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STUDY OF SPATIAL CONFIGURATION AND SOCIAL BEHAVIOUR IN CORRIDORS HOUSING IN BLIDA, ALGERIA

Abstract: This paper aims to investigate the relationship between spatial configuration and social behaviour in corridor housing. It seeks to understand the effects of the dwelling, the corridor as a space, and the inhabitant as a user on one another, through the case study of the Ourida housing estate in Blida, Algeria, which was built in the post-war period by Atbat-Afrique under the direction of Candilis. The methodology triangulates three data collection methods: systematic observation, a mixed qualitative and quantitative survey of a sample of 180 user (56% of total residents), and measured drawings of 40 out of 60 dwellings. The finding reveals a connection between the social behaviour of inhabitants and the spatial configuration. This corridor housing configuration required specific socio-spatial behaviours from the inhabitants of Ourida while failing to accommodate their lifestyle needs. Moreover, territoriality, control and surveillance, privacy, and the creation of defensible area, are the expression of social behaviour in space. Additionally, the layout of Ourida housing does not promote neighbourly interactions and activities. The results of this study highlight the importance of considering needs, lifestyle, and culture in space configuration.

Key words: spatial configuration, social behaviour, corridors housing, dwellings, lifestyle

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Introduction

As a result of the rural migration and the large concentration of slums on the fringes of towns, lack and insufficiency of housing, the urbanization policy in Algeria under French colonization adopted new measures to address the housing crisis after World War II. Construction of huge collective housing units, social housing for Europeans and Muslims, and collective housing for all, in order to reduce costs and speed up construction were among the government's proposals (Fourcaut, 2001).

With this urbanistic movement, a new typology of collective housing was propagated a national scale, is the corridor housing. The corridor satisfies ambitions for economic growth because it reduces construction costs and permits multiple houses on a single floor. Hence, it reacts to social goals, strengthens, and encourages social interaction between residents (Marchand, 1988).

Several studies have demonstrated that the adoption of the so-called "intermediate space" between the outside and the inside affects not only how the space is configured and how the interior of a home is designed, but also how users behave and use the space (Lawrence, 1983; Antipas, 1974; Raymond et al., 1966). Similarly, it enables socio-spatial interaction between neighbours who frequent common spaces to improve their social relationships (Drucker and Gumpert, 1988). Due to its effect on social behaviour, Soltani et al. (2022) claim that spatial configuration is a crucial component of conception. As such, space shapes the behaviour of individuals, and spatial behaviour modifies and transforms space (Siramkaya and Aydin, 2017).

Recent years have seen an increase in the amount of research on how spatial configuration shapes aspects of society (Soltani et al., 2022). They are interested in how social behaviour and spatial configuration interact (Perera, 2022; Soltani et al., 2022). Research on behaviour in space discover and validate the influence of form and its characteristics on the practices of the individual (Xuyang et al., 2020; Shuyan et al., 2022; Ondia et al., 2018). Moreover, the usage of space highlights social connections among space users (Siramkaya and Aydin, 2018; Bandara, 2020).

However, in Algeria, research that studies the socio-spatial relationship, practices, behaviors, and appropriation in the corridor space is limited. The research undertaken before focus on the spatial organization and social interaction in intermediate spaces, as well as social intersectionality in common spaces generally (Naceur, 2013; Zerouati, 2019). Also, the appropriation of and user behaviour in public areas of mass housing has been looked at. (Mebirouk et al., 2005).

This study aims to shed light on the following questions:

- How might the spatial configuration of social housing in the Ourida housing estate in Blida (Algeria) affect the behaviour of the user?
- How could social behaviour lead to a reconfiguration of space?
- How did this exchange of impact between spatial configuration and social behaviour materialize?

Through a socio-spatial approach, this essay attempts to study the spatial configuration and social behaviour in corridor housing. In this sense, it examines the behaviour of the user and his practices in the corridor space, how the corridor affects the spatial con-

figuration of housing, and analyse this interrelationship between the formal qualities of the space and its modes of appropriation.

Theoretical framework

The relationship between the built environment and human behaviour in space has always been a focus for researchers. Sommer (1973), confirms the close connection between the environment and behaviour, describing it as a complex link. In the same year, Blowers (1973) found a considerable correlation between the physical environment and the behaviour of the inhabitant (Zeouati, 2012). Kim (1999) found that the study of behaviour places a lot of emphasis on how configuration affects human behaviour in space (Perera, 2022). The physical foundation for social behaviour and a source of influence over the inhabitants' social behaviours is the built environment, or environment (Antipas, 1974). This relationship can be reversible; according to Rapoport (1972), the definition of spatial form depends on daily life and the needs of the user in space (Rapoport, 1972). Antipas (1974) agrees with this idea that spatial organization is linked to the cultural elements and lifestyle of the user (Zerouati, 2012) In this sense, space as a configuration is related to the physical formation and social experience of the human, it depends on the cultural context (Hansgul, 2015; Ondia et al., 2018). Therefore, spatial form influences social behaviour and behaviour influences spatial configuration, first we form the building then the building forms us (Hasgul, 2015).

Research confirms the impact of spatial configuration on social behaviour (Soltani et al., 2022). The appropriation, interventions, changes, and structuring of the space in accordance with a cultural paradigm are manifestations of the behaviour and practices carried out in the space (Raymond et al., 1966). According to Fischer (1983), appropriation is defined as the set of practices exercised on space, appropriation is the collection of behaviours performed on a space in response to both overt and covert requirements for recognition or communication (Fischer, 1983). From the appropriation is generated the habitat that becomes a centre of interest since the research of Chombart De Law and Henri Lefebvre. Living and housing are related in a way that is dependent on social development, economic situation, and cultural legacy (Semmoud, 2009). The appropriation is expressed through:

- Privacy: is expressed by the degree of openness and closure of the area, as well as by the willingness to be exposed to the public or not. The definition of privacy is controlling visual permeability between exposing or isolating oneself through spatial changes made in the living space (Dind, 2008; Zerouati, 2012).
- The control and the marking: it takes the form of acts that restructure the area by establishing a delimitation while erecting a fence, whether it be non-abstract or abstract (Segaud, 2007). As a result, the marking might be communicated by arrangements or activities that show that a space is used (Depaule,1999). Fencing can be used as a kind of control to monitor quality of life and encourage a sense of security (Fenghour et al.,2022).
- Territoriality: The delineation of its territory and the intention to erect obstacles, declare their dominance, and defend this region are examples of territoriality. Hillier and Hanson (1984) contend that territoriality is manifested in an organization of space in correspondence between biological or cultural groups, and the dynamics of spatial behaviour maintain this correspondence (Hillier and Hanson, 1984).

Both indoor and outdoor built areas, such as courtyards, balconies, corridors, and stairways, are affected by the building-behaviour connection. These outdoor spaces have a strong influence and are considered regulators of spatial organization and user behaviour (Lawrence, 1983). In addition, they encourage social activities and interactions (Gelh et al., 1977; Fenghour et al., 2022).

Characteristic of the 1950s corridors housing in Algeria

The 1930s' views on the type and style of habitat to adopt for Muslims and Europeans were put into practice during the post-war period, which served as an enabling time for the implementation of mass housing in Algeria. The mass construction and standardization of collective housing accelerated during the 1950s, culminating in 1958 with the launch of the Constantine Plan. The corridor typology is one of the building types used to address the housing issue. It is built quickly, economically, and in great quantities (Picard, 1996). The building is made up of at least four levels, with six apartments on each floor, and has the shape of a longitudinal bar with two orientations. Typically, the building incorporates corridors with an outdoor stair that leads to these corridors (Çilek, 1997).

In 1958, the doctrine of standardization and industrialization of collective buildings was confirmed in Algeria with the last attempt to found neo-colonial economic structures by de Gaulle during his visit to Algeria and the implementation of the Constantine plan, which aimed to develop a balance of the country through industry and social equipment by inaugurating the (zone to be urbanized in priority [ZUP]) formula while erasing the inequality between the two societies. the plan calls for building 50,000 dwellings annually in the formula of mass housing projects around the country. The corridor building, with a compact but healthy apartment, an entry with a kitchenette, and a reasonably sizeable bathroom, is highly recommended by this plan. The issue of family living is raised; however, it can be resolved by expanding the number of rooms rather than their surface area. Each apartment must have at least a living room (fourteen m²), a parents' and children's bedroom (nine m²), a kitchen (two m²), a bathroom and toilet (four m²), a loggia (two m²), no bedroom may be smaller than eight square meters, thirty-nine square meters of total living space, and a stairwell that serves forty-eight dwellings (Çilek, 1997; Caees, 1958).

The Atbat d'Afrique's corridor housing

A concept of Mediterraneanity and Algeriannety arose in Algeria in the 1950s to protect the country's architectural identity by utilizing local building methods and materials, honoring the social culture and lifestyle there, and taking climate and geographic factors into account. This notion was brought to life through grids, particularly those displayed at Ciam9, a North African grid of Atbat-Africa, an affiliation of the French builders' workshop (atelier des batisseurs) founded by Bodiansky and Corbusier and responsible for building the housing unit in Marseille. In 1951, a member of this workshop named Candilis relocates to Morocco to lead the African branch. The grid is primarily an interdisciplinary strategy that tries to adapt to Muslim lifestyles and rural environments while also addressing technical problems like construction methods, techniques, and local materials while taking into consideration economic conditions (Candilis, 1977; Çilek, 2006). This grid advocates the intermediate space to ensure social relations between neighbors and the economy of the construction to control ventilation and aeration. Additionally, it pro-

motes the integration of the vertical patio typology and the fusion of Muslim and European models to modernize social housing in Africa (Capannini, 2005).

The building of the Atbat of Africa:

- Was thin and long, east-west oriented, containing at least four floors.
- Has exterior corridors and stairwells.
- Has courtyards inside the dwellings open on top.
- Minimum living area of 35-m², two bedrooms, sink kitchen, and toilet.

Case study

For this study, we will focus on the Ourida housing estate in the city of Blida, located 60 kilometers from the capital Algiers. Blida, like many Algerian cities, went through the same architectural and urban problems and had to deal with 1300 housing requests from Muslims and Europeans (Attard, 1956). The construction strategy to absorb the crisis is similar to both national and international strategies, providing collective housing for all (Lathuillière, 1952). By calling the Atbat-Africa office that will take over the construction of the housing estate for the Muslim population on the outskirts of the city near another horizontal housing for the same population, and for the account of the Algerian Muslim cooperative society of housing and accession to the small property a housing estate Ourida of 210 residences was realized in 1954 (Figure 1, Table 1).

Tab.1. Description of the Ourida housing estate

Date de construction	1954
Location	On the road of Ouled Yaich
Typology	With corridor and patio
Number of floors	Five floors
Number of dwellings	60
Number of dwellings per floor	Six
Area of the city	12,000 m²
Surface of a dwelling	43 m²
Width of the corridor	One meter
Position of the corridor	two on the east side/two on the west side
Position of the stairwell	Exterior on the side facade
Typology of the corridor	Corbelled and open on top
Orientation of the building	East-West

Source: Archive document of the Municipality of Blida, 2022

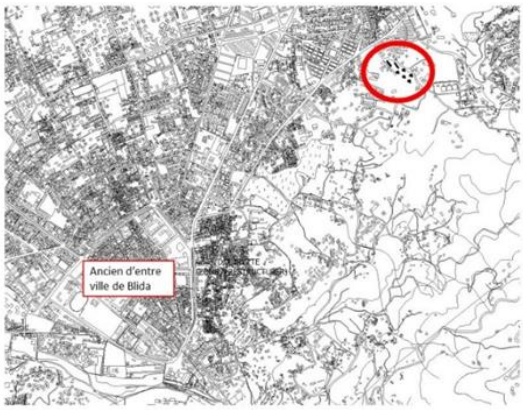

Fig. 1. The location of the Ourida housing estate in the city of Blida (Authors, 2023)

There are two types of buildings in Ourida: one has no corridors and spans seven blocks, and the other has two bars and corridors (Figure 2). Only the two bars with corridors are the focus of this article.

Fig. 2. Mass plan of the Ourida housing estate and an overview photo of the building (Authors, 2023)

The apartment of Ourida consists of a patio, a living room, two bedrooms, a kitchen sink, and a bathroom. The apartment has no kitchen or bathroom, and the room's windows are in the shape of bars and are 1m90 above the ground (Figure 3).

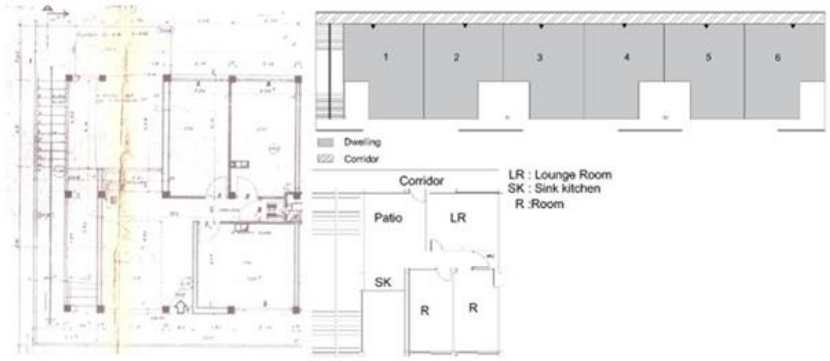

Fig. 3. Distribution of apartments on a floor, archive plan of an apartment (Authors, 2023)

Materials and Methods

For this study, we combined several approaches: archival, observational, survey, and measured drawing.

Archival research

Finding the original technical file for the Ourida housing estate is the objective of the stage of archival research. We can define the qualities of the housing estate conception with the aid of the archive. The comparison between the architect's original plan and the current plan as it has been modified by the inhabitant after 68 years will serve as support for examining the changes made by the inhabitants within the dwellings, on the facades, and in the corridors.

Observation

It serves to involve questioning the visual quality of the space (Naceur, 2013). The study of space consists of observing the building and the living experience on how the space is created.

The objective is to identify the space's appropriation forms, define the most appropriate behaviours and practices, and observe the outdoor activities in the corridor.

The observation was conducted over the course of two distinct times. The first took place in March 2022 over the course of three days, two during the week and one on a weekend, from 10 am to 1 pm and then from 4 pm to 6 pm. the same timetable, the second period took place over two days in November 2022. The choice of hours is based on the users' presence at home, as well as the fact that activities are typically carried out in intermediate and public space during these hours. The outdoor observation grid includes the gender, age range (older, adult, child), and type of practice of the practitioners (individual or group). The closing of the corridor, the means of closure (curtain, glass, door), the arrangement of the space (furniture, plants, clothesline), covering and painting of the space, and gathering and conversation among neighbours in the corridor were all included. Inside the dwelling, the observation included A space was removed or added, a room was expanded or reduced, the floor covering, and paint were changed, and windows on the exterior were either opened or closed.

The survey

We opted for a mixed method based on a qualitative and quantitative survey simultaneously. The quantitative is objective, the studies on the relationship between outdoor space and behaviour based on the quantitative method have an important role in advancing knowledge on this topic. While the qualitative method is subjective, much research on behaviour in space is based on a qualitative study, case studies, narrative surveys, narratives, and observations (Shuyan et al., 2022). A questionnaire survey among the inhabitants of the Ourida housing estate reinforced the observations. A sample of 40 out of 60 homes was chosen at random, and 180 of the 320 residents of the two corridor buildings volunteered to complete the surveys. This results in a sample of 56%. Three age groups and both genders (male and female) were included in the survey (child, adult, elderly). “People's behaviours in space differ greatly among age groups” (Xuyang et al., 2020).

The objective of the survey is to interpret and decipher the practices and behaviours of the inhabitants and determine if the designer's original plan was adequate or inadequate in light of the changes that were made.

The questionnaire was divided into two sections, the first of which dealt with the interviewee's personal characteristics (Table 2). Questions about behaviour and appropriateness are included in the second section.

Tab.2. Household characteristics, by authors

Gender		
Male	64	35.5%
Female	116	64.5%
Total	180	100%
Age		
Child	15	8.3%
Adult	71	39.4%
Older	94	52.2%
Total	180	100%
Family status		
Single	47	26.1
Married	125	69.4%
Divorced/widowed	8	4.4%
Total	180	100%
Professional situation		
Employee	50	27.8%
Retired	70	38.9%
Unemployed	40	22.2%
Student	20	11.1%
Total	180	100%
Condition of the property		
Owner	135	80%
Tenant	45	20%
Total	180	100%
Date of occupancy		
Less than 10 years	32	17.8%
From 10 years to 30 years	38	21.1%
From 30 years to 68 years	110	61.1%
Total	180	100%

Source: Authors, 2023

The measured drawing

This step identifies the modifications that the inhabitants have made to the home. The lived plan, which meets the needs of the inhabitant, is created by superimposing the measured and archival plans. The survey has been realized on the 40 visited dwellings.

Results

Transformation inside the dwellings

Surveys and visits revealed that every unit had been reorganized. The main change was at the level of the patios; no patio is preserved today, and they are all transformed into the kitchen, as the original plan did not include a kitchen. The kitchen sink also converts to a bathroom. Having a kitchen and a bathroom was seen more significant by all respondents (100%) than having a patio, which contradicts the designer's concept of favouring Algerian traditional house patios. “We can't keep the patio without a kitchen. I'm not sure how the designer came up with it” (story). The living room and two bedrooms have remained in their original locations, while the flooring and paint have been changed (Figures 4 and 5).

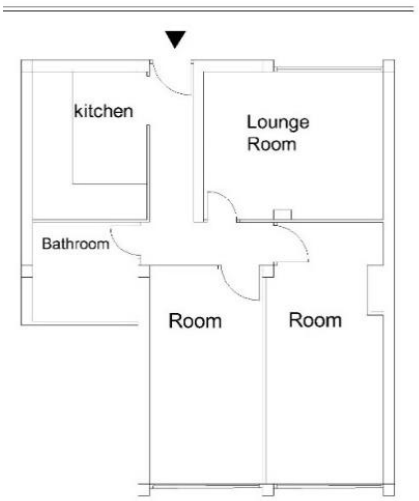

Fig. 4. Modifications made to a dwelling in the Ourida housing estate (Authors, 2023)

Fig. 5. Photos showing the interior transformations (Authors, 2023)

Modes of appropriation of the corridor space

Closing with a door

At the limits of their homes, each resident of the end of the corridor closes this area with a metal door. 20% believe that the door boosts the sense of security, while 80% justified their actions by the desire to gain more space and mark the territory by prohibiting outsiders from entering this area that was deemed private. “Since we are the last inhabitants at the end of the corridor, closing this space does not affect anyone. I appreciate the few meters of privacy; it is like having a private balcony” (story).

Similarly, some middle dwellers erect a door at the boundaries of their houses, to control, monitor, limit the passage in front of their doors and to feel protected (Figure 6).

Fig. 6. Doors installed by residents on the corridors (Authors, 2023)

Use curtains in corridors

60% of residents use curtains, the need for privacy and to create a visual barrier between the intermediate space and the public, particularly to protect women from the looks that come from the outside, is cited by 100% of residents who use curtains, who also justify the behavior by saying, “I do not have to wear my hijab just to get out in front of my door, the curtain covers me well” (story).

The curtains are hung in two key locations: between two houses, where they take the place of the metal doors, and along the corridor to break up the visual continuity between the exterior and the corridor (Figure 7).

Fig. 7. The curtains used in Ourida's corridors (Authors, 2023)

Drying laundry outside in the corridors

The inhabitants of Ourida hang their clothes on clotheslines in the corridors because there are no balconies or loggia, and the windows are 1m90 above the ground “this corridor is the only source of sunlight” (story). Instead of curtains, the drying of the laundry outside serves as a visual barrier (Figure 8).

Fig. 8. Laundry in the corridors of Ourida (Authors, 2023)

Changing flooring and putting plants

20% of the population placed plants in front of the door. Thus, 10% placed a floor covering in order to improve conceptual quality, because the corridor's ground is made of concrete. This 30% say that the goal is to demarcate our territory and infuse the area with life (Figure 9).

Fig. 9. Plants and flooring in the corridors of Ourida (Authors, 2023)

Install window bars

60% of the residents have installed window bars for protection and security because these windows are just at a height of 1.90 m “without these bars we cannot leave the house alone, before installing it there have been multiple robberies” (story) (Figure 10).

Fig. 10. The bars installed on the windows overlooking the corridor (Authors, 2023)

Children's play area

In order to be safe and under parental supervision, only 3% of the 6.67% kids choose to play in the corridors. “When they were younger, they played here, but once they start school, they prefer elsewhere” a parent said (story) (Figure 11). This 3% of children over

seven prefer to play somewhere else since they find the corridor to be too narrow and unsuitable for all activities.

Fig. 11 Children playing in the corridor (Authors, 2023)

Social interaction through the corridor

Intermediate spaces strengthen social relationships between residents (Zeouati, 2019). According to Maslow (1970), providing social interactions as much as need promotes the sensation of belonging to space (Siramkaya and Aydin, 2017).

In Ourida, 60% of women agree that social relationships between neighbors are practiced in the corridor because it's the sole outside space for fresh air, conversation, and idea exchange “it is our only way out to see the light of day” (story). The corridor is used as a transit hub or a place to dry laundry by the remaining 40%. While 20% of males believe that the corridor is a place for social interaction and helps to enhance relationships, these 20% are mostly older. 80% of men believe that the corridor serves as a passageway. Finally, 40% of residents -women and men- believe that this area encourages social interaction.

Discussion

The spatial configuration of the Ourida housing estate was founded on ideas that considered the lifestyle of the residents and the surrounding culture. Each home has a patio, and there is a corridor that promotes social interaction. Today's users, however, create a plan that takes their behaviours, and practises into account and alter the area to suit their needs. The findings indicated that the interior of the homes did not meet the needs of the inhabitants, and that the iconic patio of the traditional houses was not necessary in modern homes when compared to the kitchen and bathroom. The elimination of this patio, a crucial component of North African ideas of the Atbat-d'Afrique, is evidence of the fallacy of this sociocultural aspect-based theory.

In addition, the corridors have undergone transformations and practices to express the appropriation that is manifested through (Figure 12):

- Territoriality: 80% of the behaviour of the inhabitants of Ourida is translated by the fact of territorializing the space by putting doors, personalizing the flooring and the painting, and putting plants.
- Control and surveillance: 80% of behaviours are aimed at the threshold's control and surveillance, putting barriers at the end of the dwelling before reaching the front door.
- Intimacy: especially for women, the openness of the corridor limits women's activities in this space. 60% of behaviours emphasize intimacy in this space, mainly using curtains to cover the corridor and cut off visual contact with the outside.
- Defensible space: Improve safety by installing bars at the level of windows that open onto the corridor to create a defensible space.
- Children's space: One of the concepts attributed to the corridor by the Smithsons in the 1950s was to create a safe space for children to play under parental supervision within a step of their doors (Smithson, 1955). Contrary to the protagonists' intentions, only 3% of Ourida's children prefer to exploit the area.
- A space of social intersection: women practice only 40% of social exchange, whereas the corridor was designed to ensure social exchange between users. The user intends to reduce social relationships by erecting barriers in this space, such as doors and curtains. Space barriers separate people and create their absence (Ondia et al., 2018; Shuyan, 2022). Furthermore, the change in flooring in the dwelling's threshold represents a willingness to separate from people and create a line that must not be crossed.

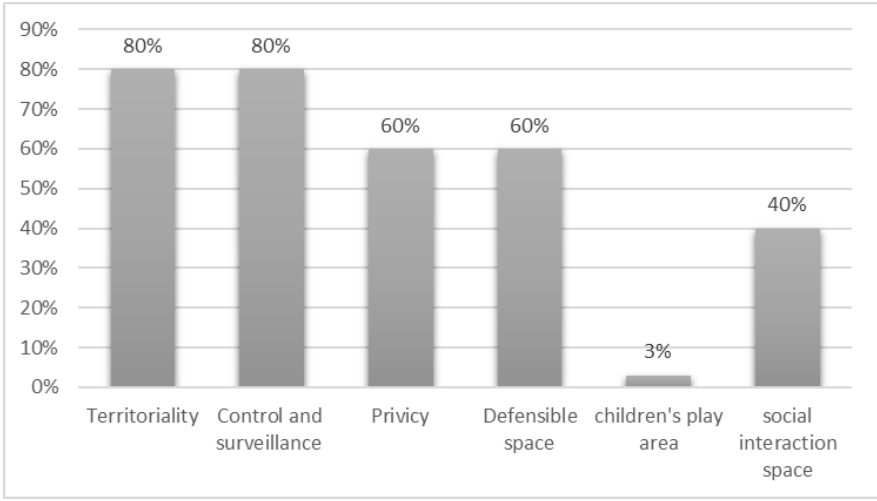

Fig. 12. Percentage summary of appropriation mechanisms in Ourida's corridors housing (Authors, 2023)

Conclusion

The objective of this study is to investigate the relationship between spatial configuration and social behaviour, specifically whether the shape of the space affects and influences the inhabitant's practices or whether the appropriation of the space disfigures the initial configuration. The Ourida housing estate was built by the Atbat d'Afrique office in the post-

war period to the 1950s, when reflection on the form and type of habitat of the local population was prominent. The principles of Atbat in North Africa are to introduce local culture, consider the socio-cultural aspect, and respect the lifestyle while modernizing. The establishment of a courtyard in the housing to evoke the patio of the traditional house and the inclusion of circulation corridors to promote social interaction between neighbours serve to materialize these concepts. This study's main hypothesis is that social behaviour and spatial configuration have a reciprocal impact on one another, resulting in a place that is adaptable to the needs of its users.

Based on the results of the observation, survey, and measured drawing, we have following findings. The interior configuration of the house is not appropriate for the people who live in Ourida nowadays. Two key operations were noted as a generalization of interior modification throughout the surveys: the patio was converted to a kitchen, and the sink kitchen corner was converted to a bathroom. Although the designer intended to respond to needs on the designed plan, the user appropriated by reconfiguring the space on the lived plan.

The corridor typology is an extension of the interior, a space where social activities occur and it provides visual continuity to the outside, especially since the dwelling windows do not allow for this continuity. However, the practices carried out in this space are a lived reality, creating a paradoxical situation between the designer's will and the inhabitants' experience. These practices are summed up by the installation of barriers such as doors, curtains, and bars, as well as by changing the flooring and painting the walls.

Territoriality, control and surveillance, privacy, and security are expression of social behaviour. Even though these are the factors that corridor spatial configuration does not offer, their absence has given rise to corrective behaviours as a way to meet needs that the designer still needs to take into account.

In the end, this investigation supported the idea that the relationship between spatial configuration and behaviour is reversible; an impact exchange takes place to satisfy the inhabitant. Although the corridor typology initially imposed certain behaviours and a specific lifestyle that the inhabitant rejected, this configuration nonetheless had an impact on the user's behaviour, which he appropriated in accordance with his cultural background, lifestyle, and daily needs.

However, the findings of this study, cannot be generalized to other buildings with corridors as they were limited to a single case study. It provides opportunities for research into other cases involving corridors in order to produce more general findings.

Conflicts of Interest: The authors declare no conflict of interest.

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