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Better Campus Dormitory Living Experiences: The Case of King Mongkut's University of Technology Thonburi, Bangkhuntien Campus

Chanida Lumthaweepaisal

Interior Architecture Programme, School of Architecture and Design
King Mongkut's University of Technology Thonburi, Bangkok, Thailand
Email: chanida.lum@kmutt.ac.th

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Abstract

This study focuses on the 'transitional experience' from Kenyon concept (1999) confronting students who leave home to live in the new environment of a university dormitory. Observing the university dormitory from the perspective of an interior architect, this study aims to understand what constitutes comfortable living for students. The objectives of this research are to establish applicable strategies for a campus dormitory design that responds to the psychological and physical comfort of undergraduate students and encourage universities to rethink dormitory design. The first part of the study examines the theories relating to psychological and physical comfort, and the role of dormitories within campus environments. The second part of the research focuses on dormitory case studies and investigates the current conditions in a university dormitory. Finally, the research topic is applied to a lab-based learning project for second-year students of Interior Architecture. As a result, this study identifies the appropriate design criteria for improving the dormitory of King Mongkut's University of Technology Thonburi, Bangkhuntien Campus, which, if adopted by the university, can be used to provide a better experience for students.

Keywords: *Dormitory, Physical comfort, Psychological comfort, Shared space, Temporary dwelling*

1. Introduction

A dormitory for undergraduate students is an ambiguous space, uniquely providing them with half temporary and half permanent accommodation, and they may decide to spend at least four years residing there. A dormitory is not only a place to sleep but can be perceived as a temporary home for students over a certain period of time during the formation of their adulthood and transition to a professional career. This research considers the dormitory as being equivalent to a home – a simple space that triggers all kinds of complex sentiments – fondness, intimacy, warmth, attachment, and comfort, affecting psychological and physical states of a person. Examination of the university dormitory raises the following questions: *What if a home happens to be temporary? What if a home happens to be small? What if a home happens to have unfamiliar persons living together?* Living in a new environment represents a significant life change, and this research focuses on the process of leaving the family home (a dependent dwelling) and moving to a university dormitory (an independent dwelling). Many freshmen are confronted with this 'transitional experience' (Kenyon, 1999) when moving into a university dormitory. The research questions form the basis of an investigation into how students inhabit the dormitory under sharing and temporality conditions since space is linked to social behaviour and human geography (Temple, 2014). This research tackles the psychological and physical comfort materialising in the dormitories of undergraduate students.

Firstly, this research examines the theories relating to the physical and psychological comfort of spatial design and the role of dormitory within the campus environment. Secondly, case studies are explored to expand the dormitory concept within the universal campus environment using the existing dormitory at King Mongkut's Technology Thonburi (KMUTT), Bangkhuntien Campus. Lastly, this research is conducted in collaboration with a study by second-year Interior Architecture students on a lab-based design studio under the theme *'co-living space'* to seek creative ideas and design solutions from the actual users of the KMUTT's Bangkhuntien Campus dormitory. The comfort situation inside the dormitory is measured on both the macro and micro scale, influenced in many ways by the '*Ecology of Individual Students*' (Figure 1) (Renn, & Arnold, 2003).

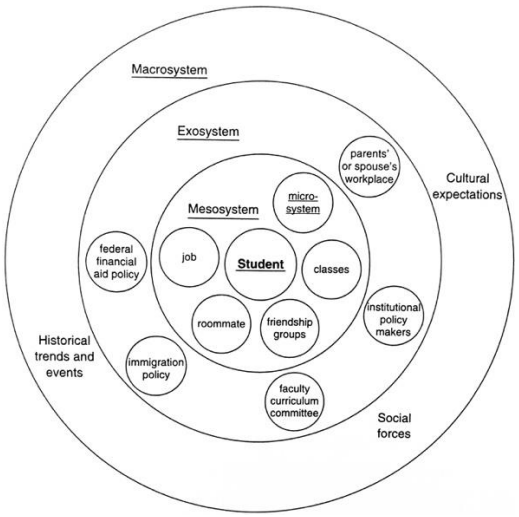

Figure 1 Diagram on the '*Ecology of Individual Students*' shows student development in the university environment ranging from the immediate (microsystem) to most distal (macrosystem) context (Source: Renn and Arnold, 2003)

2. Objectives

The objectives of this research are (1) To establish applicable strategies for a campus dormitory design that respond to psychological and physical comfort, and (2) To encourage the university to rethink dormitory design to provide a better living environment in the contemporary context.

3. Material and Methods

The research framework diagram (Figure 2) presents an overview of this study, starting with comfort situations in the campus dormitory and branching off into three main divisions: 1) Research Subject, 2) Literature Review, Case Studies, Lab-Based Learning, and 3) Conclusion and Recommended Design Strategy.

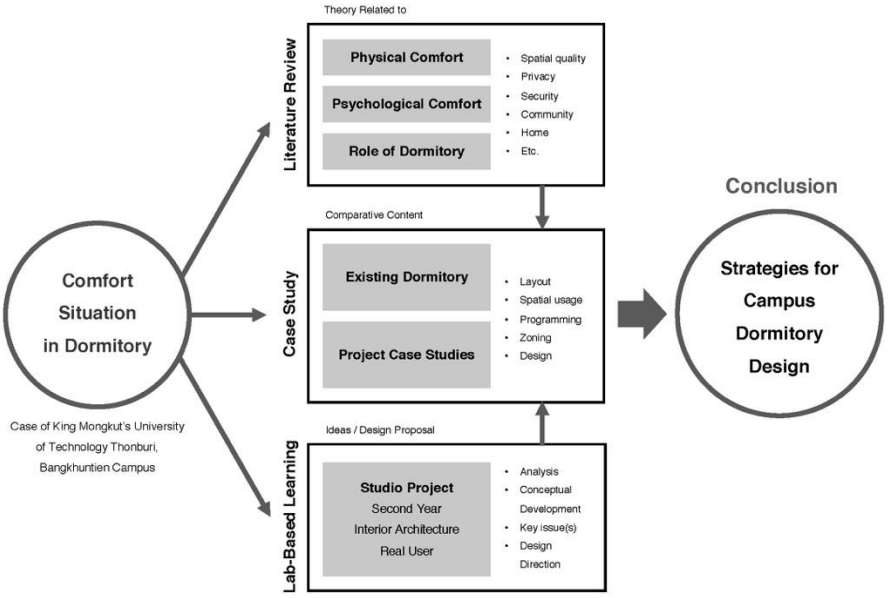

Figure 2 Research framework on Comfort Situations in the dormitory of undergraduate students: The Case of King Mongkut's University of Technology Thonburi, Bangkhuntien Campus (Source: Lumthaweepaisal, 2021)

In the literature review, the studies and theories relating to physical and psychological comfort are explored, including the role of dormitory within campus environments. The case study presented in the following section also takes into account international research projects on dormitories and existing situations (20 studied units) for architectural comparison of the *layout, spatial usage, programming, and zoning*. Lab-based learning on the topic of this research is part of the design brief for second-year Interior Architecture students participating in INA242 Interior Architectural Design II at the School of Architecture and Design, KMUTT. This research consists of insightful analysis and various interesting deliverable designs from actual users. The final section provides a conclusion of the outcomes and applicable strategies for campus dormitory design.

3.1 Literature Review

3.1.1 Related theory on comfort in the spatial design context

Giving character to the space is one of many ways of constructing comfort. Tomas Maldonado (1991) deliberates the meaning of comfort in his essay *'The Idea of Comfort'* as a certain quality of life which comes about in the modern age when home, privacy and comfort are synchronised. He refers to the idea of livability, meaning the services that a particular ambient reality can provide in terms of convenience, ease or habitability. According to Maldonado (1991), comfort is a modern idea. It evokes ease, well-being, cosiness, relaxation, pleasure, and contentment. In this research, comfort not only refers to things contributing to physical ease and well-being – such as smell, noise, light, and temperature, but also the psychological aspects of space influencing the spatial experience of individuals (Miller, 2012).

Space and Behaviour

Space influences the physical and psychological behaviour of humans. Human behaviour in a built environment is influenced by spatial quality. Sally Augustin (2009), an environmental psychologist, studied place science and how psychology can be applied to develop spaces that enrich human experience. The idea of place influencing the user's behaviour is directly linked with the topic under study. Space design is a broad body of knowledge, and without specific objectives, one cannot create a functional space. At the same time, space design should not only be practical but also perform as a *'good space'*.

How do we define a 'good space'? Good is an adjective for explaining that something has the required qualities for giving pleasure, enjoyment, or satisfaction. Augustin (2009) debates that a well-designed space is not intended to serve all human objectives but to ensure a few objectives are very well satisfied. It can be said that a *'good space'* is of above-average quality or standard. She outlines the criteria for a well-designed space into five keywords: complying, communicating, comforting, challenging, and continuing. All of these are spatial attributes, interrelated and manifested to different degrees in certain places – home, school, mall, workplace, etc.

This research focuses on two keywords: communicating and comforting, in the setting of a home and learning environment, since they are directly associated with dormitories for undergraduate students. Communicating refers to the management of territories where individuals can demarcate their own areas and socialise with others on their own terms.

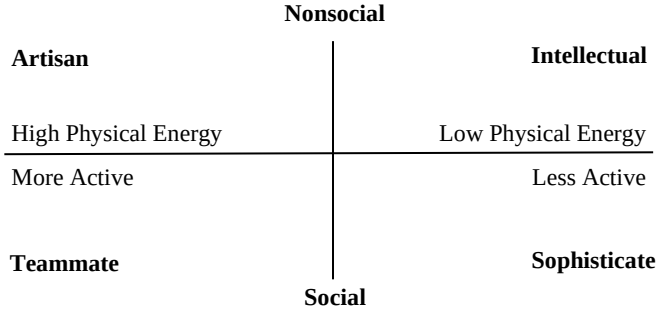

Figure 3 Quadrant living model (Source: Augustin, 2009)

Comforting refers to the control of environments by regulating personal spaces, developing territories, and preventing people from intruding on each other's privacy (Augustine, 2009). These two keywords are used as a guideline for the survey questionnaire on existing dormitory conditions. According to Augustin (2009), no one space is right for all people at all times, and she therefore applies the 'quadrant living model' (Figure 3) to explain how people respond to spaces differently at a particular moment. In the 'quadrant living model', there are areas for more active and less active activities (from left to right) and two situations for the number of people involved in an activity – Nonsocial (alone) and Social (with other people) defined by four characters: Artisan, Intellectual, Teammate, and Sophisticate.

Territory and Encounter Management

To understand the degree of comfort and communication through spatial design, the relationship must be portrayed between personal space and the control of privacy or territory. At university, the interactions between people and the material world are more significant than usual. Students who dwell in the dormitory cannot simply spend time on activities alone in their own room; they need to interact with colleagues and friends in other common spaces. Space therefore becomes a medium for managing the encounters. The complex interaction between space and people leads to better educational outcomes (Temple, 2014).

Instead of providing a specific space for a certain program or activity, the dormitory should provide an environment for adapting to various activity types (Augustin, 2009). Space should also allow for different degrees of encounter to occur because it has a social dimension beyond its apparent functionally (Temple, 2014). The fluctuation of territory is significant since it could shape the way in which students react to the space. Thus, space can be used by students with different characters at various times of the day according to the 'quadrant living model' (Figure 3).

Psychological Comfort in Space

Happiness is one psychological aspect that governs an individual's spatial experiences. The book entitled *'Building Happiness: Architecture to Make You Smile'* (Wernick, 2008) discusses happiness in the context of a built environment. There are some interesting takes on psychological comfort. Richard Roger, an architect, discusses how architecture facilitates happiness with Jane Wernick and Ed Blake: *'Two things that are central to my concept of happiness are culture and community. As an architect, I would also say that on the opposite side to happiness lie (i.e., unhappiness) dereliction, alienation, and brutality'* (Wernick, 2008). This quotation demonstrates the positive and negative side of the sociocultural components influencing how an individual identifies their spatial experience. Creating culture and a sense of community are part of the process of designing a *good space* for enhancing psychological comfort. This also reflects Augustin's criteria of desirable spaces – comforting and communicating, as previously discussed. Such spatial attributes explain why it is important to study user behaviour in existing university dormitory units and other related international case studies.

> *'All experience implies the acts of recollecting, remembering, and comparing. An embodied memory has an essential role as the basis of remembering a space or place. Home and domicile are integrated with our self-identity; they become part of our own body and being.*' (Pallasmaa, 2007)

Juhani Pallasmaa's essay entitled '*Architecture of the Seven Senses'* from the book '*Question of Perception: Phenomenology of Architecture*' (Holl, Pallasmaa, and Pérez Gómez, 2007) supports the view that space is connected to one's memories and sensory experiences. To feel comfortable, one should be familiar with a place. The challenge is how one can be acquainted and accept the existing conditions of the dormitory.

Physical Comfort and Environmental Conditions

Environmental conditions are related to physical comfort, like cause-and-effect. The design of a space affects an individual's physical comfort. Max Fordham, a building services engineer, discusses how humans experience their surroundings through the senses in the book entitled *'Building Happiness:*

Architecture to Make You Smile' (Wernick, 2008). Four key environmental conditions influence the level of comfort perceived by human sensory experiences: smell, noise, light, and temperature.

Comfort cannot merely be defined as one stereotype space but involves social, cultural, and spatial dimensions. The dormitory is central to a student's university life. Apart from being comfortable, the dormitory should be treated as both a space and place. *Space and place are two related but distinct things: the first, related to material reality; the latter, as an emotional and ideological conception* (Luz, 2008).

3.1.2 Role of the dormitory within the campus environment

Building design in a campus environment impacts the overall student experience. On a university campus, the dormitory is equally important as the education building. The dormitory building has the greatest effect on the student's experience since they spend much of their time there for both leisure and learning time. It shapes the way in which a student lives, works, and interacts with their peers and colleagues in university life (Strange, & Banning, 2015). For the dormitory to become a place, it must allow for informal interaction by bringing together living, working, and leisure activities for manageable numbers of people, where staff and students from different disciplines can mix. Good dormitory design leads to better educational outcomes through the complex interaction between space and people, rather than simply providing individuals with a certain type of working or social environment (Temple, 2014). The best example of a dormitory within a creative campus is the Bauhaus dormitory building – Prellerhaus, on the Bauhaus Dessau Campus, Germany. In the context of creative study, the Bauhaus Campus shows that the dormitory has a significant role in shaping the student's experience. Apart from being a good quality, untroubled living space, the design of the Prellerhaus helps to generate positive social interaction. In a broader context, the dormitory design should represent a specific place like 'home'.

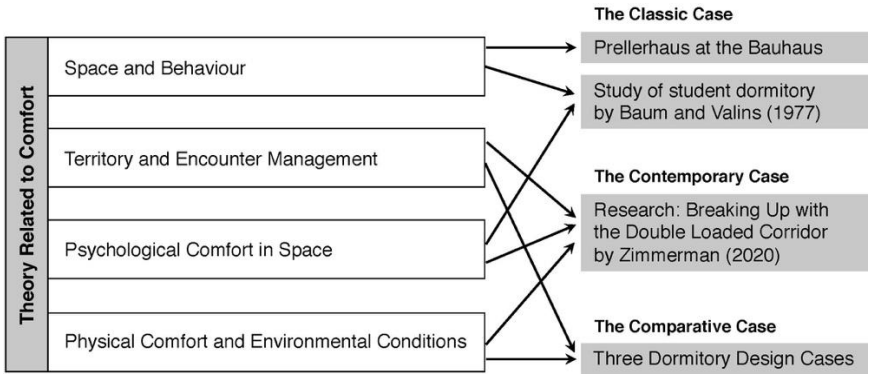

Figure 4 Diagram showing relationship between theoretical studies and case studies (Source: Lumthaweepaisal, 2022)

The study of theory in relation to comfort in the spatial design context and the role of a dormitory within the campus environment provides a framework for the research on the selected case study (Figure 4).

3.2 Case Studies

3.2.1 Learning from dormitory case studies

The Classic Case. One of the most popular dormitory designs is the corridor type – a double or single-loaded corridor for space management and efficiency. The British psychologist, David Halpern, gives an example of a student dormitory in the US in a study conducted by Baum and Valins (1977) in the book *'Building Happiness: Architecture to Make You Smile'* (Wernick, 2008). The study focuses on student experiences and the behaviours generated by two different types of dormitory design: double-loaded corridor and suite. Interestingly, the two most common spatial living arrangements influence how students interact and maintain relationships in an opposite manner.

The Contemporary Case. This research explores the contemporary idea of a living space in mid-rise and high-rise buildings. The study by Zimmerman (2020) focuses on contemporary residential architecture in Germany and Denmark. His work entitled, *'Breaking Up with the Double Loaded Corridor: A Study of Progressive Housing Design and Its Influence on Social Networks',* contains a topic relevant to dormitories, referred to as 'Human scale intervention'. He discusses three spatial apparatus for creating a productive social space: *Intermediate spaces, Balcony as connector,* and *Save the best for public.*

The Comparative Case. The scale of an education institution matters. The university design is complex since it contains a school, faculty, and other public facilities. Therefore, this research is expanded to include the universal dormitory context within the greater campus environment. Three international case studies on university campus dormitories are selected for this research: 1) *Campus Hall*, University of Southern Denmark, Odense, Denmark (Møller, 2015); 2) *Oylmpe de Gouges University Student Housing*, Paul Sabatier University, Toulouse, France, (Scalene Architects, Almudever Fabrique d'Architecture and PPA architectures, 2017); and 3) *Student Housing Diagonal Besos,* Barcelona East School of Engineering in Sant Adrià del Besòs, Barcelona, Spain (MDBA and POLO Architects, 2019).

The case studies are analysed through floor plans, spatial usage, programming, and zoning inside the living unit to provide an architectural comparison of the various designs. The proportion of space (m^2) is defined by function, consisting of Living unit (blue), Common space (orange), Circulation (yellow), Service area (Grey), and Landscape (green). These are then calculated in percentage terms and each project compared. The summary graph (Figure 5) shows the weight that different architects allocate to certain communal living spaces.

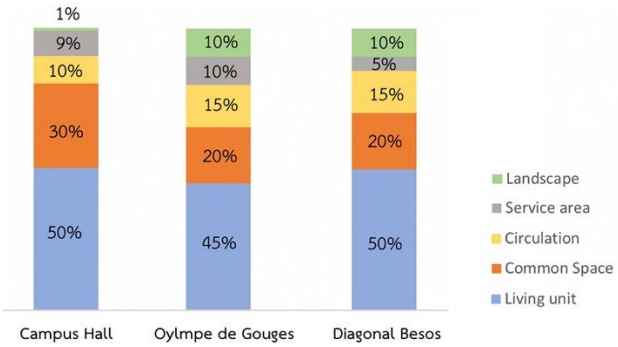

Figure 5 Summary of the dormitory spaces in the case studies, defined by function
(Source: Lumthaweepaisal, 2021)

In contrast to the typical double or single-loaded corridor dormitory design, the three case studies put greater investment into the living quality inside the building rather than space efficiency. According to the summary graph (Figure 5), the percentage of living units in all projects is no more than 50%, with an increasing proportion of common spaces. As for the circulation space, in general practice, this should represent no less than 20% of the total building area. It can be clearly observed from Figure 5 that the percentage of circulation space in the three projects does not meet this space requirement, accounting for only around 10–15%. This emphasises the idea of integrating circulation with other common spaces, which is obviously present in all projects. Apart from its essential function, the dormitory should also provide *good quality space* where individuals can: (1) stay inside the room with decent lighting quality and have access to natural light; (2) easily access a view and/or green space without effort; (3) control visual connection – to see, not to see, be seen, or not be seen; (4) not encounter any dead-end space inside the building; (5) enjoy walking and utilising the corridor space; (6) choose to participate in or escape from various kinds of social activities; and (7) feel at ease and comfortable while living in the dormitory.

3.2.2 Case of King Mongkut's University of Technology Thonburi, Bangkhuntien Campus

Built in 2000, the KMUTT Bangkhuntien Campus consists of three main zones: Academic, Research/Pilot-Plant, and Dormitory and Recreation (built later in 2010). There are three schools in the Academics Zone: School of Bioresources and Technology (SBT), School of Architecture and Design (SoA+D), and Media Technology and Applied Arts (MTA); the last two being used for creative practices. Students from both schools share the same dormitory and facilities (Figure 6).

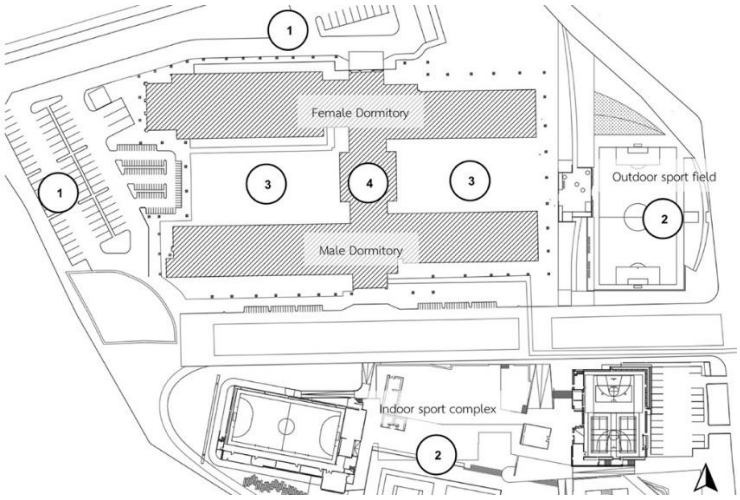

Figure 6 Master plan of the Bangkhuntien Campus dormitory and surrounding facilities: 1) Outdoor parking area; 2) Sports complex; 3) Outdoor courtyard; and 4) Single-sex dormitories – Male (South Hall) and Female (North Hall) (Drawn by second-year Interior Architecture students for INA242 class of 2/2020)

As with the majority of university campus buildings in Thailand, the Bangkhuntien Campus dormitory was constructed on the basis of standard requirements and economical concerns. The exterior of the dormitory presents itself as a typical university building with no character. Why is the exterior of the building significant? The outer shell or façade of the building involves various spatial consequences. It suggests the way in which people can interact with the space – architectural elements such as openings, voids, entrances, windows, corridors, and courtyards can appear to be either welcoming or obstructive to the user. It can also form a sense of place and spatial identity, enabling users to recognise the place and make them feel they belong to the community. The interior functions tend to be generic, with public facilities packed into the ground floor and a stack of double-loaded corridor living units on the upper floors. Spatial experience is also linked to environmental conditions, influencing the level of sensory comfort perceived (Figure 7).

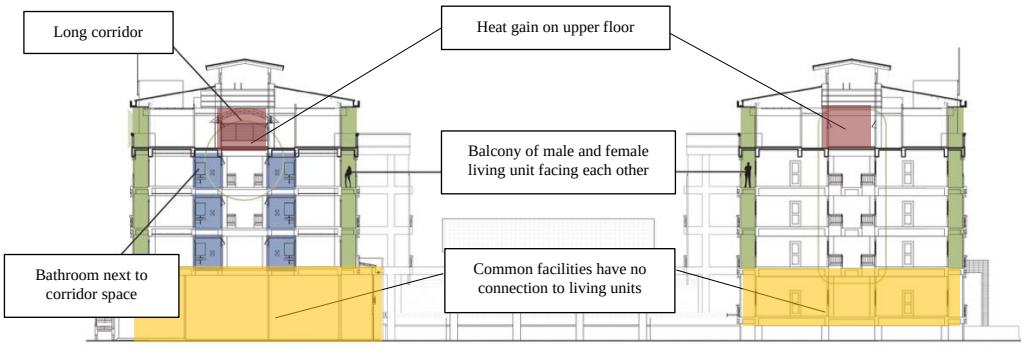

Figure 7 Sectional diagram of two dormitory buildings showing the negative spatial experience generated by the spatial organisation (Drawn by second-year Interior Architecture students for INA242 class of 2/2020)

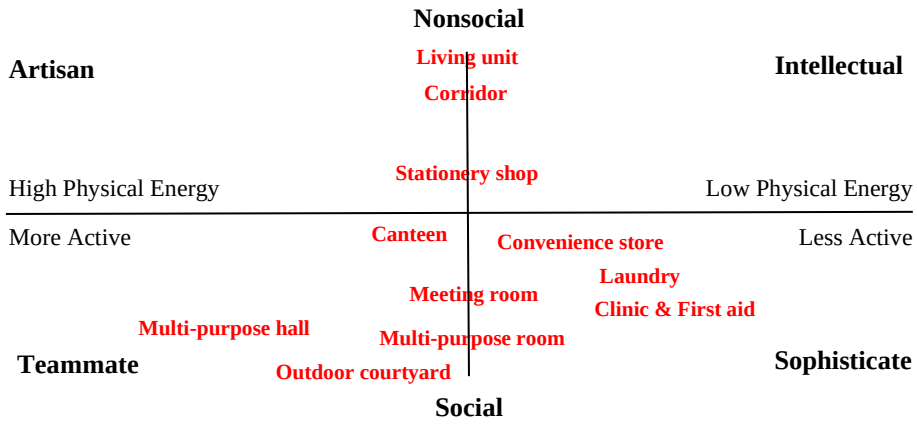

Figure 8 Augustin's quadrant living model, mapped with the dormitory function (Adapted from Augustin, 2009)

This research attempts to understand the existing spatial experience of students towards the dormitory by mapping the functions with Sally Augustin's quadrant living model (Figure 8). The functions inside the dormitory appear to be leaning towards the social side, with some facilities being quite generic since they remain in the middle of the graph. This can explain why some of the common facilities have low usage. Spatial experience is also connected to the psychological comfort of the space. To feel comfortable, an individual needs to adjust to the space and become familiar with the place. In the contemporary context where people are more concerned about health, well-being, and spatial experience, universities have the opportunity to rethink the dormitory design to create a better living environment. The study of the living conditions for undergraduate students in dormitories reveals how students adapt to the space and manage their territories inside the living units.

3.3 Lived Conditions: Study of Dormitory Living

The research uses the collected existing data to gain in-depth knowledge of spatial usage inside the living units of Bangkhuntien student dormitory. The research involves 20 existing residents – 10 volunteers from the female dormitory and 10 from the male dormitory with random room types (Figure 9).

Figure 9 Voluntary living units divided by gender and room type (Source: Lumthaweepaisal, 2021)

Data on the actual living conditions of 20 volunteer dormitory residents was collected using three methods: *1) interview and questionnaire survey; 2) furniture layout with spatial usage information; and 3) photographs of actual living conditions*. The statistics presented in the graph (Figure 8) reflect the room type preferences for students of different genders. According to the interviews, female residents tend to favour a three-person room type more than male residents due to its cost-effectiveness and living atmosphere. Female residents appear to bond and manage conflict among roommates better than male residents. Some female residents also claim that the three-person room type is more comfortable in terms of relationship management.

These issues are the main motivation for room type preference. The study shows examples of furniture layouts which have been altered from the initial design of the dormitory to fit with the requirements and territory management of users. This reflects how the residents use furniture to manage personal spaces and demarcate their territories (Figure 10).

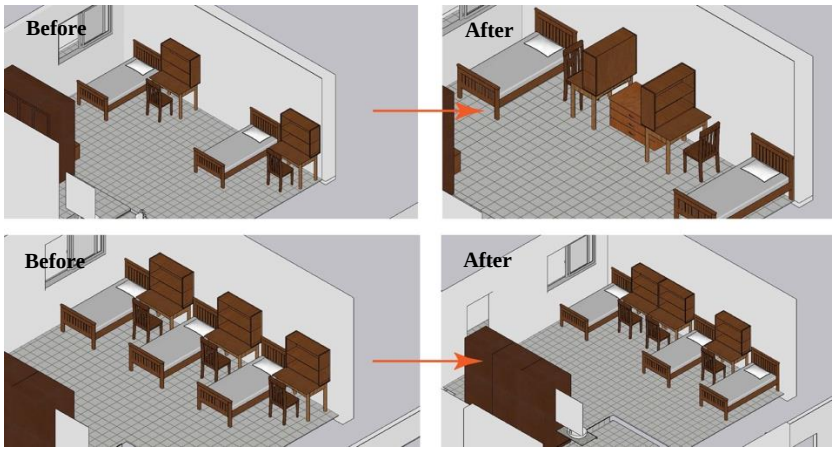

Figure 10 Examples of furniture layouts (Male dormitory unit two-person room type) altered from the initial dormitory design to fit with needs and territory management of users (Drawn by Petchsakae, Mahasittichod, Chew, and Sornnarin for INA242 class of 2/2020)

In order to understand the diverse situations influencing the furniture layouts of the 20 living units, this research uses five criteria to illustrate space management among residents: 1) Furniture ownership; 2) Shared furniture; 3) Working space; 4) Dining space; and 5) Storage space. The floor plan and furniture layout are the mapping tools applied to comprehend the space usage. The 20 living situations are explained in the following section.

3.3.1 Furniture ownership and shared furniture

The data collected on each living unit shows that the residents have clear furniture possession while some personal furniture is used as shared furniture (Figure 11).

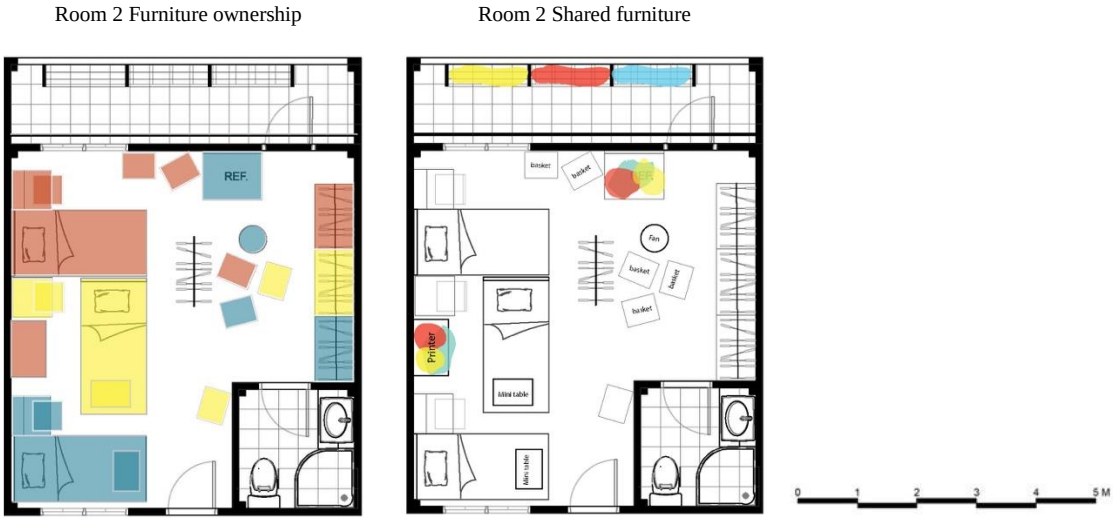

Figure 11 Unit Room 2 (three-person room type) showing furniture ownership and shared furniture; the residents only share appliances, not furniture. Colours are used to represent the three different users. (Source: Lumthaweepaisal, 2021)

3.3.2 Working and dining space

The living units under study are considered to be small when residents have to work, especially the three-person room type, and there is no proper space for dining. The collected data shows many overlapping activities, such as working, dining, and sleeping (Figure 12). These activities are easier to manage in the two-person room type (Figure 13). The working table provided is not appropriate for design-related work thus the residents tend to bring their own furniture and equipment.

Room 9 Working space Room 9 Dining space

Figure 12 Unit Room 9 (three-persons room type) showing the working space and dining area. Colours are used to represent the three different users. (Source: Lumthaweepaisal, 2021)

Room 17 Working space Room 17 Dining space

Figure 13 Unit Room 17 (two-person room type) showing the working space and dining area. Colours are used to represent the two different users. (Source: Lumthaweepaisal, 2021)

3.3.3 Storage space

Storage space is another important factor that appears to have been overlooked in the living unit design. The collected data shows insufficient storage space in every living unit – the countertop of the underused kitchenette, space underneath the bed, and space above the wardrobe are used for extra storage (Figure 14). The lack of storage space is the greatest issue negatively affecting living quality.

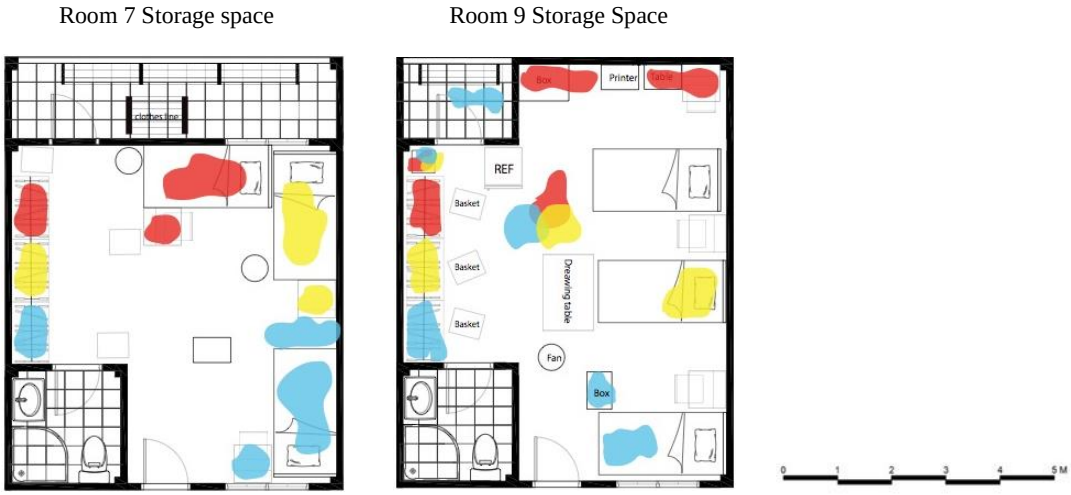

Figure 14 The insufficient storage space in Unit Rooms 7 and 9. Colours are used to represent the three different users. (Source: Lumthaweepaisal, 2021)

The study of living conditions can be summarised as follows:

- The three-person room type is overcrowded and problematic for space management
- The living units lack the private space necessary for healthy living
- There is no proper working space which can lead to an unhealthy working posture
- The living units provide insufficient storage space
- The sleeping area is organised in two forms: separate and united
- The two-person room type makes it easier for the residents to demarcate their territory
- The three-person room type tends to allow for more collective activities among residents
  There is no buffer area between the living unit and corridor

4. Results and Discussion

This study reveals that the spatial design of the dormitory has the potential to be developed further by employing the findings of the research topic on living conditions as a lab-based learning project. The topic fits perfectly with the typology of space students need to learn in their second year – residential design. This lab-based learning experiment would allow for the actual users of the Bangkhuntien Campus dormitory to develop creative ideas and design solutions relating to comfort under the *Co-Residency* theme. The INA242 Interior Architectural Design II focuses on residential design by rethinking and reprogramming the student dormitory of Bangkhuntian Campus, KMUTT. Students investigate the degree of publicity and privacy of the '*co-living space'*, with the main task being materialising new programmes, new space planning, and new designs for the dormitory. The studio work focuses on developing investigative methods and tools with an emphasis on experimentation rather than providing a single solution. Daily programmes are studied and investigated while spatial apparatuses are invented to support the needs of inhabitants. Design keywords such as *Shared vs Private*; *Indoor vs Outdoor*; *Collective vs Individual*; *and Casual vs Formal* are introduced to the students in order to suggest potential design issues. This paper selects two interesting design proposals for tackling the following issues: 1) unisex dormitories and 2) creating a homey feeling inside the dormitory. They questioning the existing conditions of the dormitory and generating two proposals namely the Unite, and the Homey Dorm responding to the initial issues respectively.

The Unite. This project raises the question '*How can the Bangkhuntien Campus dormitory transform from a gender binary to gender inclusive dormitory?*' This question is linked to the theory of territory and encounter management, whereby students seek more freedom of interaction among colleagues and friends in their living quarters. A lack of freedom can lead to an uncomfortable living experience. This question also relates to the theory of psychological comfort in space, and the separation of gender, which is

believed to generate disconnection in the communal sense among residents. According to the university's policy, changing the campus dormitory from gender binary to gender inclusive is impossible. The research indicates that this is a straightforward question, and policy limitations have led towards a creative proposal.

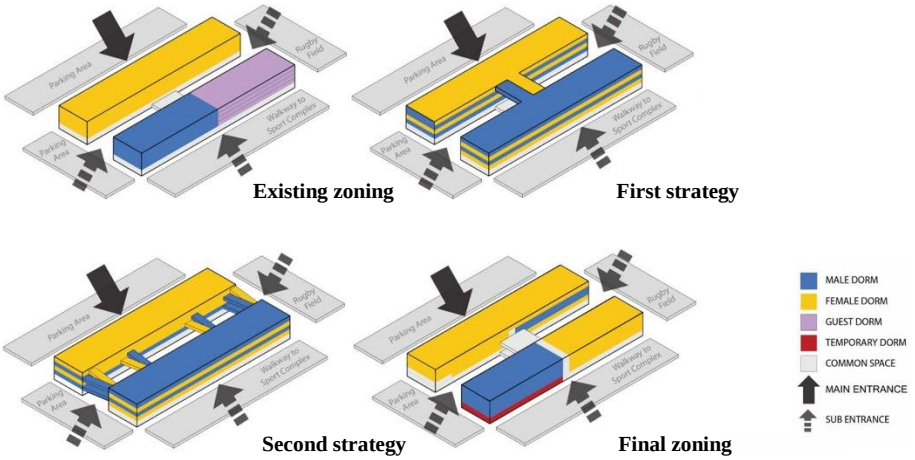

Figure 15 Zoning design strategy: 1) existing zones; 2) first strategy – mixed gender; 3) second strategy – inner loop; and 4) final zoning – shuffle and interlock (Drawn by Matsombat, Saidarasamoot, Kiatsirikulthorn, and Poe Tun for INA242 class of 2/2020)

The transformation diagram (Figure 15) shows how the existing zones can be shuffled and interlocked to create togetherness among gender through perception and visual connection. The final zoning shows the application of two keywords: shuffle and interlock, both of which affect the organisation of space, volume of space, and living unit design (Figure 16). The final design proposal offers more common spaces for communal activities, such as the expansion of the canteen and café (Figure 17), the addition of an intermediate co-working space between the North and South building, and changing the double-loaded corridor into a loop corridor (Figure 18), thereby linking the three spatial apparatus to make a productive social space as suggested by Frank Zimmerman (2020).

Figure 16 Application of the two keywords: shuffle and interlock. The double-height space of the canteen on the first floor encourages visual and physical connection to the co-working space on the second floor. The sleeping area of the living unit utilises the interlocking design. (Drawn by Matsombat, Saidarasamoot, Kiatsirikulthorn, and Poe Tun for INA242 class of 2/2020)

Figure 17 The canteen and café area connected to the outdoor garden offer a better environment for socialisation (Drawn by Matsombat, Saidarasamoot, Kiatsirikulthorn, and Poe Tun for INA242 class of 2/2020)

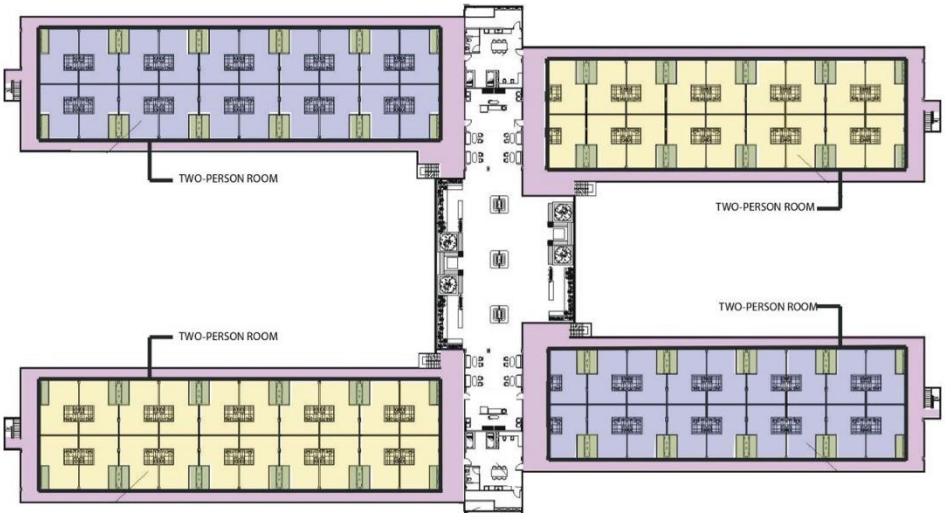

Figure 18 Third-floor plan of the building showing the shuffle position of the male (purple colour) and female (yellow colour) dormitories, the loop corridor (pink colour) of each quarter zone, and the bridge to the intermediate communal facilities (white colour) connecting the two buildings together (Drawn by Matsombat, Saidarasamoot, Kiatsirikulthorn, and Poe Tun for INA242 class of 2/2020)

Figure 19 Furniture layout for the two-person room type (left) and four-person room type (right) showing the living environment and space organisation, improved from the existing dormitory conditions (Drawn by Matsombat, Saidarasamoot, Kiatsirikulthorn, and Poe Tun for INA242 class of 2/2020)

The living units are organised into two-person and four-person room types (Figure 19) to accommodate diverse requirements. The interior space of each living unit is designed to be more spacious but practical in order to improve working and living quality (Figure 20).

Figure 20 Atmosphere of four-person room type showing the living environment, improved from the existing dormitory (Drawn by Matsombat, Saidarasamoot, Kiatsirikulthorn, and Poe Tun for INA242 class of 2/2020)

The Homey Dorm. This project began with a critique of the existing atmosphere of the dormitory, addressing its lack of comfort and failure to make students feel at home. The circulation of the female and male dormitories is too separate and does not encourage friendly social interaction. Thus, a reorganisation of the zoning for female and male dormitories is proposed, along with the expansion of the vertical circulation core through the provision of various communal facilities. Residents are categorised into two types: private and sociable, in order to implement a suitable design for two types of living atmosphere.

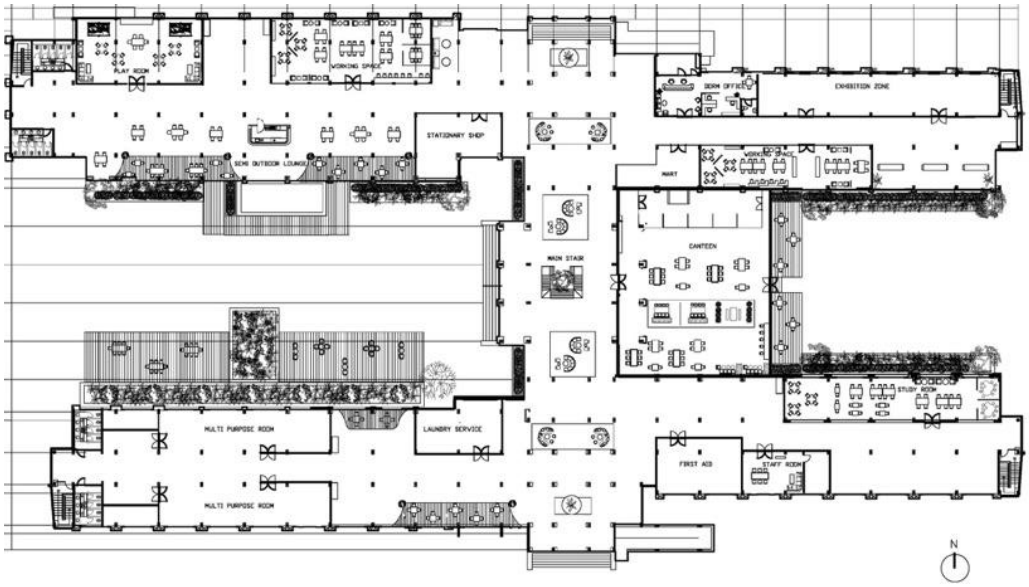

Figure 21 First-floor plan showing the semi-outdoor space expansion and a connected pathway that guests and residents can use together (Drawn by Petchsakae, Mahasittichod, Chew, and Sornnarin for INA242 class of 2/2020)

The first floor is the key to creating a homey atmosphere and should be treated as a welcoming space for both residents and guests – like a living room. Several semi-outdoor terraces are proposed to expand the communal space. Residents and guests can choose to use indoor or semi-outdoor spaces without being forced to do so (Figure 21). The space planning of the living floors is reorganised into small clusters with pocket

communal facilities to provide more specific home-like spaces for residents (Figure 22). The design of the interior spaces attempts to mimic a home-like atmosphere (Figure 23 and 24).

Figure 22 Second-floor plan of the building showing the cluster space with pocket communal facilities (Drawn by Petchsakae, Mahasittichod, Chew, and Sornnarin for INA242 class of 2/2020)

Figure 23 Communal facilities – common area (left) and co-kitchen (right) demonstrate the importance of communal activities, reflecting home-like activities in the living room and kitchen (Drawn by Petchsakae, Mahasittichod, Chew, and Sornnarin for INA242 class of 2/2020)

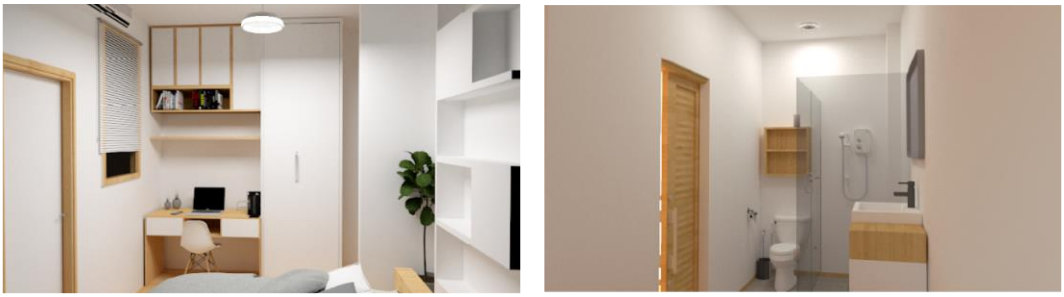

Figure 24 Living unit demonstrating a calm and homey interior, allowing the residents to have quality private spaces (Drawn by Petchsakae, Mahasittichod, Chew, and Sornnarin for INA242 class of 2/2020)

Considering '*comfort'* as a topic for improving the quality of dormitory buildings, the university must not overlook the study of living conditions and the feedback provided by existing residents. According to the research findings, the potential exists to incorporate the actual users in the design process. The design proposals from the Interior Architectural Design II studio suggest various possibilities for developing the existing dormitory, and various design agendas are identified, which link to the theory relating to comfort and case studies. Students raised various significant issues during the site survey and design process, such as the restrictions imposed by the existing physical environment, territory alterations between public and private spaces, lack of opportunity for collectiveness among peers and colleagues, an unhealthy and unproductive living environment, etc. It can therefore be confirmed that the design proposals respond to the requirements of actual users.

5. Conclusion

The previously reviewed *'Ecology of Individual Students*' presented in Figure 1 indicates that the most immediate experience of students in relation to the campus environment is through the components of the so-called *Mesosystem* (Renn and Arnold, 2003). The dormitory is one of the immediate spaces in the Mesosystem relating to roommates and friendship groups for students, which in turn also connects to the faculty, curriculum, and committee in the exosystem along with the sociocultural aspects in the macrosystem. In conclusion, this research presents the design criteria for a better Campus Dormitory Design: The Case of King Mongkut's University of Technology Thonburi, Bangkhuntien Campus.

> ***Natural light.*** Provide enough natural light and make it controllable for the residents to enable them to let in or dim natural light as required.
> ***Visual connection.*** A visual connection that works on two levels person to person and person to surroundings. Residents can choose to see or be seen, and spaces should connect to the surrounding view or greenery.
> ***Physical connection.*** Attempt to eliminate a dead-end corridor and create a communal space as an area connector for residents.
> ***Territory management.*** Provide different levels for interaction and socialisation**.** Residents must have power over their own territory and choose to be alone or participate in communal activities without being forced to do.
> ***Make a space become a place.*** Create a good quality living space for residents to make them feel at home.

These design criteria are present in all dormitory case studies and the two selected design proposals from the Interior Architectural Design II studio. This research aims to encourage KMUTT's Bangkhuntien Campus dormitory to evaluate its current performance in terms of living atmosphere, space operation, and spatial organisation. The peculiar characteristic of the dormitory as half temporary and half permanent accommodation will never change. However, the dormitory design can be changed to accommodate and provide a better living environment as a temporary home for undergraduate students. The living experience of students will then be enhanced to support their transition into adulthood and make this period more meaningful.

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