

ÖSTRA HOSPITAL

PSYCHIATRIC FACILITY

“This has provided scientific evidence suggesting that well designed medical architecture can help reduce aggression and violent situations within psychiatric in-patient care.”

— Roger Ulrich

PROJECT SUMMARY

To design the new psychiatric facility at Östra Hospital in Sweden, White Architects began by asking, “Can good architecture alleviate the suffering of psychiatry patients and their families? Can it speed recovery and thus be said to enhance the efficacy of care?” With these questions in mind, White Architects created a welcoming and caring environment that treats the facility’s design as an element of patient care. The new facility is also integrated into the campus that delivers somatic care, helping to reduce the stigma and isolation of mental illnesses. Nature is a significant influence throughout the facility as access to nature has been shown to have positive effects on health and wellbeing.

Mental illness is often stigmatized, and patients can feel embarrassed or ashamed of their need to seek care. Worse yet, mental health facilities are stereotyped as bleak, institutional buildings that one wouldn’t choose to spend time in. At Östra, the designers wanted to wipe out these preconceived notions from the entire experience. To do so, they carefully considered the patient experience from the moment someone approaches the building’s entrance, to the treatment rooms, amenities, and guest experience of visitors.

The facility was designed to be a healing environment, and to support connections with nature, all while adhering to the unique safety

and security needs of a psychiatric facility. Staff must be able to monitor patients, and to ensure their safety in the facility. Despite these challenges, White Architects incorporated access to outdoor spaces while still adhering to the safety requirements.

This case study explores the strategies used to establish a biophilic experience, including the layout of each department, access to nature both indoors and outdoors, and the variety of individual and community spaces. The design considers the varying needs of both patients and healthcare professionals, creating an environment that cares for all its occupants.

Location

Göteborg, Sweden

Project Address

Östra Sjukhuset
Journalvägen 5
416 50 Göteborg, Sweden

Project Type

Medical Facility

Square Feet

193,750 (18,000 m²)

Year of Completion

2006

Occupant

Patients, Staff, Guests

Design Team

White Architects

Keywords

mental health, wellbeing, healthcare, central courtyard, light court

Awards

Forum’s Healthcare Building Award 2007

Second place – WAN Healthcare Building of the Year Award

Biophilic Patterns

Complexity & Order
Visual Connection to Nature
Dynamic and Diffuse Light
Refuge

Prepared by Cory Nestor and Terrapin Bright Green

Above: Each care unit has a visual connection to nature in the department heart. [P1](#) [P2](#) [P6](#) [P8](#)
Work Cited: *Architecture as Medicine – the Importance of Architecture for Treatment Outcomes in Psychiatry*. Edited by Lena From & Stefan Lundin. © ARQ

NATURE IN THE SPACE

- [P1] Visual Connection with Nature.** Patient rooms have views to the central gardens; light courts are planted with low vegetation
- [P2] Non-Visual Connection With Nature.** Operable windows bring the sounds and smells from the garden in, courtyards feature edible plants
- [P3] Non-Rhythmic Sensory Stimuli.** In the garden courtyards, occupants can feel breezes, see cloud movements, and hear bird and insect sounds
- [P4] Access to Thermal & Airflow Variability.** Patient rooms and sun rooms have operable sun shades and windows
- [P5] Presence of Water.** Not significantly represented in design
- [P6] Dynamic & Diffuse Light.** Light courts in the heart of each department bring natural light into the space
- [P7] Connection with Natural Systems.** Garden courtyards show effects of weather and seasonal changes in nature

NATURAL ANALOGUES

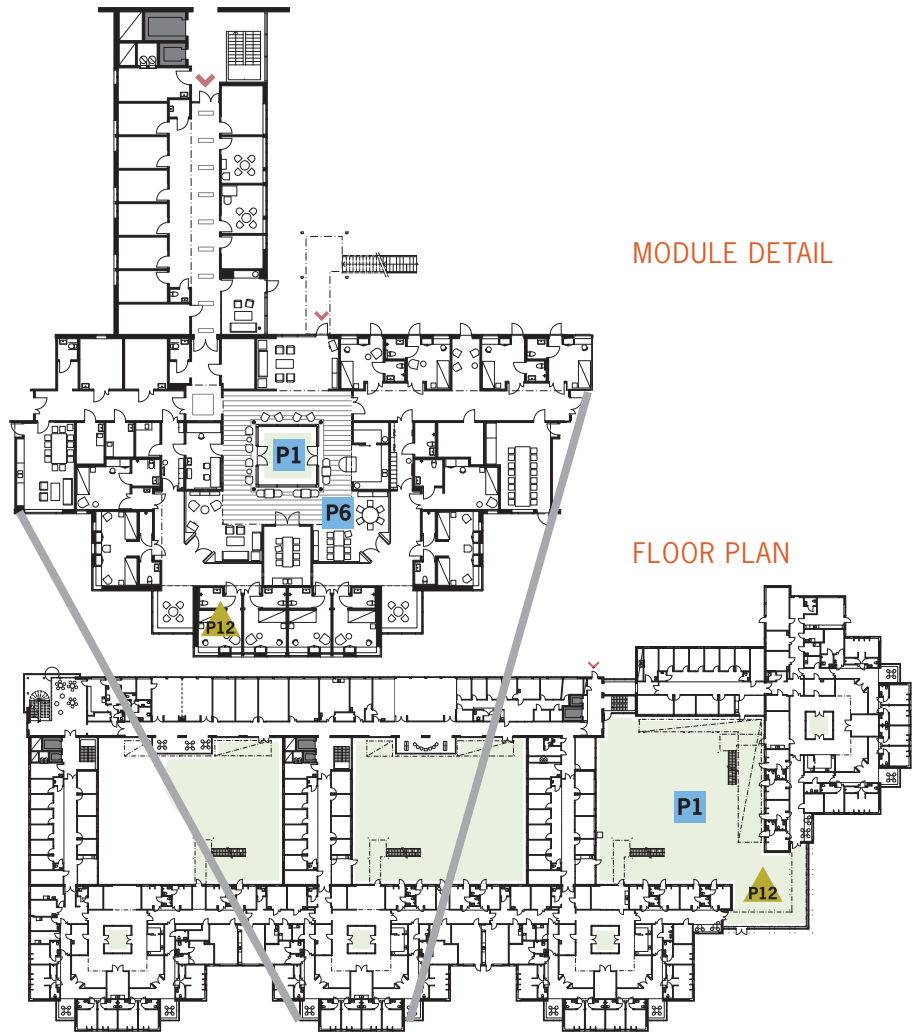
- [P8] Biomorphic Forms & Patterns.** Not significantly represented in design
- [P9] Material Connection with Nature.** Polished stone floors, oak hardwood floors, birch handrails, and unpainted wood furniture
- [P10] Complexity & Order.** Repeated L-shaped pattern of the spatial configuration

NATURE OF THE SPACE

- [P11] Prospect.** Long distance views are available from the garden and through many of the windows
- [P12] Refuge.** Arbor-like seating off the path in the garden courtyards; nested private to public spaces within the departments
- [P13] Mystery.** Not significantly represented in design
- [P14] Risk/Peril.** Not significantly represented in design

Module Detail: Space is arranged in a processional order from Private → Semi-private → Semi-public → Public. This transect from refuge to social space gives patients the opportunity to engage with one another on their own terms.

Floor Plan: The building layout is comprised of four modules with garden courtyards between each. The modules are connected by the building's spine. Repeated spatial arrangements simplify navigation for staff, patients, and visitors.



[P10] COMPLEXITY & ORDER

The floor plan is composed of four repeating L-shaped departments, three outdoor courtyards, and a connecting “spine.” Each department is self-sufficient and contains treatment rooms, administrative offices and living areas. These spaces together make up each of the L-shaped departments. Three of the departments are positioned side by side, with a fourth rotated to create the 3 large central garden courtyards. The repeating spatial arrangements make Östra easier to navigate for staff. Once staff are familiar with one department, they can navigate them all.

Östra’s subdivision of space at the departmental scale is an example of complexity and order: **sensory information that adheres to a spatial hierarchy similar to those encountered in nature.**

Within each department, it was important to designers to create a layout that allows

patients to navigate and feel a sense of ownership over their environment, as the average patient stay is over 19 days. Either individual or double units, all of the rooms have access to natural daylight and are part of a spatial grouping of rooms within the larger department. Each cluster of patient rooms also has access to a semi-private circulation and sun room. From this outer hallway, the department transitions inwards to the semi-public communal space created by the light courtyard. This transition from private/personal (individual) to semi-private (family), and semi-public (tribe) breaks the department into various environments and allows patients to participate in all three realms depending on their preference. Patients can choose where and how to interact with others, adding to the sense of normalcy and independence.

The layout also helps staff maintain security in the departments. Each section can be monitored and secured easily, and staff can immediately find their way in any department.



[P1]
**VISUAL CONNECTION
 W/ NATURE**

The Östra design works to ensure all patients have consistent access to **a view of elements of nature, living systems, and natural processes**. The placement of the three central courtyards between the departments ensures that even rooms in the center of the building have access to nature views. This, along with the interior light courts, brings nature into the space.

This project is unique in that visual connection with nature is used not only to enhance the occupant experience within the building, but also to encourage patients to go outside, either by using the indoor light courts or larger central garden courtyards. Patients are able to access the garden courtyards on their own, which provides a sense of independence and control in addition to the benefits of being in nature

Like any mental health facility, security and safety while in the building are major constraints on the building's form. When speaking about the importance of including nature in creating a nurturing experience, landscape architect Carina Tenngart Ivarsson said, "The positive effects on physical, mental and social wellbeing greatly outweigh the problematic security and secrecy aspects, which however are not to be gainsaid." The wellbeing benefits of free access to nature for the patients are balanced against the added security concerns for the staff. Designers felt that if the facility were built to be inescapable, it would encourage escape attempts. If it were built to be beautiful and welcoming, it would more likely be respected and contribute to occupant wellbeing.



[P6]
DYNAMIC & DIFFUSE LIGHT

Access to dynamic and diffuse light — **varying intensities of light and shadow that change over time to create conditions that occur in nature** — is seen throughout the facility. Several studies have successfully demonstrated the beneficial effect of natural light on depression, sleep disturbances, circadian rhythm and physical aggressiveness, making it an important design aspect of the facility.

Each grouping of patient rooms has a corner sun room with windows on two walls, while individual (private) rooms have windows. Operable blinds allow patients to adjust the level of light according to their preference. Additionally, light courts at the heart of each department bring daylight to the interior spaces where no windows are available. These light courts are the center of the communal area, bringing light not only into the court itself, but also the other surrounding community spaces like the dining area.

"Use of daylight is primary, resulting in narrow volumes and well-lit rooms. The care devoted to lighting is unmistakable: the lighting strengths are low in relation to present-day medical care; the light is sparing, something verging on darkness" (Architecture as Medicine). The use of light at Östra Hospital is reminiscent of a domestic setting, helping patients to feel at home in the space.

Left: Sun rooms located in the corner of each layout along the south wall provide a quite refuge space for patients. P1 P6 P12 P7

[P12]
REFUGE

Studies have shown that prospect and refuge spaces reduce stress and allow patients to feel in control of their surroundings. "If patients are allowed to personalize and otherwise show their territories, the researchers tell us, then the social atmosphere should improve and the environment be perceived in a more positive light" (White Architecture).

Examples of refuge are abundant in the design. The hierarchy of spaces nest private spaces away from more public communal areas, allowing occupants to choose their preferred level of interaction in the department's activities. From individual rooms to shared sunrooms and gathering spaces, to a central space with the light court, occupants have numerous ways to experience their environment. Additionally, the shared sunrooms have operable sunshades to shield views from the outside and increase the sense of refuge. The central space with the light court also uses furniture, like high-backed chairs, to create partial refuge conditions.

The garden courtyards also provide Refuge conditions. The paths are all walkable and feature arbor-like seating areas that create a sense of prospect and refuge. Individuals have the comfort of the arbor—which is withdrawn from the main flow of activity and **protects the individual from behind and overhead**—while still being able to view their surroundings. The use of a delicate arbor also ensures that individuals don't feel trapped or enclosed.

Right: Exterior courtyards have recessed seating where patients can look out over the gardens. P1 P3 P6 P7 P11 P12

HEALTH BENEFITS

White Architects implementation of the biophilic patterns have the potential to provide the following benefits to occupant health and wellbeing:

[P1] Visual Connection with Nature. Lowered blood pressure and heart rate; improved mental engagement/attentiveness; positively impacted attitude and overall happiness.

[P6] Dynamic and Diffuse Light. Positively impacted circadian system functioning; increased visual comfort.

[P10] Complexity & Order. Positively impacted perceptual and physiological stress responses; observed view preference.

[P12] Refuge. Improved concentration attention and perception of safety.

These patterns can decrease feelings of stress, and contribute to the healing environment that the designers aimed to create within the new facility. By using multiple patterns to achieve the same health response, designers address the variability in user preference and increase the likelihood that the biophilic design of the space will have a positive effect on patient health.

A HEALING ENVIRONMENT

Data collected from 2005, the year before the move to Östra, compared to 2007, the year after the move, show that there are noticeable improvements in the number of compulsory injections and restraints per quarter, as well as a decrease in sicklisting of staff. (Table 1, 2, 3).

"The need for coercive medication has diminished. The need for shackle restraint has diminished. Re-admissions within seven days of discharge have diminished. Sicklisting of staff has diminished. The survey material



is small but of great importance. This is the first quantifiable study ever undertaken in Sweden concerning the importance of the physical environment for the healing process in psychiatry" (Architecture as Medicine).

While the data show a positive difference between Östra and the previous facility on the occupants, both patients and staff, the exact mechanism found to be most beneficial to these outcomes is difficult to determine. Evidence based design (EBD) attempts to create positive outcomes on human health and wellbeing through sound science rooted in existing peer-reviewed research. Data collected at Östra Hospital psychiatric facility, analyzed in the context of outside research findings, will contribute to the growing knowledge base in the field of EBD.

Informal interviews with patients and staff further indicate that the building's design has played a role in the patient experience. "Spontaneous remarks by patients, staff and visitors show the huge importance attached to the thought of someone really having taken the task absolutely seriously and exerted themselves to create a beautiful building showing respect for everyone who will be using it" (Architecture as Medicine).

Comparison of Average Quarterly Findings 2005 (Pre-move) and 2007 (Post-move)

	2005	2007
Patients	23	17
Occasions	47	30

"The number of compulsory medications and restraints of patients has fallen greatly"

	2005	2007
Patients	14	16
Occasions	63	35

"The atmosphere in the department has been calmer and patients have had fewer outbursts of aggression"

	2005	2007
Staff	9%	6%
Occasions	NA	NA

Source: Architecture as Medicine.

Activity Within Nature

Home garden plots were incorporated into one of the courtyards for patients and staff to plant in. This place-making strategy provides occupants with the opportunity to take ownership of their environment. The plots were so successful, patients asked to incorporate them into all three courtyards.

Patients can be seen sitting on the benches, tucked away between greenery, taking advantage of the therapeutic refuge and visual connection with nature conditions provided. The care that went into creating space for patients to use freely, and the care that went into the entire design, is a reminder that Östra is a place of healing. The psychiatric facility at Östra Hospital is structured to promote health and wellbeing through connections to nature.



Terrapin

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White Architects

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