the outside and creates a calm atmosphere as an interior. It ensures a place to walk, observe, rest allows daylight and air. The outside loggia, apart from recreation, directly shelters poor and pilgrims and functions as stables.[67] The terrace at the front of the hospital resolves the transition between road and interior. It acts as a filter to the entrances and resolves the slightly sloping topography on the physical side. It is an entrance plinth.

According to many researchers, the building design is similar to the El Escorial concerning the "universal layout," meaning the structural system and chosen construction method prohibited the changes in the design once the construction has started. [68]Another planned limitation is the spatial solution of the wards. Inspired by Jesuit architecture, the ward has single, long, barrel vaults and a series of smaller counter vaults on both sides, forming niches for single beds. This solution provides a precise number of beds (72) and prohibits overcrowding. [69]

Italian palazzo, Jesuit architecture, and the El Escorial model are primary inspirations for hospital design.[70] The Jesuit inspiration leads to the churches and schools of the order where the unique

[62] Campo del Pozo, "Hospital y Fundacion Simon Ruiz en Medina del Campo (Valladolid)."
[63] Pariente Lorenzo, "Hospital general de Simón Ruiz en Medina del Campo. Rehabilitaciones de hospitales españoles del siglo XVI."
[64] Luis Navarro Garcia, *El Hospital general de Simon Ruiz en Medina del Campo : fabrica e idea* ([Valladolid: Consejer??a de Educaci??n y Cultura, 1998).
[65] Navarro Garcia, *El Hospital general de Simon Ruiz en Medina del Campo : fabrica e idea*.
[66] García Pérez, "El mecenazgo de simón ruiz en medina del campo (valladolid)."
[67] Navarro Garcia, *El Hospital general de Simon Ruiz en Medina del Campo : fabrica e idea*.
[68] Paniagua García, "El Hospital General de Simón Ruiz de Medina del Campo - Una gran obra de mecenazgo ".
[69] Navarro Garcia, *El Hospital general de Simon Ruiz en Medina del Campo : fabrica e idea*.
[70] Paniagua García, "El Hospital General de Simón Ruiz de Medina del Campo - Una gran obra de mecenazgo ".

position of the church within the plan and other monastic qualities are similar to Medina del Campo hospital.[71] The whole complex under Jesuit sobriety is not very decorative. Herrerian severity permeates the building.[72] The hospital's only ornamented elements are a sculpted fountain in the center of the courtyard, a staircase, a vestibule's paving, a church interior, and the two doorways of the main façade.[73] Therefore, users would experience more rhythm and order of loggias inspired by the herrerian module,[74] vaults, and access to the views over the landscape rather than ornament. Throughout the building, users could experience a variety of scales – from bed niches and mezzanine pilgrim shelter through loggias to the central courtyard and the nave of the church. The collection of these spaces ensured an excellent gradient of privacy and collectivity. Striking is the big footprint of the recreational zone.

e main façade tries to acknowledge the civic character of the institution and whereas the church in plan plays an essential role in the façade is somewhat dimmed.[75] Perforation is balanced and rather spare. A much more different experience awaits us on the outside facades of the wards. These sides have extensive loggias, where the bottom one has a mezzanine level with windows. Their character is of palace terrace overlooking orchard/garden and the landscape in the further plan. Their function is more of a shelter and rest than circulation. With a connection to the plan, these facades respond to the functions behind them – caring loggias for the patient and civic front for administration. Furthermore, the raw interior of the courtyard, with their rhythmical and symmetrical composition, was transformed into a garden [76] bringing greenery introduced additional healing quality. enhance its character as a balanced, calm, and ordered space. Later the courtyard of the hospital was transformed into a garden [77] bringing greenery introduced additional healing quality.

[71] Pariente Lorenzo, "Hospital general de Simón Ruiz en Medina del Campo. Rehabilitaciones de hospitales españoles del siglo XVI."
[72] Esteban Garcia Chico, "El hospital de Simon Ruiz de Medina del Campo," *Homenaje al Profesor Cayetano de Mergelina.* (1962).
[73] Pariente Lorenzo, "Hospital general de Simón Ruiz en Medina del Campo. Rehabilitaciones de hospitales españoles del siglo XVI."
[74] Garcia Chico, "El hospital de Simon Ruiz de Medina del Campo."
[75] Navarro Garcia, *El Hospital general de Simon Ruiz en Medina del Campo : fabrica e idea*.
[76] Garcia Chico, "El hospital de Simon Ruiz de Medina del Campo."
[77] Garcia Chico, "El hospital de Simon Ruiz de Medina del Campo."

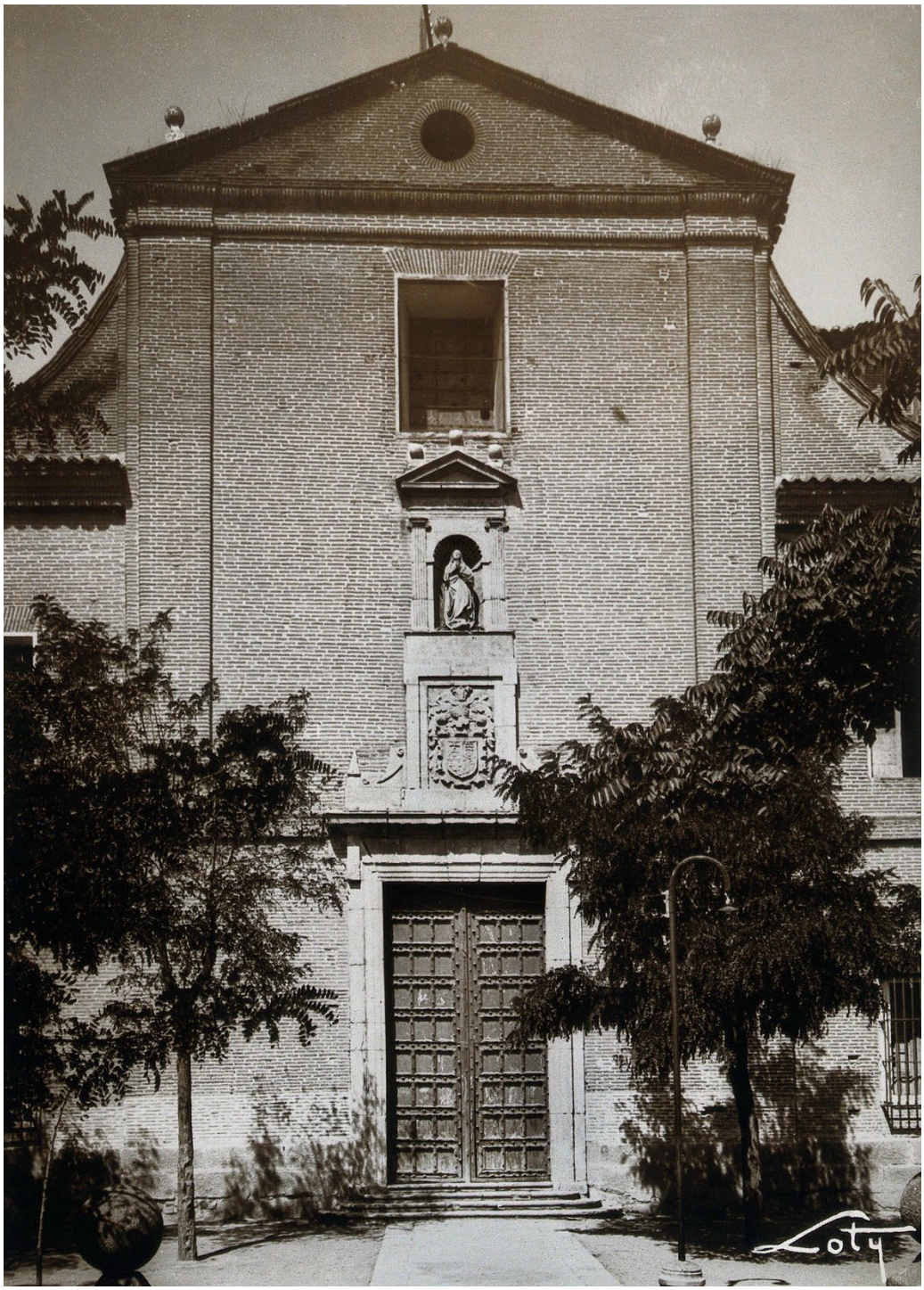


Figure 12. Front door to the church.

Figure 13. The courtyard.

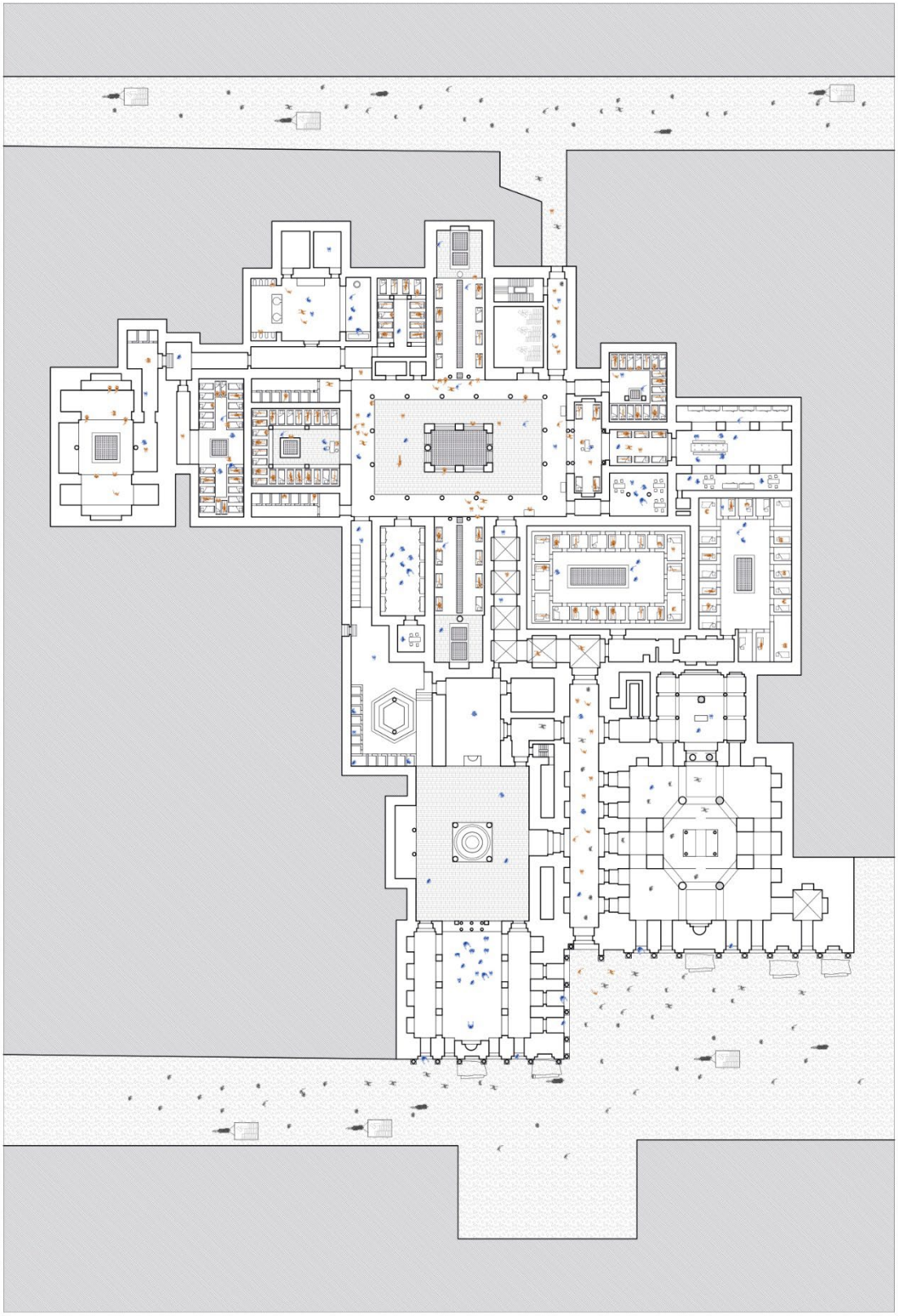


Figure 14. Plan of the complex Qalawun. (Drawing by author)

Complex Qalawun

Introduction

Bimaristan is a widely used name for medieval Islamic hospitals. Similar to Western examples, these were charitable institutions; however, they focused on healing the body rather than the soul. The doctor, not a priest, was a primary figure.[78] They often took space in the urban centers, as illness for Muslims was the sign of abolishing sins; hence, religious respect for the sick was more significant than fear. [79] Bimaristans founders look for airy places, often on hills and close to the water.[80] Founder of the al-Mansuri hospital located a new hospital on the structure of the former ruling family palace in the clear political move of establishing his power. Cairo developed as a series of cities of various rulers, often reserved for close circles. By location hospital in the former center of Fatimid dynasty, Mamluk Sultan directed to its urban center masses, as bimaristans served urban populations. [81] Moreover, the new foundation stands opposite the mausoleums of previous Mamluk rulers, uncovered additional political meanings.

Al-Mansuri complex is a set of three buildings in Cairo, built by Sultan Qalawun in 1364. It consists of madrasa - qur'anic school, mausoleum, and bimaristan, combining religious, educational, and communal parts. The hospital part stands behind the mausoleum and madrasa, which form the main façade. Unusually placed minaret and mausoleum announce complex on the route of traditional processions.[82] Access to the bimaristan leads through a "great corridor" – high, vaulted, and open on both sides passage that runs between the first two parts.

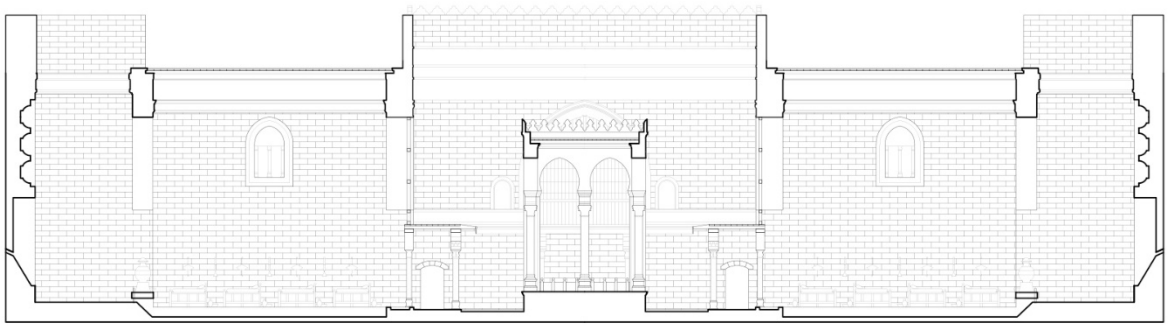


Figure 15. Section through the courtyard and weast and east iwans. (drawing by autohro).

[78] David Tschanz, "The islamic roots of the modern hospital," *AramcoWorld* 68, no. 2 (2017).
[79] Ahmed Ragab, "Illness and the Hospital in the Muslim City: Reflections on the Pietistic Space of Illness in Premodern Islam," *Journal of Islamic and Muslim Studies* 3, no. 2 (2018).
[80] Sahar Al-Majali, "Contribution of Medieval Islam to the Modern Hospital System," (01/01 2017).
[81] Ahmed Ragab, *The medieval Islamic hospital : medicine, religion, and charity* (2018).
[82] Nezar AlSayyad, *Cairo : histories of a city* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2011).

Figure 16. View of the entrance to the bimaristan.

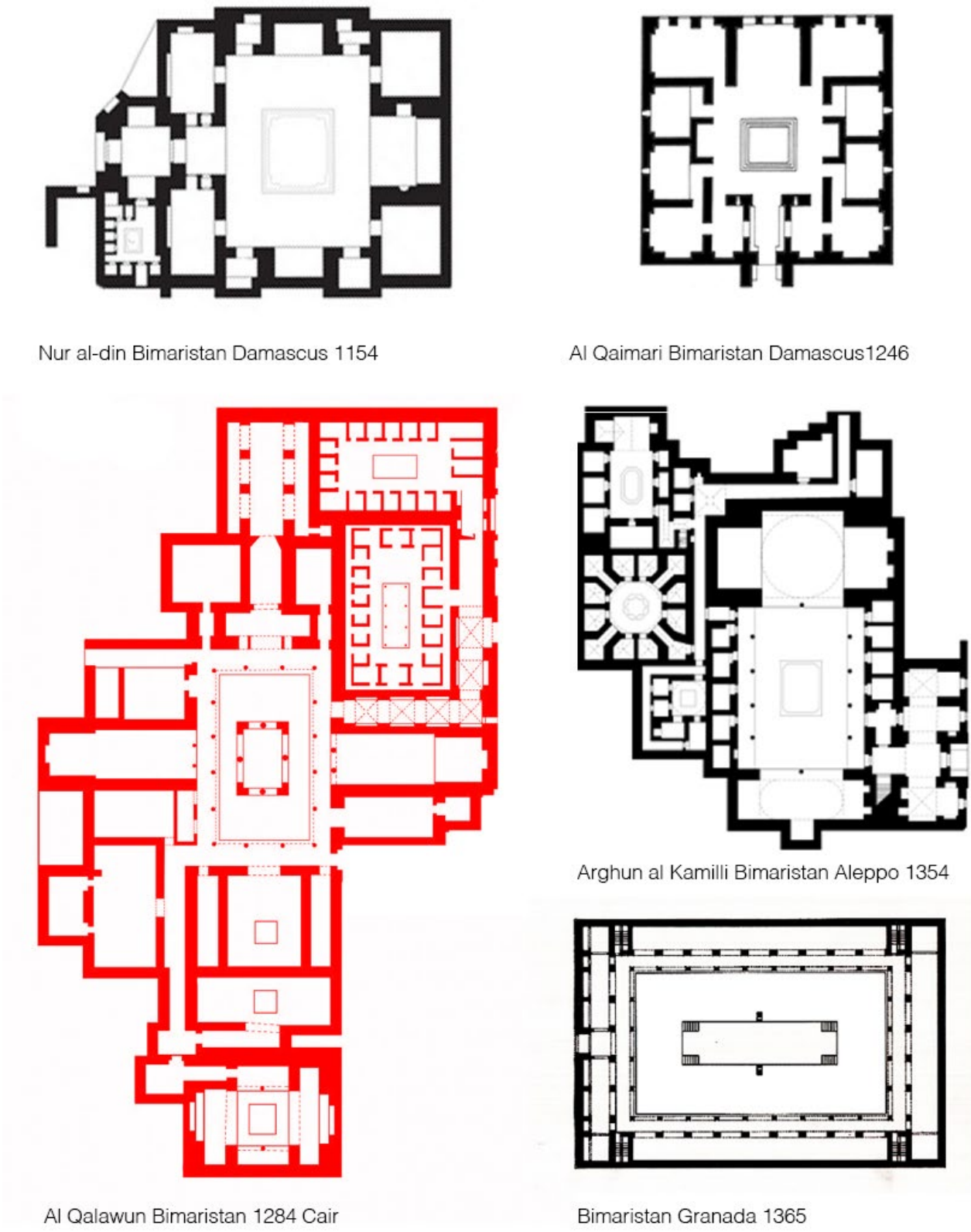


Figure 17. Plan comparison of medieval Islamic hospitals. (collage by author).

The Layout

Yasser Tabba combined a set of shared architectural qualities of Bimaristans, among them, are: symmetrical composition of the courtyard with four half-open to it spaces – iwans and several smaller varied in size space, other secondary courtyards have access to the main one, entrance to hospital leads through one controlled space, central pool with water systems, and close relation to other institutions like mausoleums or madrasas. All these qualities point to palatial architecture. [83]

Al-Mansuri hospital inherited its four iwan organizations from the former palace.[84] East and west iwan are alike, whereas the south and north iwans are different. Several other openings in the courtyard would lead to smaller rooms or circulation to other parts. Organization of bimaristan often utilized separation in sexes, ailments, or stage of treatment. According to 19th-century traveler Coste's plan, the space behind southern iwan was a woman section with Hamman behind it. The space behind northern iwan was a doctor's residence. Iwans and other spaces would group different medicine sections like infectious diseases, ophthalmology, surgery, or internal medicine, with each section having its staff. Probably spaces closer to the central courtyard housed convalescent patients, and[85]Two big courtyards to the north housed the mentally ill divided by sex. The kitchen was in the south western corner. The hospital probably included a pharmacy, laboratory, library, spaces for doctors, and store rooms for patient belongings or latrines, according to written sources.[86] Herz suggests library location in madrasa [87] We know that in other Bimaristans, there were spaces near the entrance for outpatients in Cairo that points to the central courtyard, but if that is the case here is unclear. These are all assumptions; however, particular groups of patients could require more air than others; hence they were closer to the courtyard, and bars in cells suggest confinement of the mentally ill. [88]

Social aspects

Bimaristans served a broad spectrum of poor society as doctors treated the rich in their houses. Besides treating physical ailments, Islamic hospitals cared for convalescents, the mentally ill, and the lonely elderly. The Founding document of al-Mansuri required caring for everyone in need.[89] Secular hospitals were part of a more extensive network of religious institutions. Close relation of bimaristan to mausoleum and meaning of illness as god's forgiveness resulting in the social practice of visiting, caring, and celebrating the sick gives Islamic hospital spiritual and pietistic meaning and sense of communal obligation. [90] We can imagine visitors as essential users, roaming through bimaristan halls.

Furthermore, bimaristans were places of teaching, and one of the motivations for erecting them was the production of medical professionals. [91] The spaces for teaching and spaces for patients intertwine. According to the patient's letter from medieval bimaristan in Cordoba, teaching was heard and seen

[83] Yasser Tabbaa, "The functional aspects of medieval Islamic hospitals," in *Poverty and Charity in Middle Eastern Contexts*, ed. Michael Bonner, Mine Ener, and Amy Singer (New York: State University of New York Press, 2003).
[84] Doris Behrens-Abouseif, *Cairo of the Mamluks : a history of the architecture and its culture* (London: I.B. Tauris, 2007).In the United States and Canada distributed by Palgrave Macmillan, 2007).
[85] Tschanz, "The islamic roots of the modern hospital."
[86] Tabbaa, "The functional aspects of medieval Islamic hospitals."
[87] Max Herz, *Die Baugruppe des Sultans Qalaun in Kairo, etc* (Pl. 35. Hamburg, 1919).
[88] Patricia Baker, "Medieval Islamic Hospitals: Structural Design and Social Perceptions," in *Medicine and space* (Leiden, The Netherlands: Brill, 2012).
[89] Tschanz, "The islamic roots of the modern hospital."
[90] Ragab, "Illness and the Hospital in the Muslim City: Reflections on the Pietistic Space of Illness in Premodern Islam."
[91] L. Northrup, *Al-Bīmāristān Al-Manṣūrī Explorations: The Interface Between Medicine, Politics and Culture in Early Mamluk Egypt* (Annemarie Schimmel Kolleg - History and Society during the Mamluk Era (1250-1517), 2013). https://books.google.nl/books?id=LdkouwEACAAJ.

by patients.[92] In Damascus, teaching happened in one of the iwans. Students would accompany doctors on rounds, and physicians would organize public lectures.

Complex forms with the street an urban pocket, marking the entrance to the hospital, providing a place for orientation and social interaction. [93]Perforated façade provides spaces for qur'anic readers, projecting educational and religious practice on two streets, and market stall fills the recess of the façade adding commercial activity to complex functions. Bimaristan appears separated from the public zone. However, the high corridor with its height that joins street and hospital is a fluid, open transition space between a complex and busy street, to some degree, it acts as an extension of the street that unifies all three parts of the complex[94] but also marks the transition and separation of sick from the healthy. [95] The perforated façade, urban pocket, courtyard with iwans, or the Great Corridor have smooth transitions that efface borders. Therefore, the fluid character of space anticipates medical compartmentalization, giving it collective meaning.

As a form of treatment, convalescent or mentally ill patients listened to instruments, singing, and stories.[96] Considering the first proximity to the central courtyard and the unified space character, other patients could enjoy it. Without a doubt, some could hear ceremonies in the mausoleum, teaching in a madrasa[97] , or maybe even the street. Public life enters the bimaristan soothed and blurred.

The three-level recessed portal in the middle of the façade stands out invites the user to the hospital. Because bimaristan is at the back, the façade has a great deal of transparency, unlike features for bimaristan where lack of windows was protective quality. The composition of the façade tells something about the internal organization of mausoleum and madrasa, like the location of mihrabs. [98] The Great Corridor is high, long, and theatrical. It allows peeking into the mausoleum and madrasa and offers a moment of surprise in the open and airy courtyard in the end.[99]

The courtyard is big and airy and measures 21 x 33 meters. According to 17th-century traveler Evliya Çelebi, there was a big fountain in the middle, wall fountains in iwans, connecting them canals and courtyards for the mentally ill had their pools. The extensive water features and airy uninterrupted spaces provided a fresh and cool climate. Çelebi writes that patients rested near fountains,[100] and with the Muslim belief in galenic medicine, water was also a way to cool down feverish patients.[101] Ragab suspects that in some cases, bimaristan courtyards contained gardens.[102] As the al-Mansuri complex uses a structure from the former palace, its gardens could also be inherited. With garden or not, the Bimaristan water features add a sensorial layer to the experience of the building. The construction of bimaristan expanded the palace water system, which underlines its importance.[103] Bimaristan also is rich with decorations of the former palace. The adaption alone added even more ornament. [104]The wooden ceiling in iwans or marble fountains would have floral and animal motives. [105]

[92] Tschanz, "The islamic roots of the modern hospital."
[93] Howayda Al-Harithy, "The Concept of Space in Mamluk Architecture," *Muqarnas* 18 (2001), https://doi.org/10.2307/1523302, http://www.jstor.org/stable/1523302.
[94] Al-Harithy, "The Concept of Space in Mamluk Architecture."
[95] Baker, "Medieval Islamic Hospitals: Structural Design and Social Perceptions."
[96] Roziah Sidik et al., "Impact of Music Therapy on Mental Patients: Review based on Implementation of Music Therapy in the Islamic Civilization," *International Journal of Business and Social Science* 11 (01/01 2020), https://doi.org/10.30845/ijbss.v11n10p10.
[97] Ragab, "Illness and the Hospital in the Muslim City: Reflections on the Pietistic Space of Illness in Premodern Islam."
[98] Behrens-Abouseif, *Cairo of the Mamluks : a history of the architecture and its culture*.
[99] Al-Harithy, "The Concept of Space in Mamluk Architecture."
[100] Tabbaa, "The functional aspects of medieval Islamic hospitals."
[101] Baker, "Medieval Islamic Hospitals: Structural Design and Social Perceptions."
[102] Ragab, *The medieval Islamic hospital : medicine, religion, and charity*.
[103] Richard Piran McClary, "Dar Al-Shifa or Bimaristan? Islamic hospitals of Damascus, Sivas and Cairo in the twelfth and thriteenth centuries.," in *Health And Architecture : The History Of Spaces Of Healing And Care In The Pre-Modern Era*, ed. Mohammad Gharipour (London: Bloomsbury Visual Arts, 2021).
[104] Behrens-Abouseif, *Cairo of the Mamluks : a history of the architecture and its culture*.
[105] Nasser Rabbat, "A Brief History of Green Spaces in Cairo," in *Revitalising a Historic Metropolis*, ed. Stefano Bianca and Phillip Jodidio (Turin: Umberto Allemandi & C. for Aga Khan Trust for Culture, 2004).

An interesting perspective comes from studying the biophilic features of Islamic architecture. We can list the provision of fresh air, water features, natural light, various natural materials, nature-inspired patterns, and direct links to nature. These studies also mention the theory of prospect and refuge, which implies observing the environment from smaller, sheltered spaces. Furthermore, their point out that architecture can strengthen curiosity and encourage users to explore space by drawing them to bright spaces. The third theory, called “risk and peril,” suggests using “double height in shared spaces, balconies or catwalks, cantilevers and clever use of water sounds” that would induce a feeling of risk or slight fear.[106] Biophilia researchers believe that these qualities have a positive effect on the user. Qalawun complex has all these aspects. In the waqf document upon the foundation of the bimaristan, we read, that “Hospital should lift the spirit of the patient.” [107]

Figure 18. View of the main courtyard.

[106] Mohamed Abdelaal and Veronica Soebarto, "History matters: The origins of biophilic design of innovative learning spaces in traditional architecture," *International Journal of Architectural Research* Volume 12 (11/03 2018).
[107] Behrens-Abouseif, *Cairo of the Mamluks : a history of the architecture and its culture*.

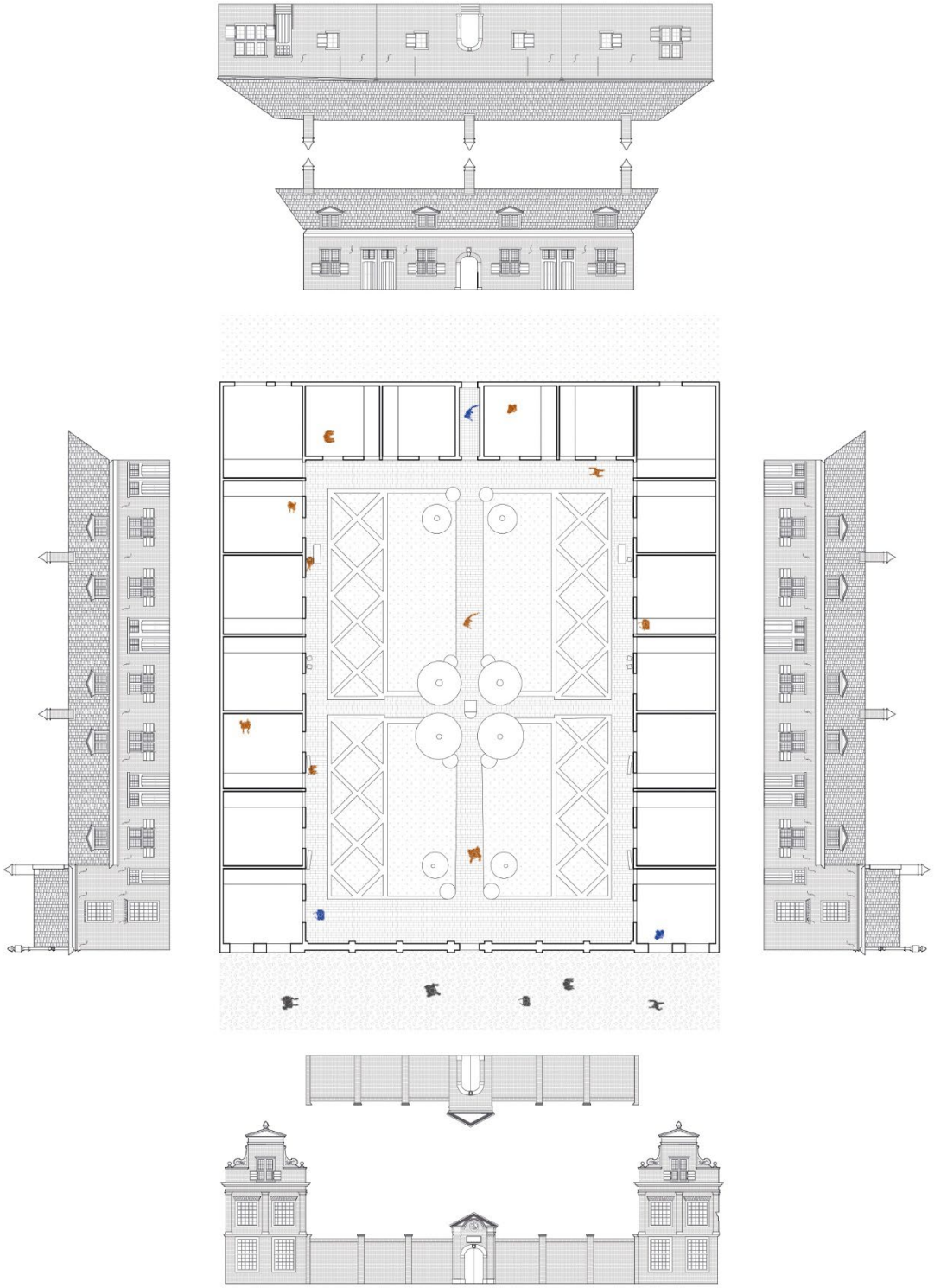


Figure 19. Pland and elevations of the Hofje van Wouw. (Drawings by author).

Hof van Wouw

Introduction

Not only medieval hospitals can offer lessons on healing environments. The study of other care institutions can uncover different ideas. For example, Dutch "charity hofje" represents a privately founded care institution, an almshouse. Their founding was not part of state reforms, although city authorities supported their creation as hofje played an essential role in the safety net of Dutch cities. Founding reasons of the hofje at the beginning was similar to other medieval caring entities, namely salvation of the founder's soul but later on, name commemoration[108] or matters of inheritance played a more significant role.[109] In contrast to hospitals, Hofjes inhabitants were relatively long-term, secluded, close-knit communities that lived by strict rules and had specific social and financial requirements upon joining. Some called them small welfare states.[110]

Location

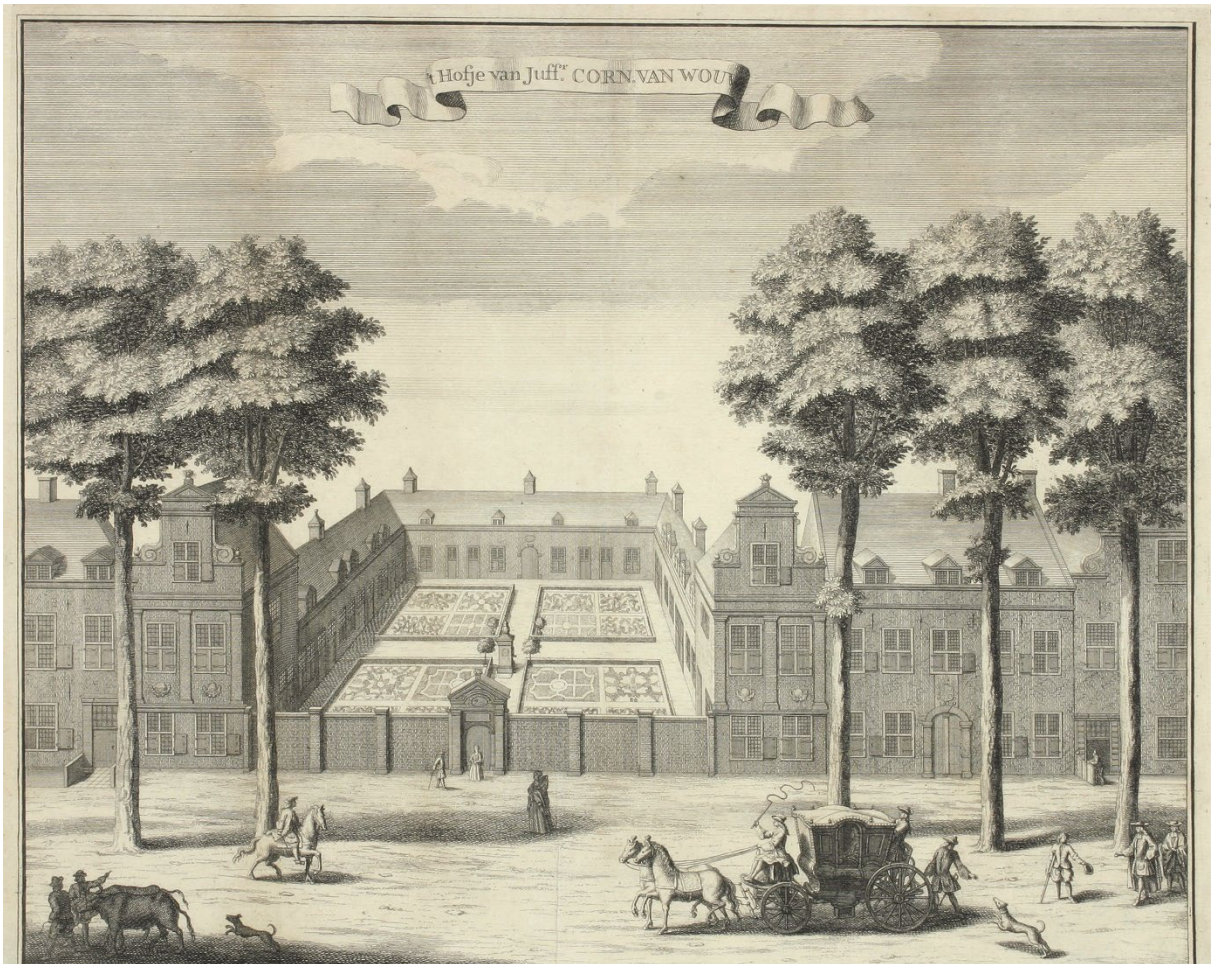


Figure 20. View of the Hofje van Wouw

[108] Jo Spaans, "Een welverzorgde oude dag. Hofjes in middeleeuwen en vroeg-moderne tijd.," *Hofjeskrant. Nieuwsbrief van de Stichting Landelijk Hofjesberaad* (2003).
[109] Lopes Cardozo et al., *Hofjes in Nederland* (Haarlem: Gottmer, 1977).
[110] Martijn van der Steen, Mark van Twist, and Philip Marcel Karré, "When Citizens Take Matters into Their Own Hands," *Public Integrity* 13, no. 4 (2011/10/01 2011), https://www.tandfonline.com/doi/abs/10.2753/PIN1099-9922130402.

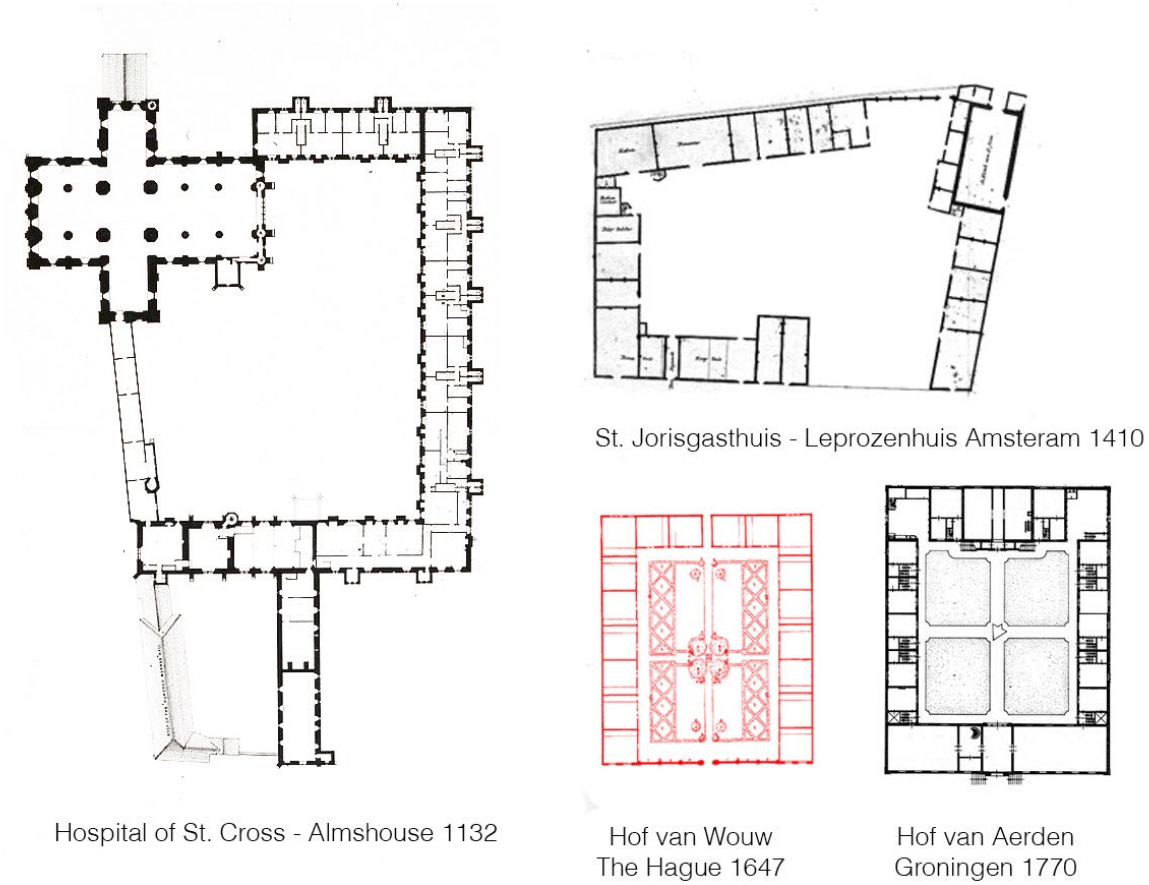


Figure 21. Plan comparison of almshouses and other institutions. (Collage by author).

Chosen example, Hof van Wouw due to its refined architectural qualities, served as an example for other almshouses and, for many, is one of the most beautiful.[111] It is one of few surviving charity hofjes in the Hague. There was a significantly smaller number of them in the Hague than in other cities. The social structure was different, and the wealthier class was relatively mobile and not particularly attached to the city.[112] In the beginning, like other hofjes in this city, it lay on its outskirts in its southwestern corner.[113]

Cornelia van Wouw founded hofje in 1647 for retired female servants above 50 and of the reformed religion. She lived here for 34 years, and the community thrives to this day. Bartholomeus van Bassen, city architect and painter, designed the courtyard. [114]Its above-average size and long border with the street result from a division of agricultural land into urban blocks of nine plots, with the middle one reserved for the garden.[115]

Layout

Hofje van Wouw consists of 18 cottages in a U-shaped courtyard with a decorative pump in the middle and garden divided into boxes, hidden behind a wall with a decorated gate. Two double-story houses facing the street have richer facades and belong to porter and regent. Behind the courtyards was the regent's fruit and vegetable garden. Hofjes architecturally belong to the tradition of poor relief institutions and monastic complexes. All houses fronts open onto the shared garden space; the back

[111] Cardozo et al., *Hofjes in Nederland*.
[112] C.H. Slechte, "Den Haag "Hofjesstad"?," in *Haagse hofjes : tien historische artikelen*, ed. Piet de Baar (Leiden: Stichting Leidse Hofjes, 1982).
[113] Willemijn Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee* (Rotterdam: nai010 uitgevers, 2021).
[114] B. Koopmans and D. Valentijn, *De verborgen stad: 115 hofjes in Den Haag* (De Nieuwe Haagsche, 2005). https://books.google.nl/books?id=xaVgMwAACAAJ.
[115] Willemijn Effting Katja Wilms Floet, *Het hofje : bouwsteen van de Hollandse stad, 1400-2000* (2016).

wall is blank.[116] Hof van wouw has all basic architectural qualities of any other hofjes. It is "an additive structure" rather than constrained composition. [117]Due to the regular shape of the plot, cottages form an elegant courtyard.

The cottage is a single tiled room with an attic. It has a box bed under the stairs, peat storage, and a tiled chimney to cook and heat. The attic was used to store peat and for hanging laundry. Nowadays, the layout changed. In Hof van Wouw, the bedroom and shower are upstairs; the box bed became a kitchenette. [118] Ideally, almost all cottages are the same, however in Hof van Wouw, apart from double-level front houses, two corner cottages have windows to the back, not to the front. Other hofjes corners could be open (telescoped layout) or taken over by shared facilities. For example, Hof van Wouw had a shared laundry room.[119] Other shared spaces would be a mortuary or open shed for outside labor. [120]

Social aspects

Regarding private and public domain, hofje, as a privately managed community, distances itself from public life to a certain degree. The distance manifests itself in the city's location–the Hague's outskirts and by hofje relation to the context[121]. Like other caring institutions of medieval Netherlands, blank walls separate hofje from the street, forming a calm and protective environment inside. The only access is through the decorated gate flanked by slightly decorative fronts of regents and porters' houses. Sometimes, front spaces had additional access from the outside, and hofje received additional revenue by renting them out. [122]The gate in Hof van Wouw is visible to the public, but in other cases,

Figure 22. View from the street.

[116] Wilms Floet, *Het hofje : bouwsteen van de Hollandse stad, 1400-2000*.
[117] Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee*.
[118] Jeltje Dijkstra, *De hofjes van Nederland* ([Amsterdam: Atrium, 1993).
[119] "Over de Hof," Hof van Wouw, 2022, https://www.hofvanwouw.nl/over-de-hof-2.
[120] Cardozo et al., *Hofjes in Nederland*.
[121] Willemijn Wilms Floet, "The social missions of Dutch 'hofjes' in architecture" (Conference: Almshouses in Europe from the late Middle Ages to the present : Comparisons and peculiarities, Haarlem, IISH, 2011).
[122] Harry Donga, *Christoffel van Brants en zijn hofje : Geschiedenis van het Van Brants Rus Hofje vanaf 1733* (Hilversum: Uitgeverij Verloren, 2008).

access could be hidden by a narrow passage, disguised as a regular street façade, or, on the other hand, exposed by the monumental gate even with qualities of promenade architecturale. Detailing also presents aspects of this distance. For example, the paving from the street would enter the hofje, or the furniture in the public entrance hall would be strangely private. [123]Transition to Hof van Wouw is immediate, through the decorated gate in the middle of the blank wall. Nevertheless, we will pass under an "urban" lamp on the other side of the gate, which has more estate or convent-like feeling than the city square.

In Hof van Wouw, on the backdrop of the view from the garden to the street, we can see street facades of opposite buildings above the wall. Residents could see parts of the city front facades, and the public could see parts of the hofje. This superimposition of the views presents another angle in hofje's relation to the city. Although physically separate, hofje maintains the connection to the context. Floet points out that often garden, with its treetops, would announce the presence of the hofje to the city. [124]At first sight, we see hofje as a private entity; however, it communicates with the city on multiple fronts.

These subtle links to the city somehow proved to be not enough. In many courtyards, the problem with seclusion is that the elderly hardly feel life or public outside and a visit from a postman becomes an event. The 19th-century literature already mentions this problem. [125]The difference between modernist older people's homes in park-like environments and hofjes is that the flats in the first are isolated from each other and from the cities making inhabitants feel even more lonely and insecure. [126]

A shared garden surrounded by cottages expresses a sense of collectivity. It was mainly a resting, recreative space, sometimes used as a bleaching field or vegetable garden. The 17th-century depiction of Hof van Wouw shows the garden's decorative character. Apart from sharing, the garden functioned as a privacy and direct contact regulator. Partly hidden behind planting, residents still could see the light in each other houses or spend time together in the garden, for which they are grateful to this day. [127]The middle of the garden would be the most communal, often with decorative lantern with pump for rain-or groundwater – detail expression of collectivity, [128]sides were more private, often furnished by residents, acting like a shared porch, bringing residents together. [129]For Floet, the architecture of cottages further reinforces the collectivity. The repetitive character of cottages their seriality bring anonymity over individuality.[130] In Hof van Wouw, each house has one door and window, but two houses share a chimney. Sharing happens, therefore, on a few levels. This repetitiveness and sober character relates to strict living rules in hofje and partly closed of the community's character, which acceptance residents exchanged for a chance of living in hofje. [131]Rules also regulated collectiveness, but on the other hand, collectiveness and shared experience helped obey those rules. [132]The small scale of hofjes surprisingly allowed more privacy. Instead of in large dining halls, residents could eat meals in their own houses. [133]

Most of the cottages in Hof van Wouw are the same, apart from corner ones. Cardozo suggests that these segments were least attractive, and often their residents moved out when better cottages became available.[134] Two houses stand out – porter and regents, with their height, view on the street, position in hofje and furnishing, describe power relations. Regent represented the founder, and porter

[123] Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee*.
[124] Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee*.
[125] Cardozo et al., *Hofjes in Nederland*.
[126] Dijkstra, *De hofjes van Nederland*.
[127] "Over de Hof."
[128] Dijkstra, *De hofjes van Nederland*.
[129] Wilms Floet, *Het hofje : bouwsteen van de Hollandse stad, 1400-2000*.
[130] Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee*.
[131] van der Steen, van Twist, and Karré, "When Citizens Take Matters into Their Own Hands."
[132] Else Lindhout, "Vrouwen : maandblad van de Nederlandse Vrouwenbeweging," (1990).
[133] Donga, *Christoffel van Brants en zijn hofje : Geschiedenis van het Van Brants Rus Hofje vanaf 1733*.
[134] Cardozo et al., *Hofjes in Nederland*.

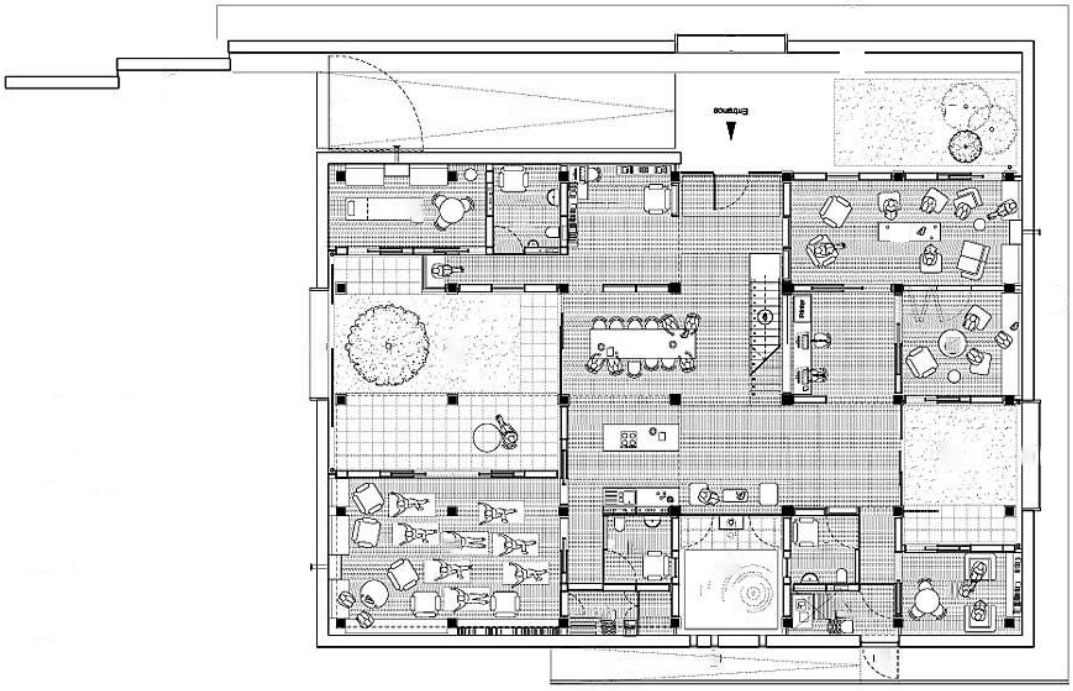
oversaw life in the hofje. [135]Architecturally here, he is equal to the regent. In other hofjes, often regents house would be the most prominent element. Regents rooms were also a meeting space for the residents and distribution space for prouwen – charity goods, [136]it often had a large table inside, in many hofje this space function is now purely communal. [137]

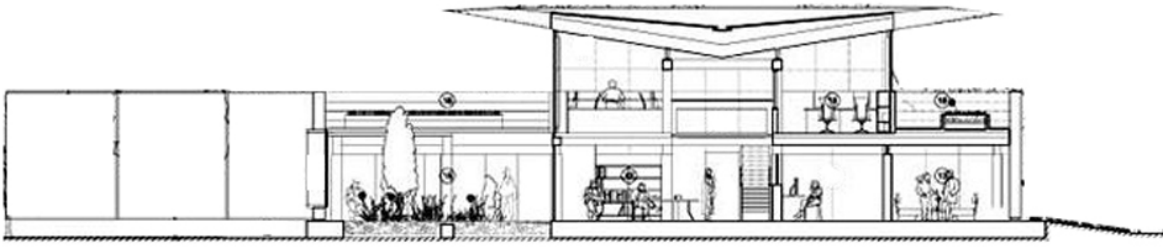
Experience

The architecture of the Hof van Wouw is a repeated pattern of residential appearance. However, some other hofjes have palatial qualities, such as optical illusions or allusions to palatial street façade or canal pavilions.[138] The decoration is scarce; however, porter and regents houses have classicist pilasters underlining the funder status. Golden pine cone on their tops is the symbol of hospitality. [139]Often founders hired sculptors for special orders for their hofjes,[140] and the pump was a central garden decoration. Although ultimately sober, we can say that hofjes were designed with care. White stones demarked paths to prevent tripping, horizontally split in half dutch doors allowed sitting inside while being outside. [141]The small, humane scale, seclusion, and endowment with greenery form the aura of intimacy. In old Van Dale's dictionary, hofje refers to a calm and serene environment. [142]This atmosphere contrasts with the hectic urban environment just outside the wall. Therefore the transition from the city to the hofje holds the element of surprise. Floet calls it the "transition from city to serenity." In some cases, light, sounds, and textures play a part in experiencing this transition. [143]

Figure 23 View of the courtyard.

[135] Dijkstra, *De hofjes van Nederland*.
[136] Koopmans and Valentijn, *De verborgen stad: 115 hofjes in Den Haag*.
[137] Cardozo et al., *Hofjes in Nederland*.
[138] Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee*.
[139] Koopmans and Valentijn, *De verborgen stad: 115 hofjes in Den Haag*.
[140] Donga, *Christoffel van Brants en zijn hofje : Geschiedenis van het Van Brants Rus Hofje vanaf 1733*.
[141] Cardozo et al., *Hofjes in Nederland*.
[142] Johan Schwencke, *Oude Haagse Hofjes en Godshuizen* (1975).
[143] Wilms Floet et al., *Oases in de stad. Het hofje als architectonisch idee*.





Modern case studies

Maggie's Centre

Introduction

The Maggie's centers are small-scale buildings near hospitals that provide psychological support for cancer patients. The initiative was started by landscape designer Maggie Keswick and her husband Charles Jencks when Maggie had cancer. Maggie's center designs start from her writings about inhumane hospital environments and how she regained control over her life by taking an active role in her treatment. [144]She quite explicitly described the desired environment of the hospital from referring to air, light, connection to outside to the need of a variety of settings, access to the library, or singular toilet as a place to cry in. Her writings dominate the need to include more psychological support and offer the possibility of trying different supplementary methods and information to empower the patient and encourage him to take control of his life. Lastly, in her essay "A view from the front line", Keswick mentions the problem of distance to her carers and the considerable stress on her family. [145]

The opening of the first center in Edinburgh, where Maggie received treatment, resulted in establishing charity that constructs these centers in multiple places in the UK and the world. Each design is given to a prominent architect and guided by a qualitative programmatic brief that speaks more of atmospheres than numbers. An effect is a series of unique designs sharing standard features.

The brief details the desired atmosphere of the center by enlisting contrasting qualities like calm but zesty, sheltering but not excluding, private and collective. Importantly it seeks designs that are cozy

Figure 25. View from the entrance square.

[144] Marcia Blakenham, "Foreword," in *A View from a frontline*, ed. Margaret Keswick and Charles Jencks (London: Maggie Keswick Jencks Cancer Caring Centres Trust, 2007).
[145] Margaret Keswick and Charles Jencks, "A View from a frontline," (London: Maggie Keswick Jencks Cancer Caring Centres Trust, 1995).

but do not trivialize patient experience. The text extensively calls for a clear plan, gradients of privacy and social interactions, landscaping, greenery, and sensorial experiences. [146]Jencks describes maggies as hybrid buildings, something that A "like a house which is not a home, a collective hospital which is not an institution, a church which is not religious, and an art gallery which is not a museum." [147]

Location

The charity locates its centers close to the hospitals; patients can immediately seek help without going elsewhere. Therefore, most centers are in colossal hospital machinery, often surrounded by suburban landscapes, although few Maggie's benefit from open natural surroundings. Chosen example - Maggie's in West London is a rare case of the center in the urban context.

Maggie's in West London stands in the busy surroundings of Charing Cross Hospital. The row of trees and high orange wall wraps the center around to mitigate the negative impact of the urban environment. The wall separates but one of its ends extends in an inviting gesture. The path with trees from a small square leads to the wall extension and overhanging roof. Carefully placed opening incorporates sensitive connections to the city and garden and gives a taste of what users can find inside. [148]

The layout.

Maggie's brief calls for an open and flexible plan. It should accommodate central space with a kitchen table and a series of smaller spaces for various uses and degrees of privacy. [149] In West London, the kitchen table stands in a central double-height space, clearly visible from the entrance. Centers provide communal spaces, rooms for group activities, and places of solitude. They can have a form of rooms,

Figure 26. Interior.

[146] "Maggie's Architecture and Landscape Brief," (London: Maggie Keswick Jencks Cancer Caring Centres Trust, 2015).
[147] Charles Jencks and Edwin Heathcote, *The architecture of hope : Maggie's cancer caring centres* (London: Frances Lincoln, 2010).
[148] "Maggie's West London Centre | Design Guide," (London: Maggie Keswick Jencks Cancer Caring Centres Trust and Rogers Stirk Harbour + Partners, 2014).
[149] Keswick and Jencks, "A View from a frontline."

niches, or quiet corners. As flexibility is vital for the center, the design allows the accomodating of various activities thanks t foldable partitions that allow multiple configurations. [150]

Social aspects.

The Maggie's in West London stays in clear opposition to the hospital and its surroundings. It works as a buffer for vulnerable people from technologized healthcare. [151]The uniqueness of Maggie's is a form of creating a sense of ownership amongst their users[152] and a means to spark curiosity and bring new people to the centers. [153]The architecture here confronts standard views on healthcare space and matters of sickness and death – it takes them to the front rather than hides.[154] Butterfield asks if Maggie's are architectural follies that are grabbing the attention of potential donors and media. [155] Interestingly similar to mechanisms found in Hotel Dieu de Beaune.

The plan organizes gradients of privacy by placing more communal spaces at heart and more private on the outskirts. [156]This gradient is fluid, thanks to foldable partitions. Details like sliding doors better communicate availability, easing social anxieties. [157]This structure of plan offers a feeling of collectiveness without hindering privacy. It offers choice and empowers, something missing from hospitals where unbalanced power, knowledge, and orderly architecture prevent that. [158]The use of sliding doors, a functional overlap of spaces, furniture acting as partitions, and raised above plan roof to allow light addresses aspects the need of dynamic between being together and apart in brief. Garden offers similar mechanics. On a smaller scale, it functions like a room or its extension. [159]It separates rooms and joins them, giving the idea of sharing while enhancing privacy. Additionally, overlapping spaces help avoid using corridors. [160]

Moreover, social gestures also happened to solve the need for privacy, and an open plan helps staff silently oversee the users. [161] Finally, using elements like a big communal table main collective object in the center strengthens the sense of collectivity. Bollnow would emphasize that the collective experience of space exceeds the personal. Here can lay the essence of the Maggie's.[162]

Designers, apart from patients, also considered staff and patient families. In West London, they also treat the center as their place. [163]Offices are part of the open plan, and the layout does not strictly segregate user groups. Staff or families can find emotional relief the same way as patients, and the latter is calmer when they know the quality of care their relatives receive.[164] When the building cares for the staff, then the staff better care for patients. [165]Maggie's centers do not impose help over the

[150] "Maggie's West London Centre | Design Guide."
[151] M. H. Dominiczak, "Illness and culture: Maggie's Centres," *Clin Chem* 59, no. 1 (Jan 2013), https://doi.org/10.1373/clinchem.2012.188318.
[152] Annemans et al., *What makes an environment healing? Users and designer about the Maggie's Cancer Caring Centre London*.
[153] Valerie Van der Linden, Margo Annemans, and Ann Heylighen, *"You'd want an energy from a building": User experience of healing environment in a Maggie's Cancer Caring Centre* (2015).
[154] Michelle Knox, "Locating death anxieties: End-of-life care and the built environment," *Wellbeing, Space and Society* 2 (2021/01/01/ 2021), https://www.sciencedirect.com/science/article/pii/S2666558120300129.
[155] Angela Butterfield, "Resilient places? The healthcare gardens and the Maggie's Centres" (2014).
[156] Valerie Van der Linden, Margo Annemans, and Ann Heylighen, "Architects' Approaches to Healing Environment in Designing a Maggie's Cancer Caring Centre," *The Design Journal* 19, no. 3 (2016/05/03 2016), https://doi.org/10.1080/14606925.2016.1149358.
[157] Annemans et al., *What makes an environment healing? Users and designer about the Maggie's Cancer Caring Centre London*.
[158] Edwin Heathcote, "Maggie's Centres," *BMJ* 333, no. 7582 (2006), https://dx.doi.org/10.1136/bmj.39062.614132.55.
[159] "Maggie's West London Centre | Design Guide."
[160] Van der Linden, Annemans, and Heylighen, "Architects' Approaches to Healing Environment in Designing a Maggie's Cancer Caring Centre."
[161] Annemans et al., *What makes an environment healing? Users and designer about the Maggie's Cancer Caring Centre London.*
[162] Van der Linden, Annemans, and Heylighen, *"You'd want an energy from a building": User experience of healing environment in a Maggie's Cancer Caring Centre*.
[163] Barbara Millar, "Home of Inspiration," *Nursing standard* 22, no. 9 (2007).
[164] Angela Butterfield and Daryl Martin, "Affective sanctuaries: understanding Maggie's as therapeutic landscapes," *Landscape Research* 41, no. 6 (2016/08/17 2016), https://doi.org/10.1080/01426397.2016.1197386.
[165] Charles Jencks, "Maggie's Architecture: The Deep Affinities Between Architecture and Health," *Architectural Design* 87 (03/01 2017), https://doi.org/10.1002/ad.2154.

user. Users can talk about what they want and participate in activities of their choice. The choice is a theme of Maggie's design. [166]

Experience.

Garden

Angela Butterfield directed necessary research of gardens' role in Maggie's healing environment. In her PhD thesis, Butterfield underlines four "essences" (something "conveying a quality or attribute"). First – the landscape is the threshold that forms the relation with hospitalized context. Second - Sensory richness, planting that engages different senses. Third, the density of time – gardens provides users with different time experiences, including various walking paces or seasonal changes, and homeliness – the garden aura of intimacy. [167]In West London, the garden protects, provides therapeutic activities, works as a buffer, and links with the hospital environment. Finally, striking is how it profoundly penetrates the building. We see a garden again while entering the center behind the main space. Finally, the building and garden are interlocking elements, bound together by visual connections (in many directions) and easy accessibility to one another. [168]Jencks writes that "Architecture of hope is one big orientation outwards." [169]

Figure 27. Opening towards the entrance square.

Light, color and materials

Martin studied people's feelings in Maggie's to understand how light, color, materials, and form influenced them and generated atmospheres. Combinations of these elements and their relations to

[166] "Maggie's West London Centre | Design Guide."
[167] Butterfield, "Resilient places? The healthcare gardens and the Maggie's Centres."
[168] Butterfield and Martin, "Affective sanctuaries: understanding Maggie's as therapeutic landscapes."
[169] Jencks, "Maggie's Architecture: The Deep Affinities Between Architecture and Health."

other aspects played a role in creating welcoming and humane atmospheres. [170]Studies by Anneman et al. showed that these aspects created a calm, warm, peaceful atmosphere, mainly referring to "big, light and airy" spaces. Architectural experience varies by the uses of different ceiling heights or different windows that bring different light. [171]Materials like timber or colorful interiors create a sense of warmth, a high level of detailing and craft, complex compositions of colors, or high-quality materials causes often intended admiration. Walls as furniture are pleasant to touch.

Uniqueness

Martin also pointed out that unusual forms sparked curiosity.[172] This idea of uniqueness also arrives on a smaller scale. West London Maggie's strikes with the layering of wood, steel, and concrete on the backdrop of the bright orange wall outside. Without a doubt, the uniquely designed roof, which perforation imitates treetops, steals users' attention.

Domesticity and informality

Furthermore, the implementation of everyday objects, like domestic furniture, complemented creating the welcoming atmosphere (martin). Jencks points to the importance of informality; the idea of a chat, drinking coffee near the central table is called "kitchenism", [173]it is a slight referral to the domestic space, although not entirely. The emphasis is on elements like this table or other fairly domestic features rather than offices or counseling rooms,[174] reversing the standard order of healthcare settings.

Many studies underlined that architecture alone is not a determining factor in the success of the Maggie's. Instead, the mutual support of physical and social elements is what Jencks calls "an architectural placebo". Bohme states that spatial aspects with social practices create certain atmospheres[175]

It is interesting to look at Maggie's through qualities listed by Gesler that are characteristic for places of healing. First, its evident connectedness to nature. Second, iconic architecture that fosters pride among users. Third, careful design that enables sensorial experiences. Fourth, the design that focuses on rituals – like having a coffee near the kitchen table and the references to home and lastly, design that works closely with social interactions – fostering equality, therapeutical community. [176]

[170] Daryl Martin, Sarah Nettleton, and Christina Buse, "Affecting care: Maggie's Centres and the orchestration of architectural atmospheres," *Social Science & Medicine* 240 (2019/11/01/ 2019), https://www.sciencedirect.com/science/article/pii/S027795361930557X.
[171] Annemans et al., *What makes an environment healing? Users and designer about the Maggie's Cancer Caring Centre London*.
[172] Martin, Nettleton, and Buse, "Affecting care: Maggie's Centres and the orchestration of architectural atmospheres."
[173] Jencks, "Maggie's Architecture: The Deep Affinities Between Architecture and Health."
[174] Knox, "Locating death anxieties: End-of-life care and the built environment."
[175] Martin, Nettleton, and Buse, "Affecting care: Maggie's Centres and the orchestration of architectural atmospheres."
[176] Butterfield, "Resilient places? The healthcare gardens and the Maggie's Centres."

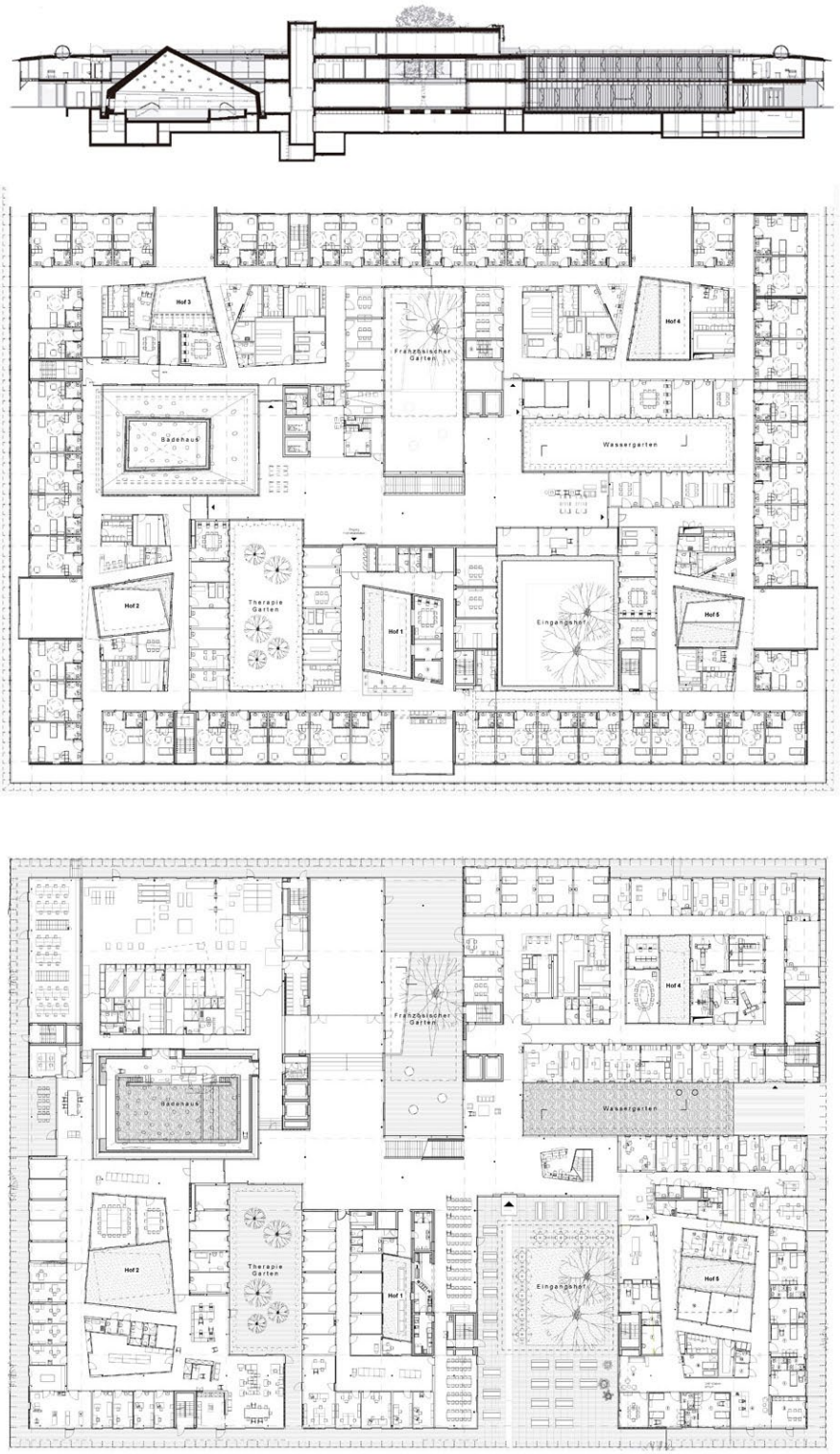


Figure 28. Plans and section. Of Rehab basel.

Rehab Basel,

REHAB Basel is a rehabilitation clinic for spinal cord and brain injuries. Patients with significant impairment can regain lost abilities and prepare to return to everyday life during an extended stay. The client asked the architects from Herzog de Meuron to design a clinic that does not reassemble the hospital.[177]For them, traditional hospitals drown with countless corridors and the same spatial pattern of examination and waiting rooms. Their design starting point stood in opposition to the current architectural model.

Location.

The clinic lies in a suburban area near the French border. The large area filled with allotment gardens separates it from the bustling city of Basel. On the north side, clinics plot borders with a park that extends Rhein valley. The rest of the context has a residential character.[178]Like new hospital constructions, clinic distances from the city and only highway provide a fast connection with Basel. However, this aspect has low importance due to the elective, not the acute profile of the clinic.

The Building.

The building is two layers horizontal block (120 x 90m). Patients are above, and treatment spaces are below. It breaks a tradition of back-to-back organization in the plan in favor of the section. [179]Five large courtyards and five small lightwells regulate the plan. Each courtyard has a particular functional zone and lightwells group staff stations and ancillary spaces.[180]Pavillion with family hotel occupies the center of the roof, which is also accessible. Patient rooms arranged around the perimeter of the second level allow flexible organization of the wards.[181] Additionally, the top pavilion can be adapted to the ward if needed.[182]

Figure 29. Water courtyard.

[177] "165 REHAB BASEL," 2022, https://www.herzogdemeuron.com/index/projects/complete-works/151-175/165-rehab-centre-for-spinal-cord-and-brain-injuries.html.
[178] "Ein Block als kleine Stadt: Herzog & de Meuron: Rehabilitationszentrum für Querschnittgelähmte und Hirnverletzte, Basel, 1999-2001," *Archithese* 30, no. 1 (January 2000 2000).
[179] Ren Furer, *Herzog & de Meuron : Rehab Burgfeld : Baukunst al Humanismus* (Benglen: R. Furer, 2007).
[180] Luis Fernández-Galiano, *Herzog & De Meuron : 2000-2005*, AV monografías ; 114, (Madrid: Arquitectura Viva, 2005).
[181] Furer, *Herzog & de Meuron : Rehab Burgfeld : Baukunst al Humanismus*.
[182] "Ein Block als kleine Stadt: Herzog & de Meuron: Rehabilitationszentrum für Querschnittgelähmte und Hirnverletzte, Basel, 1999-2001."

Social aspects.

Considering the length of stay and user limitation to one place, architects approached the design of a clinic as a microcosm of a city – filled with equivalents of streets, squares, or gardens that offer variety and choice in moving around or using the spaces, thus enhancing independency. [183]Central courtyards are embedded in circulation routes and directly connected to them – forming the main street and squares. Some are surrounded by rooms–houses or circulation, offering a variety of space exploration.

From the central space, every courtyard, functions group, and main vertical circulation around it are visible and easy to understand and allow control.[184] The lobby also groups the most public zones and common meeting points between different user groups.[185] This way, the plan with its frivolously carved courtyards reassembles the organic character of the village.[186] Courtyard differences in shape and use (water, garden, swimming pool) play a significant role in orientation. Visibility of outside space in many directions and precise order of the plan with patient rooms on perimeter and supporting function directed inwards further enhance user orientation in the plan. In the plan, we will find spaces without the prescribed function, which users can use according to their wishes – to chat or wait for treatment. The order of the plan into neighborhoods with is residential feel is to prompt “casual meetings and friendly visits”. [187]This solution could be a way to achieve a “sense of belonging and intimacy”. The village model further provides other beneficial qualities for rehabilitation patients, like short distances to necessary treatment and proximity of caregivers to patients. [188] However, the horizontal village-like organization promotes movement and exploration.

Figure 30. The veranda.

[183] "165 REHAB BASEL."
[184] Stephen Verderber, *Innovations in hospital architecture* (New York, NY: Routledge, 2010), http://www.vlebooks.com/vleweb/product/openreader?id=none&isbn=9780203855751, https://doi.org/10.4324/9780203855751, 1 online resource (xvi, 373 pages) : illustrations.
[185] "Ein Block als kleine Stadt: Herzog & de Meuron: Rehabilitationszentrum für Querschnittgelähmte und Hirnverletzte, Basel, 1999-2001."
[186] Verderber, *Innovations in hospital architecture*.
[187] "165 REHAB BASEL."
[188] Gerhard Mack, *Herzog & de Meuron : das Gesamtwerk = the complete works / Vol. 4, 1997-2001* (Basel: Birkhäuser, 2009).

Experience

Venderberger points out that REHAB Basel is a theraserialized building. It means that the space is "serialized, layered, collaged, superimposed, transparent and fluid". It is about the transition between degrees of private-public range, inside and outside, building and its surroundings. [189]Space is here not compartmentalized but rather liquid. This effect here is achieved in the composition of the plan and by a minimal steel structure that quietly pierces the interior, allowing its fluid character. [190]The public space is free of obstacles like doors or thresholds. The large windows, with hidden frames, allow clean exchange between exterior and interior. Almost seamless floor and ceiling extend in all directions, unifying the space. Theserialisation is varied. Spaces differ by size, function, and the character of openings and relation to the outside – from outward to inward-looking spaces. Bed-wide veranda on the first floor extends the patient room and looks onto the designed garden that blends with the natural landscape.[191] It gives "a sense of floating detachment from the surroundings." [192]

The outside enters the building also in planting. Gardens in REHAB are "low maintenance xeriscapes" that include native plants surrounding the landscape.[193] Continuity and repetitiveness off façade elements blend with the building mass, forming subtle relation to the surrounding natural and low suburban landscape.[194] Low height ensures humane scale.

The building is somewhat organized orthogonally, despite obvious tension between angled lightwells and the rest of the ensemble.[195] Also, the irregular placement of structural columns dissolves orthogonal interiors.[196]The steel construction does not strictly follow the grid. Architects have chosen individualization over standardization. [197]

"Nature is translated into the artificial world of architecture through the extensive use of wood in the building." [198]Wooden slates are to differentiate rehab from the hospital look. [199]We find different kinds of wood in the REHAB clinic. It is the primary material on the outside. It clads the façade, thin wooden slits form screens, and awnings in different patterns and combinations in the entire building. They make up a railing of veranda, ensuring privacy, whereas the bottom part marks the boundary of the walkway below. In two courtyards, slats were laid out vertically and have served as guide rails for sun shading. [200]The wooden screen is also a visually unifying element of various wall openings.[201]Inside, patients enjoy suspended wooden ceilings in their rooms. Christine Binswanger, the project architect, observes that wood is untreated and will turn grey. She points out: "Wood weathers-it is not meant to look so perfect."[202] It is interesting to look at it from the perspective of Pallasmaa's writings on time, where he sees architecture that incorporates this dimension as a remedy for the technologized environment.

Designers paid careful attention to the details and ideas of sparking imagination and beauty. Transparent beads that shimmer in the light connect wooden screes, unique, spherical skylight offer daylight, sensorial and aesthetical experiences to the patients. The details that look more like a craft

[189] Verderber, *Innovations in hospital architecture*.
[190] Shahin Vassigh and Jason R. Chandler, *Building systems integration for enhanced environmental performance* (Ft. Lauderdale, Fla.: J. Ross Pub., 2011), 1 online resource (156 pages) : color illustrations, maps.
[191] Fernández-Galiano, *Herzog & De Meuron : 2000-2005*.
[192] "REHAB, Center for Spinal Cord and Brain Injuries by Herzog & de Meuron," Architectural Record, 2022, accessed 10.12.2021, 2021, https://www.architecturalrecord.com/articles/13682-rehab-center-for-spinal-cord-and-brain-injuries-by-herzog-de-meuron.
[193] Verderber, *Innovations in hospital architecture*.
[194] Irina Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron," in *Gta papers; Social distance*, ed. Adam Jasper (Zürich: gta Verlag, 2021).
[195] Mack, *Herzog & de Meuron : das Gesamtwerk = the complete works / Vol. 4, 1997-2001*.
[196] Judit Solt, "Lebendige Vielfalt: Herzog & de Meuron, Rehabilitationszentrum für Querschnittgelähmte und Hirnverletze, Basel, 1998-2002," *Architthese* 32, no. 3 (May 2002 2002).
[197] Hubertus Adam, "REHAB Basel: Neubau Schweizer Paraplegikerzentrum," *Bauwelt* 93, no. 33 (2002 Aug 30 2002).
[198] Mack, *Herzog & de Meuron : das Gesamtwerk = the complete works / Vol. 4, 1997-2001*.
[199] Fernández-Galiano, *Herzog & De Meuron : 2000-2005*.
[200] Adam, "REHAB Basel: Neubau Schweizer Paraplegikerzentrum."
[201] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[202] Stephens, "REHAB, Center for Spinal Cord and Brain Injuries by Herzog & de Meuron."

than factory technology oppose mainstream hospital aesthetics. Unlike traditional hospital aesthetics, bathrooms have solid and vivid colors to avoid sterility associations. The connection to the exterior landscape plays a leading role in orchestrating anti clinical feel. Varied geometry and orientation of courtyards provide different light sensations. [203]Similarly, like in Maggie's, the tactile materials or penetrating daylight follow Bohme's theory of atmospheres' generators.

The idea of informality seems to be penetrating the design. It encompasses the idea of neighborhoods and informal social practices that this model embodies, architectural form closer to the resort than an institution, fluidity rather than ordered compartmentalization. What makes this building striking is the dynamic between regular and irregular, condensing and expanding, opening and closing. [204]Architectural historian Annmarie Adams described it as "recoding" of the modern hospital model.

Moreover, its designers had no prior experience in this field. "Patients can enjoy maximum diversity in minimum space" [205]

Figure 31. Craftmanship details of wooden screens.

[203] "Ein Block als kleine Stadt: Herzog & de Meuron: Rehabilitationszentrum für Querschnittgelähmte und Hirnverletzte, Basel, 1999-2001."
[204] Adam, "REHAB Basel: Neubau Schweizer Paraplegikerzentrum."
[205] Mack, *Herzog & de Meuron : das Gesamtwerk = the complete works / Vol. 4, 1997-2001*.

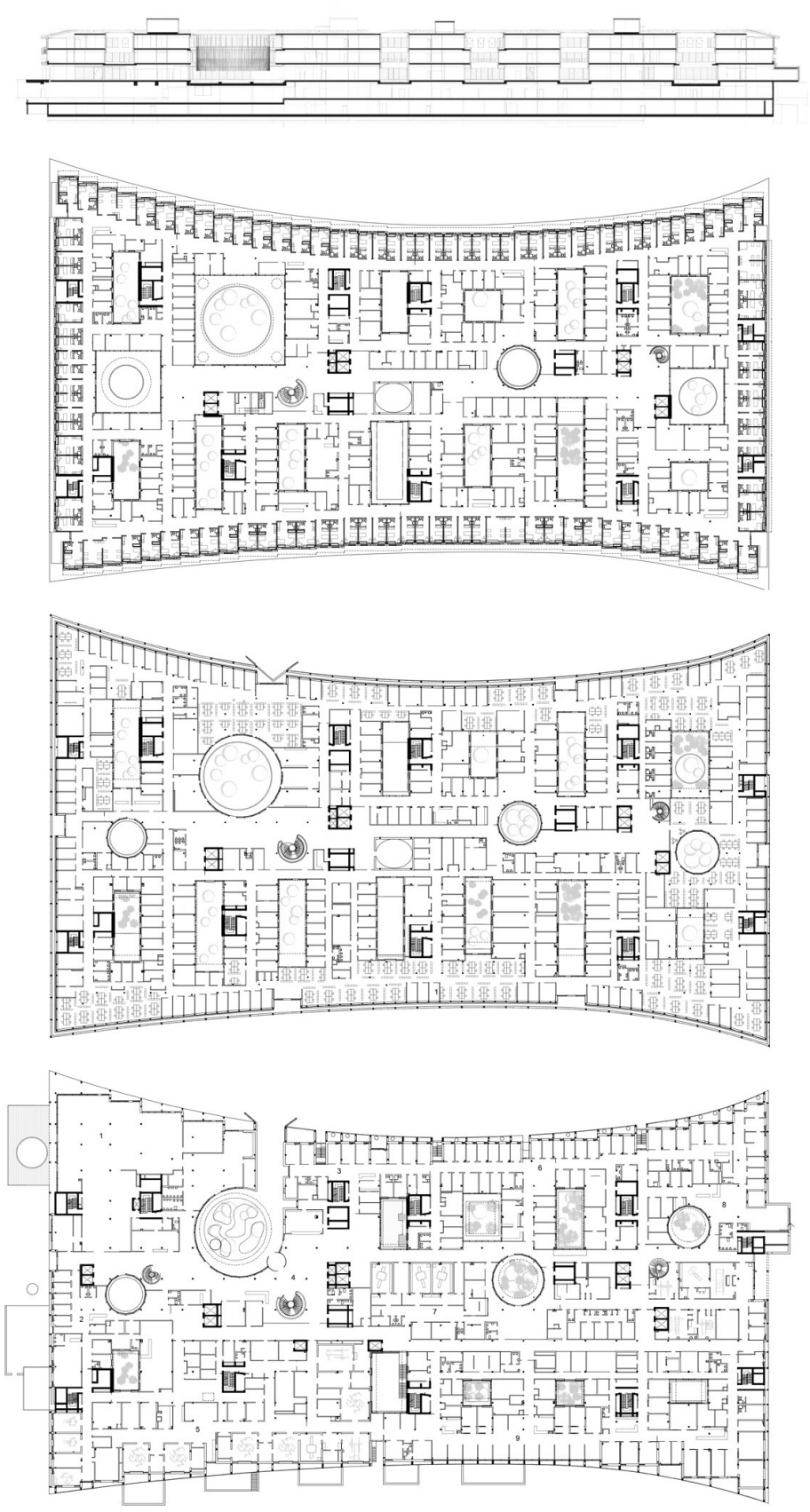


Figure 32. Plans and section of the Kinderspital in Zurich.

Kinderspital Zurich

Introduction

Hospital design needs to answer two sets of sometimes conflicting values. On the one hand, it has to be modular, flexible, functional, and answer the questions of atmospheres or experience. The lead designer calls the first "compulsory exercise" and the second "freestyling.[206] Following the previous project of REHAB clinic, Herzog&deMeuron continues the negative attitude against the traditional hospital model.[207]

Location

The new hospital will stand on the health campus on the city outskirts, where different buildings and functions are intermingling with the landscape. The new development consists of a large horizontal three-story rectilinear block of a new hospital and a seven-story, round research tower.

Interestingly, the hospital's architecture forms a relationship with the neighboring XIX century hospital, somehow opposing its monumentality and heavy materiality. The slightly inwards rounded entrance presumably functions as almost proscenium for urban, public encounters.[208]The space between the old hospital and the new one will serve both of them as an extensive public park-like public access space to them both.[209]

Figure 33. View from the outside.v

[206] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[207] Luis (Ed.) Fernández-Galiano, *Herzog & de Meuron : 2013-2017*, ed. Luis Fernández-Galiano, AV Monografías, (Madrid: Arquitectura Viva, 2017).
[208] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[209] Fernández-Galiano, *Herzog & de Meuron : 2013-2017*.

Layout

The first floor accommodates public functions, treatment areas, emergency, service, and operating theatres. The next floor contains outpatient services on both sides of the main thoroughfare and the office in the back along the whole facade. The third floor contains patient rooms on the perimeter therapeutic departments corresponding to the wards in the middle.[210]

Diagrammatically, functional organization happens in 3 layered sections with treatment on the ground, offices on the first floor, and patients on top. According to the architects, this horizontal approach allows sharing between the departments on one floor, more than their distribution in a tower block.[211]Designers grouped each department vertically, which contributed to short distances. [212]The somewhat repeating plan's structure and minimal structural elements respond to the need for flexibility. The departments can be rearranged, mixed, or redistributed. Only fixed elements are vertical communication, courtyards, and glazed lightwells. Davidovici describes it as a mat-like, horizontal system that cannot expand to infinite due to its limitation by the fixed boundary of the façade. In opposition to the reality of modern hospitals, the kinderspital is bound in the form of flowy rectangular block – mean of volumetrical unification. The laboratories in the tower have access to the outer shared terraces and inner skylit atrium. The tower's ground floor is a multifunctional space that can be differently used and configured, clearly connecting to the outside and landscape. [213]

Social Aspects

"Hospital functions […] like a cityscape with streets, paths, squares, plants, and vantage points. "[214]

The children's hospital "follows an urban grid with streets, intersections, and squares" design draws parallels to the city – the department is a neighborhood. Different elements of the building function as orientation points, a mechanism similar to the one described by Kevin Lynch. The white research

Figure 34. Inner courtyard.

[210] "377 KINDERSPITAL ZÜRICH," 2022, https://www.herzogdemeuron.com/index/projects/complete-works/376-400/377-kinderspital-zuerich.html.
[211] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[212] "377 KINDERSPITAL ZÜRICH."
[213] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[214] Irene Troxler and Jacques Herzog, "Kein Freipass für Hässlichkeit. Jacques Herzog will die Funktionalität von Stadien und Spitälern mit guter Architektur verbinden.," *Neue Zürcher Zeitung*, 2017.

tower directs to the hospital. The old Zurich street inspires the main circulation area in its structure. It runs through 4 circular courtyards that function like orientation points and mark more public and key zones. This pattern repeats on each floor.[215] Rectangular courtyards organize different department spaces. The organizational model deals with public and private zones and intensity use by placing the most public and intense in the bottom middle and the most private and least intense on the perimeter of the top. The corridor sizes vary according to hierarchy and accommodate semipublic zones like waiting rooms.[216]

Experience

Children need a smaller scale. [217]The three-story height ensures the human scale. This aspect is taken further by recessing the third floor. Orthogonality is juxtaposed with a slight curvature of façade, breaking the association with long, dull corridors inside and framing spaces outside

Davidovici states that building-as-city by inversion uses references to streets and squares exteriors to construct public interiors. Building-as-a-city is a "container of cityscapes." Patient rooms on the third floor directly represent the ideas of residentiality and domesticity in the design. They look like tiny houses, each with a pitched roof. The hospital's appearance is relatively informal, with recreational motives.[218] Planted courtyards reminiscent of a holiday home rather than a hospital. The irregular structure on the façade gives a playful character.[219]

Façade varies as functions and volumes behind. Abundance of wood, textile sun shades, glazing, planting express this variety.[220]The form of the patient rooms emphasizes individuality. Wood covers every surface where it is sanitary and maintenance-wise possible. The concrete structure on the façade is ready to be filled with different materials according to the need. Intricate perforated façade allows observing the hospital life outside without completely exposing the users. On the ground floor, wooden screens form loggias that provide an extra protective distance. [221]

Architects applied principles from REHAB. "It is all about light, orientation, freedom of movement and pleasant meeting spaces."[222] Kinderspital follows REHAB in the organization in the rectangular block with cutout volumes of courtyards. It applies principles of diversity of their form and proportions and continues the idea of the hospital as an inner-urban structure with its streets and squares, their relations, and arrangement in the patient journey. We can find similar craftmanship, like details and ideas about wooden slats. Hospital design characterizes by similar tension between orthogonal and non-orthogonal geometry, but differently. Yet another take on informality. Wooden slats work similarly in rehab, demarking walkways and gardens and ensuring privacy on higher levels.[223]These projects stand out with the extensiveness of landscaping and nature, an abundance of daylight, architectural signposting, and haptic qualities of materials. [224]

[215] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[216] Fernández-Galiano, *Herzog & de Meuron : 2013-2017*.
[217] Irene Troxler, "Wie Architektur bei der Genesung hilft.," *Neue Zürcher Zeitung*, 2017.
[218] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."
[219] Troxler, "Wie Architektur bei der Genesung hilft.."
[220] Fernández-Galiano, *Herzog & de Meuron : 2013-2017*.
[221] "377 KINDERSPITAL ZÜRICH."
[222] Troxler, "Wie Architektur bei der Genesung hilft.."
[223] Fernández-Galiano, *Herzog & de Meuron : 2013-2017*.
[224] Davidovici, "H: Hospital-as-City. The Healthcare Architecture of Herzog & de Meuron."

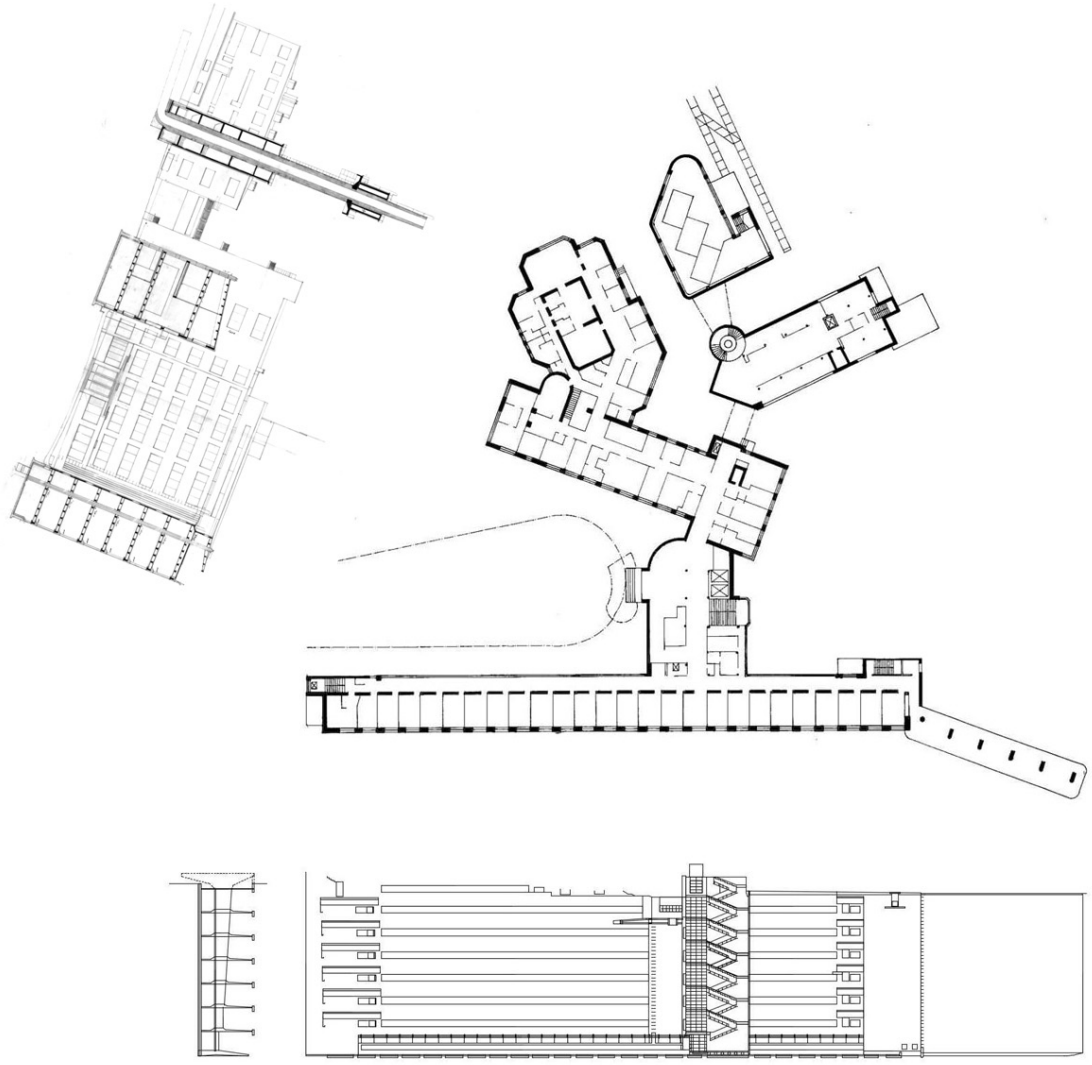


Figure 35. Plan and sections of Paimio Sanatorium.

Sanatorium Paimio

Introduction

The first case study from modern times is a building which for Giedion is one of the most influential designs on contemporary architecture.[225] From its opening for decades functioned as a sanatorium and hospital sustaining changes in medicine. Effect of the competition in 1929, Aalto design was one of many TB facilities in those times, and medicine considered exposure to the sun a remedy. While adding Aalto's humane take on rationalism [226], the study of Paimio as a healing environment seems plausible.

Location and context

Beatriz Colomina compares sanatoria to the ships detached from the cities.[227] Paimio Sanatorium stands in a pine forest 3 km from the Paimio and 30 km from Turku. The oldest pictures show the building hovering above the treetops. Sanatorium stands unbounded in the forest. It grows linearly and extends toward nature, forming with it an ensemble.[228] The building does not need to be enclosed. In Finnish collective memory, forest means shelter. [229]

Figure 36. View of the patient wing and sun terraces.

[225] S. Giedion, *Space, time and architecture : the growth of a new tradition*, 5th ed., rev. and enl. ed., The Charles Eliot Norton lectures ; 1938-1939, (Cambridge, Mass. ;: Harvard University Press, 2008).
[226] Ellis Woodman, "Revisit: 'Aalto's Paimio Sanatorium continues to radiate a profound sense of human empathy'," *Architectural Review* (2016-11-17 2016), https://www.architectural-review.com/buildings/revisit-aaltos-paimio-sanatorium-continues-to-radiate-a-profound-sense-of-human-empathy.
[227] Beatriz Colomina, *X-Ray architecture* (Zürich: Lars Müller Publishers, 2019).
[228] Eija Rauske, "Paimio Sanatorium," in *Alvar Aalto in seven buildings : interpretations of an architect's work* (Helsinki: Museum of Finnish Architecture, 1998).
[229] Marc Treib, "Aalto's nature," in *Alvar Aalto : between humanism and materialism*, ed. Peter Reed and Kenneth Frampton (New York, N.Y.: Museum of Modern Art, 1998).

Figure 37. Rooftop garden.

Plan, organization, and structure.

The sanatorium consists of 4 wings joined by the entrance and circulation space. Each wing groups functions and rooms with similar needs, resulting in distinct orientations.[230]

Long seven-story wing with southern exposure and skewed to the east sun-deck houses patient rooms. More to the north, oriented south-west is communal part with the library, dining and recreational rooms above and medical services downstairs. Attached to the former is a wing rotated to the southeast with kitchen and staff accommodation, whereas senior staff housing is elsewhere on the site. The last wing caters heating plant.

Daily routine informed daylighting needs of each part.[231] Staff receives the earliest light, patient rooms are more balanced, but with priority for the morning light, the communal part prioritizes afternoon light. Competition entry had rooms on south and circulation to the north, in final form, staff wing become double-sided.

Aalto was concerned with functionalist, large-scale, and modular structures that did not meet the needs of body and soul.[232] Therefore, although using grid structure, he individualized the span in each part according to needs.

[230] Alvar Aalto, *Tuberculosis Sanatorium at Paimio*, ed. Pirkko Tuukkanen-Beckers, Alvar Aalto : points of contact, (Jyväskylä: Alvar Aalto Museum, 1994).
[231] Frederick Albert Gutheim, *Alvar Aalto*, Masters of world architecture series ; A 112., (New York: George Braziller, 1960).
[232] Huxtable Ada Louise, "Architecture: Finnish Master Alvar Aalto," *Wall Street Journal* (New York, N.Y.), 02/26/1998 1998, Eastern edition, https://www.proquest.com/newspapers/architecture-finnish-master-alvar-aalto/docview/398640989/se-2?accountid=27026.

Social aspects

Building structures user social interactions.[233] A simplified space syntax diagram shows patients' rooms and communal parts in a fan structure. Staff accommodation is deeper in this diagram, but their entrance leaves patients undisturbed. This equal arrangement somehow suggests a level of democracy. We can trace it further in the equality of providing each user group with their balconies. [234]

Aalto was fascinated with ancient Greece and the idea of democratic building, which conveyed commonality with individuality. Wings are complete ensembles; however, they create a bigger organism.[235] Patients were separate from staff, and private patient zones were separate from patient shared zones. Vertical communications in each part are far from each other, whereas communal one is close to everyone. Wings arrangement prevented visual contact between groups. Common areas and shared traffic spaces are away from, the closer to the forest, private zones[236]Separation ensured privacy and prevented the spread of diseases.[237]Sadly, the illest patients were placed out of sight in the basement due to sanatorium politics.[238] However, rooms orientation blocks contact, small windows on the northern sides allow peeking into other parts.[239] The entrance lobby, the central traffic zone, was the place where everybody could meet. That space stretches uninterrupted to other wings, Aalto often avoided enclosures in favor of flowing space. His designs in landscapes have something urban.[240] In Paimio, there are no private balconies for patients but shared, dividable ones at the end of the wing – another collective quality. [241]

Inspired by ancient Greece, Aalto created stepped-like elements – social theatres in his designs.[242] In Paimio, we will find a broad sociable staircase in the lobby or floating mezzanine level in the communal wing. The competition proposal had zigzagging terraces in front of the patient wing.[243]

A widening entrance court embraces the user public space that broadens towards the landscape. It may relate to the idea of *cour d'honneur or* trick of the "false perspective."[244] Other wings seem to embrace the forest similarly.

Variety of views degrees of private and public interiors and balconies strengthen the patients' autonomy over their treatment and communal life. [245] Different orientations allowed some rooms to be in the dark and some light.[246] Opening corners in some interiors provided an even wider choice of views and smaller distance to the outside.[247] Aalto considered all patients, especially those on beds.

[233] Woodman, "Revisit: 'Aalto's Paimio Sanatorium continues to radiate a profound sense of human empathy' - Architectural Review."
[234] Giedion, *Space, time and architecture : the growth of a new tradition*.
[235] William J.R. Curtis, "Modernism, Nature, Tradition: Aalto's Mythical Landscapes," in *Alvar Aalto in seven buildings : interpretations of an architect's work* (Helsinki: Museum of Finnish Architecture, 1998).
[236] Karl Fleig, *Alvar Aalto*, Studio paperback, (Zurich: Artemis, 1974).
[237] Woodman, "Revisit: 'Aalto's Paimio Sanatorium continues to radiate a profound sense of human empathy' - Architectural Review."
[238] Colomina, *X-Ray architecture*.
[239] Göran Schildt, *Alvar Aalto, The decisive years* (New York: Rizzoli, 1986).).
[240] Curtis, "Modernism, Nature, Tradition: Aalto's Mythical Landscapes."
[241] Giedion, *Space, time and architecture : the growth of a new tradition*.
[242] Curtis, "Modernism, Nature, Tradition: Aalto's Mythical Landscapes."
[243] Eva Eylers, "Alvar Aalto and the problem of architectural research" (2017).
[244] Demetri Porphyrios, *Sources of modern eclectism : studies on Alvar Aalto* (London: Academy Editions, 1982).
[245] Woodman, "Revisit: 'Aalto's Paimio Sanatorium continues to radiate a profound sense of human empathy' - Architectural Review."
[246] Aalto, *Tuberculosis Sanatorium at Paimio*.
[247] Rauske, "Paimio Sanatorium."

Experience and architecture.

The diversified architecture of Paimio, where each volume has a different façade, massing or structure, abided many interpretations. Marc Teib contrasts its lack of hierarchy with its completeness and compares it to the forest.[248] The different character of volumes in a unified ensemble aligns with Giedion's space-time principle or his reading of Paimio as the healthy body with different organs.[249] Porphyrios in sanatorium see heterotopia but mainly in a formal manner. Volumes are like an "autonomous room." Their union happens by their bordering which have no architectural rule. It is not about functions but proprieties. The sanatorium is a "building-as-city" that combines varied iconographies. [250]Aalto alludes to established models like cour d'honneur. Many compare its mass to an ocean-linear. Some doors reference leisure cruisers. [251] Due to their relation to therapeutical sun sanatoria were called sun-devices, sun devices[252] , or houses with open windows. [253] Without a doubt, this variety of meanings enriches the experience.

Aalto perceived architecture as a living organism to be perceived and enjoyed. Big spaces, huge southern windows, and yellow floors intended uplifting character. Structure gives priority to light by allowing open corners. After opening, many praised the building for joyfulness and surprise, unlike the typical sanatorium appearance.[254] The promenade architecturale is also part of the Paimio experience. Patients entered first through low dark space to be immediately illuminated by the foyer and its bright staircase with a view of the forest behind it. Heroic structure of hanging library or cantilevered sun-decks sparks admiration and conjures biophilic theory of heling in risk and peril. The building is full of

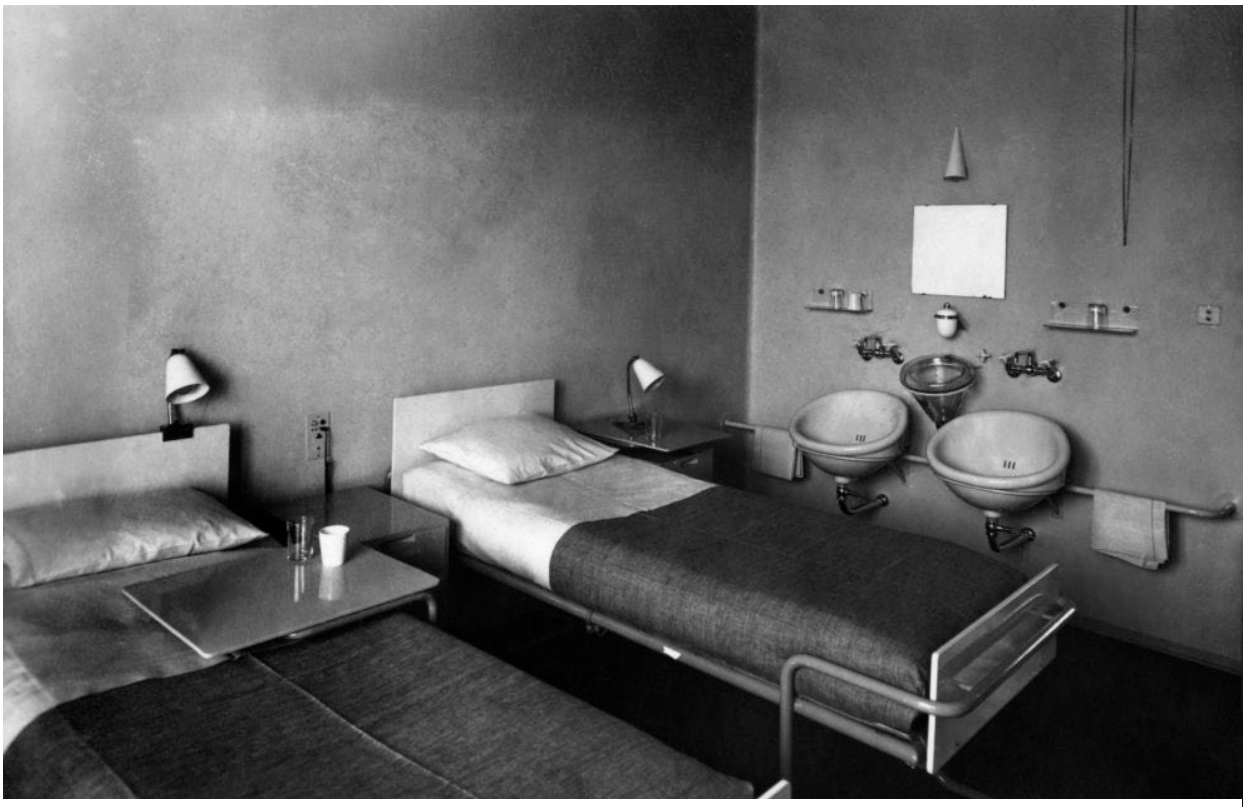


Figure 38. Patient room.

[248] Treib, "Aalto's nature."
[249] Giedion, *Space, time and architecture : the growth of a new tradition*.
[250] Porphyrios, *Sources of modern eclectism : studies on Alvar Aalto*.
[251] Curtis, "Modernism, Nature, Tradition: Aalto's Mythical Landscapes."
[252] Colomina, *X-Ray architecture*.
[253] Gutheim, *Alvar Aalto*..
[254] Rauske, "Paimio Sanatorium."

tensions between fluid shapes like the canopy and orthogonal rest, yet another take on individualization.[255]

Goran writes that unintentional placement of glazed lift at the front could give hope in curing technology while entering the building and contribute more to the healing than quiet washbasin[256]. It also provided views for patients who could not walk independently, and for those who could, circulation was elongated to encourage movement.[257]

Aalto prioritizes nature and light, not building, with a minimum amount of materials. The world praised sterility at that time. It wanted a germ-free environment[258] that forbids plants, ornaments, or any surface that accumulates dust and promotes easy to clean smooth organic shapes. Therefore reserved interior receives sensorial richness from the outside. As long as it is let inside, nature is also subdued, using the reflecting or absorbing surfaces. Natural and artificial light was equal for Aalto, and he soothed them equally.[259] Nature is around, on the roof in the form of potted trees and sometimes in the form of potted plants between glazings of the dining hall. Wood surfaces are scarce but happen for their warm qualities in touch surfaces.[260] Flowing space between parts, like the kitchen and dining hall, allow sensorial contact between them. Nature anticipates sterility coldness, but artificial solutions also subdued nature in service of healing.

Colour in Paimio soothes the impact of the healing machine and refers to its organization. The yellow lobby evoked the warmth of sunshine,[261] and environmental psychologists later confirmed that green-blueish celling in the patient room has soothing qualities.[262] This duality also refers to degrees of public and private zones.[263] However, the sanatorium is dominantly white. In older sanatoria and literature, “white cubic forms” were strongly linked to health, so for Colomina, they could act like architecture placebo. [264]

Patient room design paid particular attention to the needs of a bedridden patient. The window was low enough to allow the laying patient to see the forest[265] but did not reach the floor due to hygienic requirements and ensuring patients feeling of safety. [266]The window stretched almost to the ceiling thanks to the uplifted beam. Asymmetrical windows favored morning light. Wooden window blinds protected rooms from excessive heat and appeared as big wooden elements on the façade.[267] The light is directed to a reflective patch on the ceiling to avoid glare. Similarly, the curved joint of the wall and the floor dissolves the sunbeams and serves as a footrest.[268] Similarly, some walls reflected the light, and some absorbed it.

South orientation eased heating, and the ceiling-mounted heaters directed the heat to the patient’s feet. Aalto improved the concept of a widely used “health window” to ensure constant ventilation and avoid the draft. The solution directed the air between the glazing. Air entered the room through the outlet at the top of the window, far away from the patient. [269] Wall bordering corridor was thick to

[255] Schildt, *Alvar Aalto, The decisive years*.
[256] Schildt, *Alvar Aalto, The decisive years*.
[257] Colomina, *X-Ray architecture*.
[258] Colomina, *X-Ray architecture*.
[259] Federico Marconi, "Conversations: Federico Marconi," in *Alvar Aalto : the mark of the hand*, ed. Harry Charrington and Vezio Nava (Helsinki: Rakennustieto, 2011).
[260] Sarah Williams Goldhagen, "Ultraviolet: Alvar Aalto’s Embodied Rationalism," *Harvard Design Magazine*, no. 27 (2007).
[261] Juhani Pallasmaa, "Alvar Aalto: Toward a Synthetic Functionalism," in *Alvar Aalto : between humanism and materialism*, ed. Peter Reed and Kenneth Frampton (New York, N.Y.: Museum of Modern Art, 1998).
[262] Williams Goldhagen, "Ultraviolet: Alvar Aalto’s Embodied Rationalism."
[263] Rauske, "Paimio Sanatorium."
[264] Colomina, *X-Ray architecture*.
[265] Woodman, "Revisit: ‘Aalto’s Paimio Sanatorium continues to radiate a profound sense of human empathy’ - Architectural Review."
[266] Eylers, "Alvar Aalto and the problem of architectural research."
[267] Aalto, *Tuberculosis Sanatorium at Paimio*.
[268] Williams Goldhagen, "Ultraviolet: Alvar Aalto’s Embodied Rationalism."
[269] M. Heikinheimo, *Architecture and Technology: Alvar Aalto's Paimio Sanatorium* (School of Art and Design, 2016). https://books.google.nl/books?id=eSfTjwEACAAJ.

absorb sounds, [and] the washbasins had a unique angle to be silent. Access to piping on the corridor allowed patients to be undisturbed.[270]

Aalto strips the rooms from the obstacles, furniture is rounded and hangs above the floor to ease washing and protects from hurting patients,[271] there is no ornament, and the door handle does not catch sleeves.[272]

Aalto paid attention to small things that increased unaware use's comfort. There he has seen the idea of the humanized architecture. A Series of experiments on people's reactions to these ideas informed patient room design.[273] Aalto adds individualism to standardization and mass production by designing specific elements and furniture for Paimio. This way, it feels like craft. Not every solution worked. Washbasin pipes made noise, furniture had some coffin appearance, and the Paimio chair that eased breathing was uncomfortable. [274]

[270] Schildt, *Alvar Aalto, The decisive years*.
[271] Richard Weston, *Key buildings of the 20th century : plans, sections and elevations*, 2nd ed. ed. (London: Laurence King, 2010).
[272] Colomina, *X-Ray architecture*.
[273] Williams Goldhagen, "Ultraviolet: Alvar Aalto's Embodied Rationalism."
[274] Schildt, *Alvar Aalto, The decisive years*.

Conclusions – humane hospital manifest

This conclusions part will extract humane qualities from the case studies organizing them thematically in the manifest form.

1. *Collectivity and sharing.* The recurring element in most of the studied cases is the idea of sharing and collectiveness. Almost all examples have a collective body in the form of a courtyard. These were not solely circulation spaces. The courtyard played multiple functions in Hotel Dieu de Beaune – from chores or work to social interactions, gatherings, or resting. Medina del Campo colonnaded courtyard unifies its elements, providing an illusion of equality. For the renaissance architects, the courtyard also had sanitary significance. In Bimaristan, apart from bringing fresh air, the courtyard is a stage of music therapy and storytelling, a place with healing water features and uniting space for people placed in smaller spaces around it. In Hof van Wouw, the patio generates the ideas of sharing and strengthening the community's feeling supporting obeying its strict rules of life. In Modern examples, the courtyard acts as an orientation point, marking public zones and critical functions.
   Collectivity enters the level of the interior itself. The illness in medieval Europe was a collective experience happening in church-like interiors. These spaces were also places of meeting different social groups – patients with families and non-related to them public. Shared was not only a spiritual act, but also simple things like sharing a meal. In hofje, sharing also happens between neighboring cottages. In Bimaristans, each minor part has a courtyard form, often with smaller fountains and oculus in the roof. Aalto designed so-called social theatres in Paimio broad, and the light staircase faces the most intensely used space – a foyer, a meeting point of most users. Moreover, he pushed the idea of sharing even further. There were no private balconies for patients, only the shared ones.
   Collectivity should enter all levels of hospital architecture, from the macro organization model to the relation between rooms or people. It is a vital element mitigating the isolation and distance between hospital users, helps create the sense of ownership and belonging, and eases the harsh situation through the possibility of shared experience.
2. *Orientation.* Courtyard in these older examples was a place that organized layout. In Beaune and Medina, it had access to almost all spaces. The courtyard structure of bimaristan and iwans simplified and structured the hierarchy in an often complicated layout. Having a big courtyard or main communal space in a relatively open plan, like in Maggie's centers from which we can see and access every other space is somewhat hard in modern hospital programs. Therefore to ease orientation, high visibility and referencing hospital elements to streets and squares is a solution used by Herzog&de Meuron in their healthcare projects. They translate the hierarchy of our cities structure into the hospital environment. Public zones stretch like a street between a range of sunny courtyards. Similarly, in bimaristans, corridors and passages are joined lit by sunspaces, always drawing the user towards the light. Moreover, the visibility with the fluid character of space contributes to understanding the building structure.
3. *Equality.* The idea of collective spaces that bring different user groups together is one side of an answer towards the democratic building. However, equality requires a lack of hierarchy like a courtyard with equal visual and physical access, with no difference between spaces for various groups or courtyard that does not tell this difference like in Medina del Campo. Equality also lies in the distribution of resources. For example, in healthcare projects by Herzog, each department has its courtyard. In the Aalto sanatorium, both staff and patients have balconies. Hansen points out that nurses' lack of access to the patio was a pretty severe equality issue. [275]
4. *Signs of care*. Medieval examples had a somewhat protective face and did not tell what was happening inside. In Beaune, only the light awning marks the entrance as the only pleasant

[275] Hansen, Architectural thinking in practice: A qualitative study of architectural practice seen from the view point of a refl ective practitioner.

element of the façade, creating a point of shelter. However, it is a sign of a charitable character. The front façade is sober in Medina, but we can see extensive recreational loggias approaching the hospital from the side. Bimaristans, similar to Beaune, had intricate, recessed entrances, Qalawun complex, somehow hidden, open on to the street with its religious and educational functions and marks itself as an urban pocket, the extension of the street in the form of a vaulted corridor leading to the hospital part in the form of some sign of hidden oasis. Hofjes did not always hide completely. In Hof van Wouw we can see the roof and chimneys of the courtyard shape behind and, other hofjes openly showed its interior to the city. Places like Maggie's center, with its uniqueness, oppose the austere aesthetic of neighboring hospitals. Herzog&deMeuron healthcare building engages with the city and allows peeking inside the hospital through wooden slits. What is essential is that neither of these examples is entirely open to the outside. Most of them allow peeking in but have protective solid architectural solutions, balancing caring for the sick and their privacy and promoting itself. Peeking is a gesture of invitation and changing social perspective on healthcare.

5. *Isolated but together.* Ideas of collectivity somehow answer this, and this part is its extension. A church-like interior in Beaune was a unified space of ward and chapel, although the rest of the building, apart from the unifying courtyard, is rather compartmentalized. Successful segregation without complete separation achieves the architecture of bimaristans. Spaces of iwans and courtyards are fluid and unobstructed. Sometimes, they communicate with the cities. Modern examples further take this aspect. All studied examples utilize forms of fluid space – in maggies in an open, reconfigurable plan, in Rehab by unobstructed public space extending between courtyards, and in Paimio with its connections between some wings and they are protruding towards the landscape space. Verberger calls it theraserialisation. Different spaces of the interior are connected in an unobstructed manner. Buildings dissolve into landscapes, actively engaging with them. We can compartmentalize hospitals to fulfill functional requirements, but we should not resign from making meaningful connections between them.
6. *Caring for the outside.* Hospitals acted as a space for shelter and charity for a broader audience throughout history. Hotel Dieu de Beaune had an awning to give alms and the public rest. On the Mezzanine level of Simon Ruiz hospital, people could find overnight accommodation. Bimaristans did not refuse help for the poor and hungry and often took them for short rest periods. Without a doubt, their courtyards could be accessed but all needy. In Zurich, the park between new and old hospitals would be a public park offering a green retreat to patients and the public. This questions the inward-looking character of modern hospitals. It can provide simple resources for its surroundings like greenery, shelters from rain and wind, or even open partly its calm environments for all. Another idea of sheltering comes when we zoom out. The hospital in itself should be an ultimate shelter. Medieval institutions hid behind defensive walls or other buildings, Maggie's centers are often drowned in a protective veil of greenery. Herzog architecture wraps itself in a wooden screen. In its open and extending to exterior architecture, Even Aalto's sanatorium is placed in the forest – a synonym of shelter for Finns. Continuing this thought, we can think of sterility, as Colomina has written, as an architectural placebo.[276] Whitness and easy-to-clean environment is a form of shelter in itself. A similar function had a glazed lift that could play on human belief in technology. It complements the need for safety.
7. *Direct connections.* Marcus, following Foucault proved that in modern hospitals, patients are controlled and placed deep within the building. [277]The situation is reversed in old medieval examples, where access to the sick was necessary for society and its understanding of charity. Interestingly, the open plan of Maggie;s deals with it similarly, as we can assume that in this arrangement, no one is closer or deeper as the space does not entirely segregate. In some way, by placing patients in the front, Herzog gives them visibility from the entrance, even if the way

[276] Colomina, *X-Ray architecture*.
[277] Markus, *Buildings and power : freedom and control in the origin of modern building types*.

inside the building to them could be more complicated. Surprisingly for Aalto sanatorium, as a modern healthcare facility, patients are not far from the entrance foyer either. In fact, they are incredibly close. Therefore, keeping the patient close to the beginning of the hospital structure and visual contact with the user placed even deeper in the building can diminish control issues.

8. *No home and no institution, both home and institution*. Much attention was paid by referencing hospital architecture to the aesthetics of home or hotel. An exciting lesson comes from historical examples. On the one hand, its architecture references monastic qualities and palatial ones on the other. We see it in feast hall inspiration of hall of the poor in the Beaune, Monastic-palatial complex of El Escorial influenced Simon Ruiz hospital and the bimaristan in Cairo directly used 3former palace structure and its features. On the one hand, the idea of the hospital like a palace lies in the supposed policy of encouraging donors by presenting aspects of luxury or social ideas of praising the sick. Hofjes, on the other hand, are somewhat residential but communal rather than individual. There is a balance between the residential appearance of a single house and its ordered arrangement around the courtyard like cells in a monastic complex. A clear view on that presents the architecture of Maggie's centres. The centers are not homes nor hospitals. They balance these two worlds. They try not to be too homey, not to trivialize the experience, and not dominate the patient emotions. They use home artifacts like kitchen tables, but Jencks underlined that the idea lies in informal activities brought by the table, not what it can represent. Hospital is an institution. Dressing it in a dress of a hotel still is not enough. We should look for a balance that acknowledges the patient's need for professional care, which he seeks in the hospital but refers to known elements of a healthy and pleasant environment.
9. *Dynamics.* Similar tensions between residential and institutional characters happen in a more abstract sense. In Herzog and Aalto projects, orthogonality is balanced with informal curves. We will find individualized elements within the repetitive matrix. These environments are not homogenous. If both designers tried to do something new in their designs, Aalto with functionalism and Herzog with modern hospital monotony, in that tensions between formality and informality, we can find an answer. Many also pointed out that informal forms could bring the aesthetic of playfulness to the hospital interior, and in the end, none is dominating.
10. *Offer of choice.* One of the fundamental aims of Maggie's centers is encouraging a user to regain control of his own life and take an active role in his treatment. The open-plan architecture of centers that offer a range of spaces – from communal to private ones allows the patient to choose how to spend his time. He could choose which view he wants to look at by choosing a room or even a different side in one room. Spaces can be reconfigured and flexible in use, increasing the available user options. In the REHAB center, we will find space that does not have an assumed function, and users can spend time there however they want. Paimio sanatorium offered a set of communal rooms that, with their different orientation, provided both spaces in shadow and in light to choose from. The same applies to Paimio terraces for smaller groups and roof terraces for hundreds. Herzog village-like model creates an explore-friendly environment with multiple ways of getting from point a to b. Architecture that does not impose one way but offers various means can empower the position of the non-staff user in the healthcare environment.
11. *Experience.* This question of choice relates to architectural and aesthetical experience as well. Both Medina del Campo and Beaune hospitals had distinctly different parts, from austere and closed to rich and open. Herzog&de Meuron hospital-as a city or even Aalto's sanatorium collection of city iconographies produces varied experiences. Patient rooms in Zurich are like tiny cottages, and Paimio was like a ship sailing in the forest or its sun terrace look like a tree with terraces as branches. REHAB courtyards provide different light sensations due to their different orientations, and they also have different uses; hence are experienced differently. The ideas of surprise or enhanced architectural experience belong to studied cases. Light, sounds, changes in level play a role in user experience. Walking towards the light is an

orientation device and a positively impacting mean. All of these can be an answer to hospital monotony. This can continue without an end with the notions of beauty and admiration, from impossible structures to uniquely composed materials.

12. *Craft and technology.* Herzog&de Meuron did not end with opposing just monotonous hospital structures. Their opposition towards hospital environments goes to the details as well. Materials and ways are made and reassemble craftmanship rather than catalog mass production. Similar "craft" or individualization lies in Aalto details of the Paimio room – from unique basins and healthy windows to uniquely designed door handles that do not catch sleeves. By individually designing elements of Paimio, Aalto used mass production for the specific project. Not only are details individual, by individualization of sanatorium various parts structures, but he also promotes the needs of these parts over the ideas of functionalism. In Herzog, the structure is secondary to the public space, and columns are moved from the grid. The success of this project also lies in individualized solutions that respond directly to their user's needs.

Many other aspects are recuring in those examples and are often cited in the literature on humane environments. To summarize them, we will refer to the words of Florence Nightingale, who already wrote about the importance of the view from the window, daylight, fresh air, and greenery. [278]We can add constantly repeated words about the importance of art or engaging time and senses into the architectural experience. These aspects were in humane architecture from the beginning and studied examples. There is no need to describe the importance of this matter as they are widely known.

One can ask what proof we would have for the importance of the influence of these elements. Neoliberalism uses solid evidence that we seem not to have. However, Stephen Lundin from White Architekter, in his dissertation on Evidence-Based Design, has pointed out that what EBD proved had already been known and used in older examples. He wittily called it "good architecture".[279]

[278] Florence Nightingale, *Notes on hospitals : two papers read before the National Association for the Promotion of Social Science, at Liverpool in October, 1859 with evidence given at the Royal Commissioners on the state of the Army in 1857* (2015).
[279] Stefan Lundin, "Healing Architecture: Evidence, Intuition, Dialogue" (2015).

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