

DESIGN FOR PSYCHIATRIC PATIENTS: THE COMPLEXITIES OF THERAPEUTIC ARCHITECTURE DECISION-MAKING

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Abstract

Objective - The research set to identify integrated methodologies for the design, planning and evaluation of psychiatric facilities in the community.

Background - De-institutionalisation resulted in care delivered in the community. Smaller-scale facilities, varying in terms of regime and place in the system, covered a broader spectrum of patients' needs, in a more comprehensive manner. This created an experimental network of psychiatric buildings in the community. These presented considerable variations both in architectural design and in care provision requirements.

Research question - In this complex context, how could we create a model that would:

- enable the planning, the design and the evaluation of psychiatric
- be flexible to use in such a variant framework
- be comprehensive enough to cover the various needs of the patient throughout the uneven path of recovery?

Methods - The research explored the concepts that dominated the thinking behind psychiatric treatments and care. It explored how these concepts influenced the design of psychiatric facilities and draw major themes in connection to their relation to treatment frameworks. These themes were synthesised in a model that could depict the main concepts and translate them in a specialised design decision-making tool [1]. This tool formed the grid of a purposely-designed, parametric checklist that could classify psychiatric buildings according to their institutional vs domestic elements. Also, a set of open-ended questionnaires aimed for staff and patients' views. These questionnaires could triangulate the user perspective to the initial theoretical model. The new tool was tested in two countries, in ten facilities with a sample of 115 patients and staff. Fifteen years later, the study was repeated in a second smaller sample that focused on the most acute spectrum of provision but which was also juxtaposed to spatial analysis [2].

Results - Both the theoretical model with their corresponding methodologies, i.e., patient and staff views, and the checklist when juxtaposed, tended to support each-other. Contrary, the spatial analysis was coming at odds with what was happening in the wards and with the other two methodologies.

Conclusion - Methodologies that were incorporating principles of non-architectural frameworks, in these cases the care models for mental illness, seemed to be more comprehensive and sensitive to the healthcare context, in this case psychiatric environments, than more generic architectural frameworks. This could be related to changes in the perception and physiology that relate to an illness and therefore, might require a more specialised approach for planning, design and evaluation.

Keywords: *Psychiatric design | healthcare architecture | therapeutic environments | psychiatric buildings | mental health buildings*

Introduction

Mental health provision has historically been determined by perceived risks, defined by each social context, rather than patients' needs. Until the first part of the 20th century, judges decided for referrals, to deal with dangerousness. We could name this model of care as jurisdictional. The establishment of psychiatry and the discovery of anti-psychotic drugs in the 1950s challenged that custodial model [1]. This created a paradigm shift establishing the medical model of care. Patients were transferred to the psychiatric ward of the general hospital [2]. When drugs proved ineffective to cure, psychiatrists realised the need for interdisciplinary therapeutic teams [3]. The psychosocial rehabilitation model that followed, introduced various care options, located inside the community.

This created unique and variant therapeutic networks, with an assortment of facility types. Mental health authorities acquired considerable freedom to plan their own models of provision. This prevented the development of well-

established, evidence based design frameworks and typologies for psychiatric buildings [4]. The paper recognises these main concepts as drivers behind psychiatric architecture practices. It focuses on developing fit for purpose methodological tools to assist professionals involved in the planning, design and evaluation of psychiatric buildings deliver solutions closer to care and patient wellbeing requirements.

The origins of Community Mental Health Architecture

Baker and Sivadon [5] proposed to WHO a system of psychiatric care that included design guidance for a hospital integrated with satellite facilities. Among others, they introduced psychosocial theories and spatial situations to trigger clients' emotions for therapeutic purposes. Those theoretical concept designs feed the bipolar elements concept of Amiel' [6] "topotherapy". However, the concepts of Sivadon or Amiel were not widely adopted. Contrary, the newly established community mental health facilities were set up in storefronts, office buildings, former private homes or even self-contained luxurious clinics, providing in-patient and out-patient care, partial hospitalisation, emergencies or consultation [7, 8]. Moreover, there was a growing disillusionment on the actual possibilities for independent life after patients' discharge [9]. Zucker's institutional resistance to change was detected [10]. In these new premises, institutional practices could survive. Modernisation should target the social environment of the facilities as psychiatric buildings incorporated a significant level of socio-spatial complexity [11, 12].

The efforts of defining psychiatric space between two poles, i.e., hospital and home, constituted a discussion mostly among healthcare professionals and not the planners and architects who were providing for those. Therefore, the discussion did not involve the physical traits of these environments. To bridge this gap, "normalisation theory" architects referred to normalisation theory from the field of learning disabilities [13] to provide the context for planning and designing mental healthcare environments. Normalisation implied "homelike" environments but lacked a definition of what constitutes homelike in terms of built environment but also what homelike would mean in the context of psychiatric provision.

Eventually three options of mental healthcare co-existed: a) ordinary housing for all, b) care in the community but in co-operation with a hospital and c) modernised hospital care with its own community network [14]. So, when in the 90s medical architecture shifted from functionalism towards patient-focused environments, psychiatric theories could add to the dialogue by addressing the de-centralisation of provision and our limited and fragmented understanding of therapeutic space.

This diversity and limited interdisciplinary relations between architectural practice and health sciences, created an experimental, intuitive approach regarding the design of psychiatric facilities. This started to change in the last decade [15]. The gap of knowledge on psychiatric space was accentuated when interdisciplinary research combining methodologies deriving from medical sociology and architecture, found that even awarded psychiatric facilities might present strong institutional characteristics regarding building features and in terms of users' perspective [16]. To some extent this was expected, as there were no strong causal links between design and clinical outcomes [17]. Also, de-institutionalisation was relatively new practice and there were no tested models of care. Third, there has been a lack of evidence-base culture in healthcare buildings competitions [18]. Finally, there was absence of vertical advocacy at planning stages. This resulted in disparity between the psychiatric principle of psychosocial rehabilitation, architecture, and user expectations or between the numbers of human resources in these facilities. It was also at odds with former practices of bottom up initiatives established as early as the mid of the previous century [19]. These generated the question on the relation of building layout to psychosocial performance. So, how could we create a model that would:

- enable the planning, the design and the evaluation of psychiatric facilities
- flexible to use in a variant framework
- comprehensive enough to cover the various needs of the patient throughout the uneven path of recovery?

Methodology

Initially we looked at key issues behind mental illness expressed by the dominant models of care as they evolved over the years. These three main concepts were the jurisdictional, the medical, and the psychosocial rehabilitation model, as introduced earlier.

An extended literature review looked at key concepts associated with the planning and the design of psychiatric facilities. This included legislation on psychiatric hospitalization from a historical perspective, psychiatric literature on spatial aspects, psychiatric care management on facility types and provision, environmental psychology and behavioural patterns of staff and patients in psychiatric wards to architectural publications on buildings for psychiatric uses. The review accompanied exploratory interviews with medical architecture professionals, visits to about 100 psychiatric facilities in the UK, Greece, Belgium and France. These highlighted potential conflict between various sources or ambiguity between different approaches. Those involved anything from the place of projects in the general context of care, the relationship of the facilities to their locus, the exterior, the services provided, safety issues, privacy,

services and activities available to more private or intimate issues related to personal hygiene, sleep and relationships in the ward.

After the thematic analysis of the existing literature on mental health legislation and policy, provision as well as spatial considerations in relation to policy and treatment regimes, which constituted at that time, i.e., late 90s, the majority of the available literature, we produced a theoretical framework. That framework, was constructed as a means to classify all concepts related the spatial programming of psychiatric facilities. This was the SCP model. It was named after the acronyms of three variables: Safety and security, Competence and finally Personalization and choice. It was a three-dimensional model and each of these variables comprises one dimension of a cubic problem space occupied by three axes (x, y and z) (Figure 1), “where safety and security implies an opposite pole, where the building is unsafe and insecure, where competence implies a situation where dependency is fostered in patients, and where personalization and choice also implies a situation where no personalization and choice is allowed. Each building could theoretically occupy a unique position in the three-dimensional problem space of the model, which is therefore both more sensitive and more specific than the polar opposition between domesticity and institutionalization, previously described” [20] (Figure 2). The model could depict the quality of environment and its consequences to patients’ life. The matrix formed by the three parameters did not cover the style of the facades as relevant but according to Shepley this was a reasonable decision [21]. Shepley has created a visual interpretation of the SCP model according to site scale features (Figure 3). Verderber characterised the analytical process and the research behind the SCP model as insightful.

At a second layer of analysis, the parameters corresponded to the basic needs related to mental health priorities as they relate to the main objectives of care (Figure 4):

- Harm and self-harm prevention (essential for existence and therefore forming the basis of the pyramid), and corresponds to safety and security
- Medical and nursing provision, to restore competence compromised by mental illness. The second parameter has been viewed by some scholars as relevant to the definition of environmental gerontologist Powell Lawton [18]
- Social reintegration, promoting the personalization and choice that are lost in institutional environments, and correspond to wellbeing.

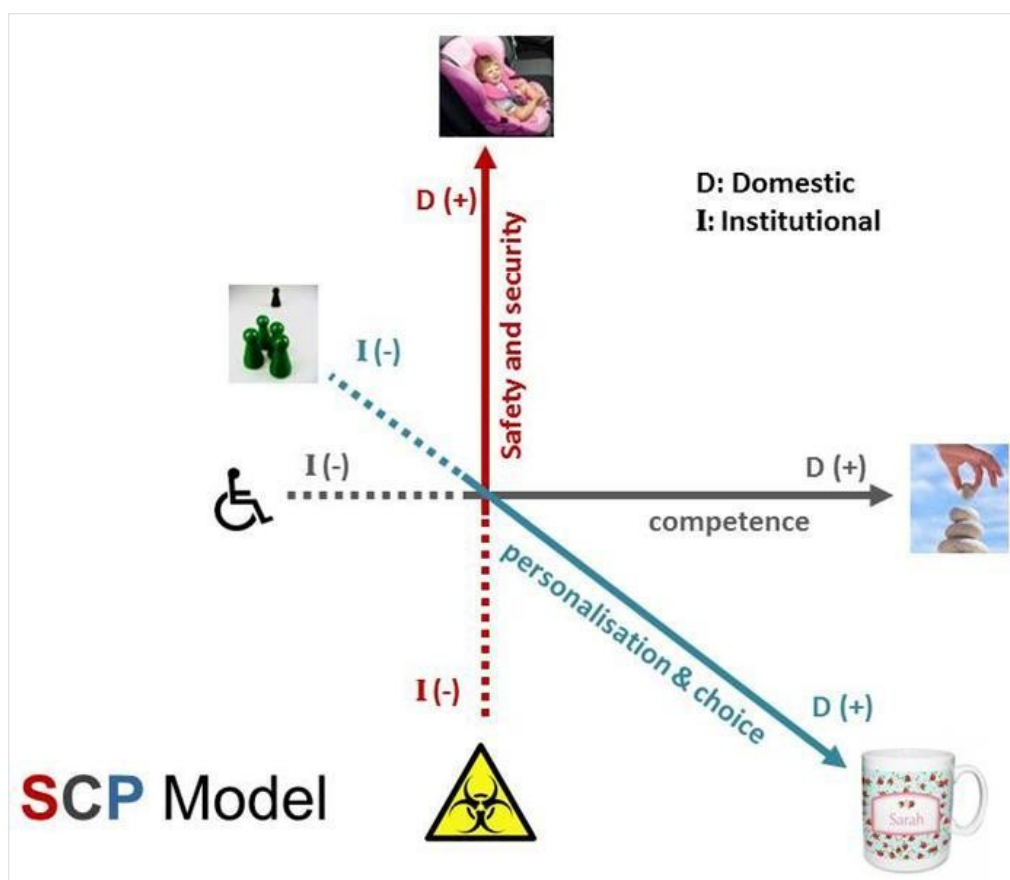


Figure 1. The SCP Model as a 3D space where psychiatric facilities can be placed according to their individual characteristics in domestic (+) vs institutional (-) scale

Even though, we moved over the years from custodial to the psychosocial rehabilitation models, elements of each still exist in psychiatric structures. The relationship of each facility or each care program to each of the three defines where each facility sits between the three. For example, a forensic facility might appear closer to the jurisdictional model and a serviced apartment is closer to the concept of psychosocial rehabilitation. Yet, each displays elements that belong

to the other two. For example, a forensic facility might have an occupational or music therapy room or the serviced apartment might be visited by a social worker.

The SCP Model

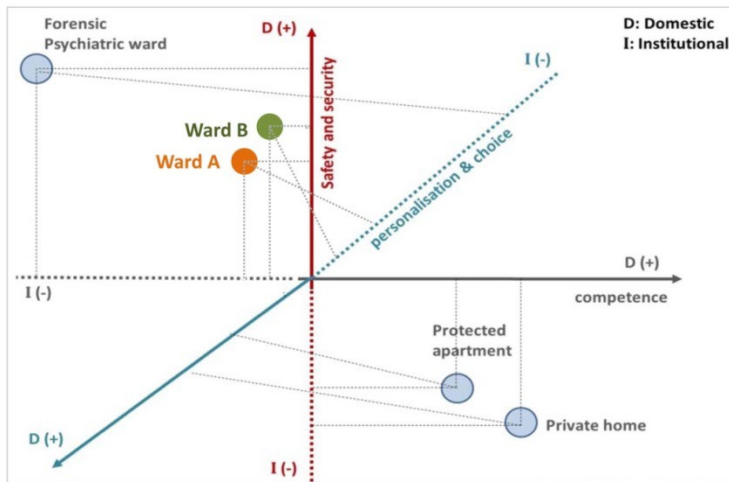


Figure 2. The case studies projected on the SCP model in relation to the spectrum of mental healthcare building stock

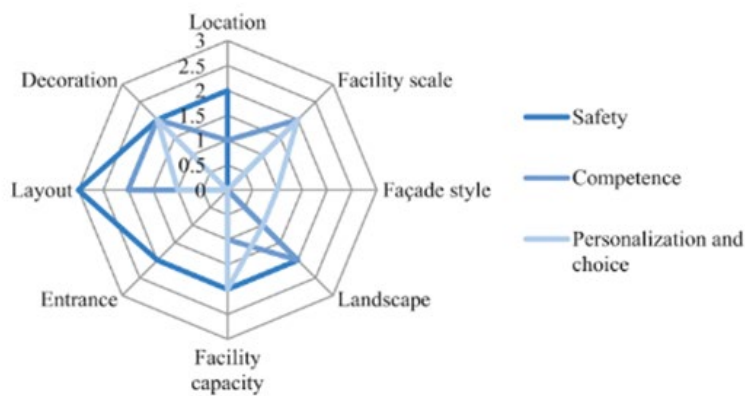


Figure 3. Shepley et al. graphic representation of the SCP model in relation to site scale features

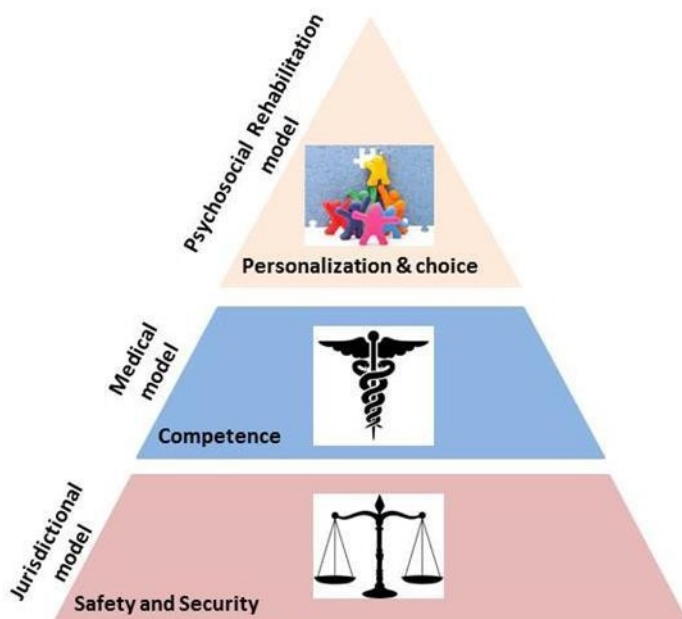


Figure 4. The SCP Model and the pyramid of needs: each tier represents a parameter of the model (named by the acronyms of the three parameters) and corresponds to a model of mental health provision

Case studies

For the second part of the research, i.e. the fieldwork, we concentrated on two countries among the sample, those with extensive networks of community provision, the UK and France. We selected ten case studies, the closest to the acute spectrum of in-patient care in the community. For the UK that community care included the provision for acute patients, this translated to mental health wards in the community and those hosted patients who were acutely ill and the majority were under a mental health section. For France, which still retained the psychiatric hospital and care in the community started mainly after patients' discharge from the hospital, the closest to the acute spectrum in the community would be the stage where people would be eligible for stay at the Foyers de Post-cure. Therefore, the French sample could be described as more stable than the UK sample, even though the projection of mental illness is not always linear and patients could relapse even at Post Cure.

Due to the considerable amount of speculation existing in the architectural press it was decided to use methodologies employed in psychiatric and healthcare provision research. For evaluating patients' needs and the compliance to care regime, patients, and staff were interviewed by the researcher using semi-structured interview questionnaires of 30 and 23 main sets of questions respectively. These questionnaires comprised three sub-sets of questions, each referring to one of the three parameters (security vs autonomy, competence vs dependency and restrictions vs opportunities for personalization and choice). The topics derived from literature on psychiatric rehabilitation and policies related to psychiatric inpatient environments and were then translated to spatial implications that were then juxtaposed with patients' and staff views. The interviews could define enabling environments for what staff considers best practice and patients perceive as suitable for their environments of care.

Additionally, the case studies were audited for their physical environment: Data on the physical environment and sense of place of the wards derived from a systematic architectural account for spatial organization, therapeutic regime, salutogenic qualities i.e., the building qualities that enhance health [22, 23, 24] such as day lighting, art, natural views, access to nature, etc. based on visits, photographic auditing, and plans. Regarding the plans, architectural blueprints were compared on their analogies of areas per use and user group.

Third, a detailed architectural checklist was used to identify the "normal" as opposed to the institutional traits of buildings. The checklist dissecting each building to 212 traits identified institutional physical characteristics in a comparative scale to the local norm as defined by the neighbouring or local residential buildings in parameters related to the exterior, the layout, and the design of the interior. The checklist had been adapted by a similar checklist of Robinson et al [25] researching residential environments for learning disabilities.

Fifteen years later, the study was repeated in a second smaller and different from the original case studies sample by the same researchers. This time, the research focused on the most acute spectrum of provision, i.e. the acute psychiatric ward in the community and the findings were juxtaposed to spatial analysis. This was because, the SCP model could use data from the previous study and add a longitudinal evidence of changes that happened, bearing in mind though the limitations as the facilities in both studies are of the same time but not the same buildings neither belong to the same health authorities. Also the SCP model bears limitations regarding the socio-spatial dynamics inside the wards and this was considered as a way to address them. One of the most widespread architectural theories associated with socio-spatial dynamics is the theory of space syntax [26]. This theory of architectural morphology has developed tools that could look in more depth on the opportunities for social encounters that buildings generate. This methodology has been widely used in urban and normative architecture settings but was seldom used in healthcare settings. The question would be if we could set more light to the socio-spatial angle of the institutions and whether we could identify any generators of institutional environments. This project for the first time brought together the two frameworks, i.e., the SCP model and Space Syntax, the former designed especially for mental healthcare and the latter for all spatial scale.

Space Syntax has a strong algorithmic toolsets, involving all scales of planning and design and all typologies looking at their spatial structure. According its theoretical framework the relation of space and society is interconnected. Hillier [27] suggests that to research buildings we need to find their social patterns, through their non-discursive contents. This is because human understanding of spatial configurations happens intuitively and we do not have the vocabulary or discursive mechanisms to express and therefore research it. The emphasis on layout irrespectively to other qualities of place-making that the SCP model addresses is an important reason of including Space Syntax in this project: data occurring from spatial analysis would be 'unpolluted' from pre-conceptions of medical architecture.

By combining these two methodologies, the second stage of the research –and the one we will focus here – set to investigate both patients' relation to the therapeutic regime, as on the first stage, and social relations to the spatial configuration, which was a new element. The SCP model constituted the basis of the evaluation, being more high-level in the aspects covered even though it is less generic when it comes to population and the building types. Space Syntax, on the other hand, has broader applicability in the build environment but is more focused on layout issues and does not cover issues such as fixtures and fittings, technologies, availability and types of human resources or aesthetics. Thus, it provided tools on observability, wayfinding, and social solidarity. The findings from that methodology enriched areas that come under the SCP parameters. Findings of agreement between the two frameworks might enable the formulation of an integrated model for mental health design and findings of non-agreement allow these theories to evolve by addressing the limitations that the research pointed out (Table 1).

Regarding the objective on the built environment in relation to psychiatric space, the research set to establish a valid framework of designing for mental health. To achieve that, this user- inclusive research involved academics and architects, health authorities, staff, and patients. The locus involved two secure acute facilities chosen according to pre-set criteria and permission granting, in line with the growing policy of community care. For the secure, acute parameter, the more severe the symptomatology is and the closer to the acute episode, the more important the therapeutic environment, and the more persistent the institutional regime might be.

Methodology for a psychosocially supportive design of mental health facilities		
Objective (reference to main research objectives)	Methodology	Tools
Personal milieu (I)	Evaluation of patients' needs and compliance to care regime	Semi-structured interviews of 30 (for patients) and 23 (for staff) sets of questions
Place-making for mental health (II)	Data on physical environment and sense of place	Visits, photographic auditing and architectural blueprints for calculation analogies of areas per use and user group
Domesticity vs Institutionalisation (I)	Architectural checklist	212 traits on building exterior, layout and design of interior
Social Milieu (I)	Space Syntax analysis	Convex graphs, axial graphs, visibility graphs and justified graphs

Table 1. Methodology in relation to main research objectives

Results

The locus of the research comprised two acute psychiatric wards in London, belonging to different Mental Health Trusts, all part of the public healthcare sector (Figure 5). The selection of the case studies was done by the two participating Trusts. Staff suggested a potential pool of patients well enough to participate. Then it was up to these patients to decide if they wanted to participate. Staff participated according to availability. Final sample comprised 11 patients, 4 from Ward A and 7 from Ward B and 10 members of staff, five from each ward. Ward A was single gender. The stage of the illness was the main factor that could affect preferences compared to age or gender in the previous study [20] with patients being less able to cope from non-fit-for purpose design. Therefore, this study focused on this patient group. The project was carried out following all ethical procedures and permission required by the Research Ethics Committee (REC) of the National Health Service (NHS).



Figure 5. Floorplans of Wards A and B. The architectural drawings are color-coded according to functions

Both wards, presented strong institutional character: an average of 60.85% and 54.72% according to the Institutional vs Domestic Checklist for Ward A and B respectively (Table 2). In terms of layout (building features) the wards have identical number of institutional features. Regarding the surrounding area and exterior (context and site), Ward A presents more institutional features than Ward B and this is similar when it comes to the interior design of each room in the building (space and room features according to Robinson classification) [25].

Regarding layouts, the two Wards presented similarities yet there are key differences too (Table 3).

Institutional features for wards A and B according to the Institutional vs Domestic features checklist Checklist				
Feature	Ward A		Ward B	
Context and site features	16/22	72.73%	14/22	63.64%
Building features	24/40	60%	24/40	60%
Space and room features	89/150	59.33%	78/150	52%
Total	129/212	60.85%	116/212	54.72%

Table 2. Institutional features for wards A and B

Similarities and differences in the layout of the two Wards			
	Description	Ward A	Ward B
Similarities	Ground Floor	+	+
	Single-storey	+	+
	Access to fully protected courtyard	+	(+)
	Centrally positioned nurse station	+	+
	Centrally positioned clinics	+	+
	Double loaded corridors	(+)	+
Differences	Office area: Offices integrated (as opposed to segregated or at the far end)	-	+
	Self-contained ward (vs dependent)	-	+
	Single bedrooms (vs sharing)	-	+
	Toilets: Individual (vs shared)	-	+
	Gender segregation: Single gendered ward (vs female only area)	-	+

Table 3. Layout similarities and differences for Wards A/B

Ward A presented wear and tear and demonstrated institutional traits such as dormitories and shared toilets, considered obsolete. On the contrary, Ward B was maintained in an excellent condition. Still, the number of its institutional traits was comparable to that of Ward A because of an extensive use of anti-ligature fixtures and fittings.

Interviews provided qualitative data. Passive behaviour was mostly encountered in Ward A and activities mostly common in case study B. Willingness to participate to interviews was also higher in Ward B. Dormitories as opposed to single rooms seemed to increase passive behaviour combined to the limited availability of staff. Both staff and patients in Ward B reported positive and frequent interaction between themselves.

Staff interviewed on the nursing station and its effectiveness in providing adequate control, were 7/10 satisfied. There were 3 staff, two in Ward B and one in Ward A who were dissatisfied with the control available from the nursing station. The latter pointed that the nursing station felt suffocating.

The justified graphs, a space syntax tool, present the spatial configuration of the wards. The two justified graphs (Figure 6) present similarities in their overall shape and relatively similar amount of depth. Yet, wards differ considerably on the placement of the private and intimate areas. Depthmap was used to indicate areas of higher or lower co-presence. In ward A, which was more institutional according to the checklist, we see that the most segregated areas were the clinical and staff areas at the rear of the building. In ward B, we see the least integrated areas being the en-suite toilets/shower rooms. In both wards the most integrated areas according to Depthmap were the areas outside the nursing station. Isovist analysis was then performed from points of highest integration and where visibility mattered such as the nursing station, such as the isovist from the nursing station.

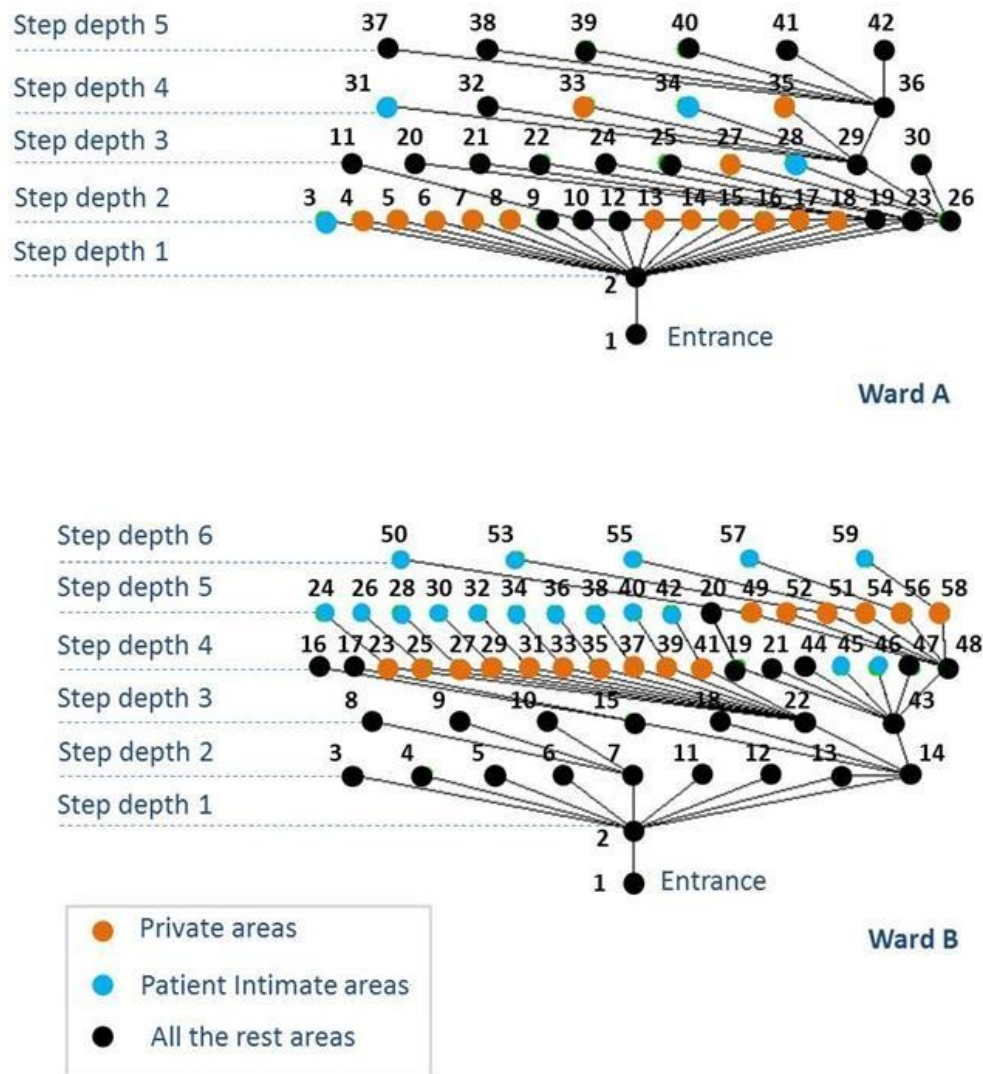


Figure 6. Justified graphs of Wards showing depths of private/intimate areas

Discussion

The research produced a significant volume of data, deriving from the checklist, the interviews, the architectural auditing and for the two recent wards, the spatial morphology analysis. These generated a comprehensive series of findings regarding architectural features, therapeutic regimes, layouts, relationship to care models, and to users' preferences, plus their relationship to the data of the early 2000s UK research [20,28,29] that used the SCP model and generated a comparable amount of data.

The two more recent wards are at the institutional end or very close to it when compared to the former UK sample, i.e., of the case studies that had been investigated using the same checklist 15 years ago (Table 4) [28]. This is even the case in the renovated ward. Yet, the number of institutional features alone could not convey the character of each facility.

Percentages of Institutional features per building	
Facility	Mean
Ward A (2016)	60.85
Ward I (2002)	56
Ward B (2016)	54.72
Ward II (2002)	48
Ward III (2002)	47
Ward IV (2002)	44
Ward V (2002)	26

Table 4. Mean institutional percentages for Wards A/B compared to earlier UK sample

There was an increased emphasis on suicide prevention through design and clearer gender segregation in agreement with the National Service Framework (NSF) for Mental Health [30]. Over the years, the dilemma between the safety-security (jurisdictional model) axis and the personalization and choice that occurred from the psychosocial rehabilitation model favoured the former. This happened despite studies supporting that homelike features together with opportunities for privacy increase social interaction and support wellbeing [17]. Moreover, research in German wards suggested that locked wards when compared to open facilities, do not seem justified to prevent suicide and absconding [31].

Wards A and B represented two distinct models of care provision: one pre-normalization providing low stimulation, limited privacy, and sociofugal design of sitting arrangements [31, 32] and one post-normalization featuring specialized psychiatric design, especially in terms of materiality. The latter could be described as a re-introduction of the psychiatric ward of the general hospital in the community: emphasis on infection control, anti-ligature, central nursing station, provision for various degrees of gender segregation, general hospital policies such as the non-smoking policies in all hospital outdoor areas.

The qualitative characteristics are mostly depicted by the analysis using the SCP model (where we can see for example where the ward sits compared to anti-ligature, medical or the rehabilitation models), the architectural morphology analysis, and in particular the analysis of user hierarchies (for example the integration value of the staff areas compared to the integration values of the rest areas) and policies such as gender segregation, smoking policy or access to the existing outdoor areas.

Additional findings

- One less institutional facility in terms of building features could demonstrate a strong institutional behaviour led by specific policies.
- Policies could generate social unrest.
- Policy and psychiatric buildings are interrelated. Yet, policies might change at any time during the building life-cycle.
- Policy might affect the spatial use of mental health facilities considerably.

The integration of the nursing station could generate food for thought regarding the application of Space Syntax in psychiatric care. What Hiller and Hanson (1984) would describe as social logic of space might be severely compromised by top down imposed rules and movement restrictions. On the contrary Space Syntax identified as spaces generating social interaction the locations of actual institutional behaviours and anti-social outbreaks. For instance, in both wards, the most integrated spaces appear to be the spaces outside the nursing station (Figure 7). These were also areas of visibility (Figure 8). Similar to total institutions, patients gathered outside both nursing stations putting themselves in the surveillance “radar”. Visibility from those points might have been requirements of the architectural briefs. Yet, most staff did not gather there. Patients did not wait outside the staff office of Ward B, which was at a segregated part, neither outside the entrance connecting the ward corridor to the staff only part in Ward A,

which appeared similarly segregated. Patients gathered at the most integrated point. It remains uncertain whether that was a demonstration of an institutional behaviour or a human need of meeting people at the point that spatially provided the highest chance of social encounters. The co-relation between the two, areas of high integration and anti-social behaviours is in agreement of the space syntax theory as space syntax indicates chances of encounters. However, space syntax does not specify if these areas of increased co-presence would translate to positive or negative encounters. This needs to be clarified especially since the Bill Hillier, the founder of Space syntax, uses the phrase-principle “people attract people” when explaining the conceptual origin of space syntax [27]. Bill Hillier and other space syntax scholars consider these interactions as positive, especially since several publications they attribute anti-social behaviours because of areas of low integration and areas of higher integration with increased safety [26,33, 34].

In the psychiatric context this attraction could be attraction for co-presence even if this co-presence results in anti-social behaviours. This could be attributed to two factors. One could relate to how mental illness affects perception. As psychiatric patients require more personal space compared to normative population [35, 36], anti-social outbreaks occur in spaces that their personal space is endangered by too many or too close encounters. The other is that we could broaden the perspective of space syntax scholars, including theory founders Bill Hillier and Juliane Hanson and accept that space syntax could highlight places for social encounters, both positive and negative. This research affirms these predictions with data of anti-social outbreak. However, this tendency for negative social encounters, where the space syntax scholars might predict positive encounters, might be related to the social fabric of psychiatric establishment and its generation of anti-social phenomena [37] or this could be an indication that these spaces comply with Goffman’s definitions of Total Institutions [38]. The latter observation is in agreement with the amount of Institutional points scored by these two facilities at the Checklists. They performed on the top range of the sample even when compared to the sample of the initial part of the research in the early 2000. Moreover, showing negative interaction results, these two wards could also fall under the group of buildings Hillier and Hanson call “inverse” buildings. By those they mean buildings that correspond to what Goffman calls Total institutions and where institutional regimes and rules are over imposed normative human behaviour.

The above becomes more complex when we consider the visibility from the nursing stations. One of the key aims of a nursing station is surveillance (Figure 8). However, visibility from nursing station glazing to the corridors in both cases had been partially blocked by staff by furniture arrangement and pieces of paper taped on the windows of the nursing stations and in both cases staff had their backs to the corridors. Thus, staff lacked visual control.

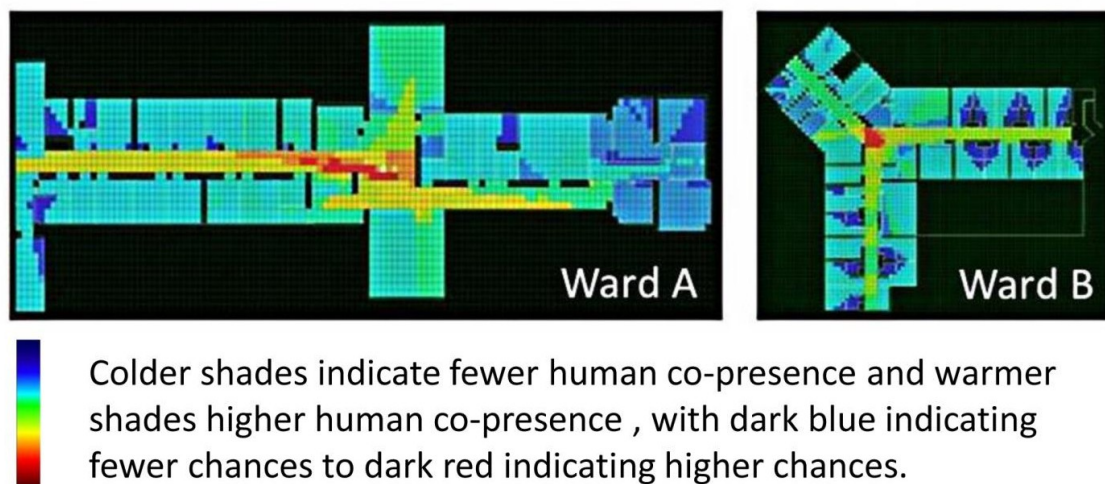


Figure 7. Integration of Wards A/B. The colours are computer generated from the shape of the plans and indicate chances of human co-presence (from dark blue indicating fewer chances to dark red indicating higher chances). From the plans it occurs that the most integrated space is the area outside the nursing station (red)

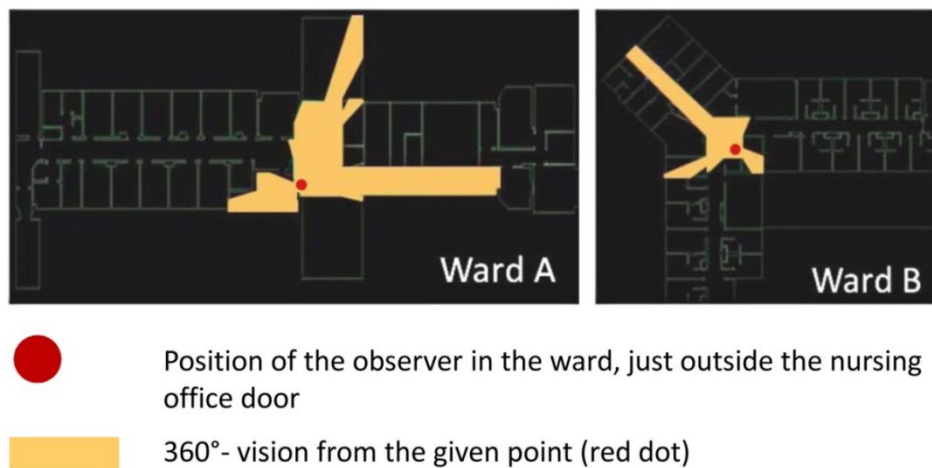


Figure 8. Visibility from the nursing station at Wards A/B. The dot on the two graphs represents the position of the observer in the ward. The raster shows the 360°- vision from that given point

Conclusions

Dangerousness still dominates the design of psychiatric wards in the UK, despite the optimism from psychiatric rehabilitation movements. The findings highlighted potential connections between policies, care-regimes, spatial configuration and social fabric. The research combined a tool specifically developed for the evaluation of psychiatric facilities to a generic architectural methodology. Institutional undercurrents inside psychiatric environments still survive, even when care in the community policy implies that institutions have been abolished. The tool, seen as a matrix ranging from normal to institutional could challenge the way psychiatric buildings are planned and designed from the current surveillance-led model to integrated design for patient wellbeing as is based on three dynamic axes rather than a dominant anti-ligature logic that tends to dominate psychiatric architecture at least in the NHS. From a clinical perspective, this would mean that each decision-making step would be weighed against the therapeutic plan and not pre-assumptions of those involved in the planning, design and building delivery process. Such a dialogue fostering process would be beneficial for all user groups and mostly the actual recipients of care.

Findings indicated that generic methodologies used without involving tools deriving either from medical humanities, such as medical architecture and medical sociology, or from a more clinical or healthcare management perspective could not provide results that could be used with confidence, as the healthcare context is a much more controlled and multi-parametric environment than normative urban or architectural planning.

The insights from medical architecture and healthcare facilities planning can outline institutional undercurrents and help make better sense of generic architectural methodologies, which on their own can be misleading. This is in agreement with the growing trend of employing comparative methodologies to conduct research in healthcare buildings [39].

Regarding limitations, the interconnection between design and social logic result in difficulty to establish cause and effect. Future research involving more case studies that vary considerably in spatial configurations, institutional levels, and regimes could gradually provide better understanding on the key determinants.

The experience of staff and patients, their interpersonal relations, health, and wellbeing, all are influenced by their environment. The research provides the ground for an integrated design framework for evidence-based mental health architecture to serve as a design and evaluation tool, immediately accessible to architects, planners, and stakeholders. Incorporating the full spectrum of patients' needs (physical, caring, wellbeing) and recognizing spaces as cells that allow mechanisms to operate and influence behaviour towards social integration.

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