

The Impact of Pandemic in Domestic Design, An Assessment of Open and Close Plan Apartment Typology in Albania

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Abstract: Pandemics have had their impact throughout the course of history on the built environment. There are precedencies where the disease has been a co-drive to architecture and urban transformations. Many are questioning if the pandemic of Covid-19, will make us reflect on the legacy we are leaving and change it? This is a question that requires complex analysis. A first steps will be to understand what home feels like during this period. This paper tries to understand the exploitation of domestic space during the quarantine through the examination of spatial design. The majority of constructions today in Albania is the collective housing. It is the object of this research, which aims to reflect on the domestic space, making an assessment on how two typologies, the close and the open floor plan reacted in such specific conditions. The methodology that is used to trace public perception is the survey, then the analysis deep into a graphic comparison between the plan of two typologies.

Key Words: Collective housing, Domestic Design, Pandemic

1 INTRODUCTION

Home itself, like architecture, is a reflection of society and its social conditions. With the pandemic situation ongoing, we have become particularly aware of the importance of the domestic environment in our daily lives. For many, the quarantine limited the physical space only inside of a home. Such a new context has changed the use of spaces, the way of exploiting them, and their primary function. Forced to shrink and reorganize all the activities in a defined space all our spatial routines fundamentally mutated during the self-isolation. There wasn't only the issue of working from home but also a mixing of different activities performed at the same time by many family members.

This paper tries to understand the exploitation of domestic space during the quarantine through the examination of spatial design. During self-isolation most of us wished to have lived in a villa, because life in a collective apartment building might recalled us its limits, making us feel more the stark distinction between these two dwelling typologies. The object of this research is collective housing, it aims to reflect on the domestic space, making an assessment on how two typologies, the close and the open floor plan reacted in such specific conditions.

1.1 A throwback in history of architecture and diseases.

Architecture and specifically domestic space have been considerably affected over time by hygiene and health conditions. There are precedencies in the history where the disease as a co-drive¹ to

architecture and urban transformations. The increase of the urban population in industrial cities during the nineteenth century apart from the problem of shortage in housing was also accompanied by poor living conditions in working-class areas, filthy environment, which led to the outbreak of diseases like cholera and typhoid.

The reaction came on a large scale and in architecture scale too. A sanitary reform movement begins around 1830 in Britain as a response to the aggravated situation aiming to retrofit the urban settlements. Ebenezer Howard propose as a solution the "Garden Cities". Great public work projects like the establishment of sewer and water infrastructure, creation of parks and public spaces was the answer to the outgoing conditions. This was the emergence of the modern state. The twentieth century brought the pandemic of Spanish flu and tuberculosis, the companion diseases of modern time. Early measures used in former pandemic like isolation and quarantine were clearly insufficient in an urban society.

Clinical treatment of tuberculosis patients led to the development of typology of hospitals and sanatoriums. The design of the Paimio Sanatorium by Alto reflected the innovations of a more penetrating building from sunlight as one of the main cures to the disease. The architecture principals of Le Corbusier, expressed fully in Villa Savoye, like the pilots to keep the building far from the dirty of ground, the long windows to provide indoor fresh air and light shows the new attitude of architecture as a cure (Le Corbusier 1986). According to Colomina "Tuberculosis helped make modern architecture modern", the high rate of deaths from this disease was a strong reason for the

architects to introduce changes based mostly on health specialist advices than theory itself. (Colomina, 2019, p.63) Architecture in its modern period more than ever reflected the eagerness for cleanliness through sterile minimalism. Glorifying air and light, was a turning point in history of architecture.

Rethinking housing design was the main concern for the architects in the interwar years, it was not just because of the quantitative shortfall but moreover of quality scarcity in urban dwelling. International Congresses of Modern Architecture (CIAM II) presented during its second conference, in 1929 in Frankfurt, the "Existenzminimum" concept. It was discussed that the house should be shaped by standard and rational concepts of space as a suitable minimum space for living; industrialization, taylorization (Frampton, 1999). Many architects like May, Gropius, Le Corbusier, Klein etc., studied and dimensioned habitat cells in space terms but also comfort terms for the "New Man". Gropius outlined the minimum necessary space, the related amount of light, air, and heat needed for a man to conduct a normal vital activity (Bevilacqua 2011). Functionalism brought the most compact design of a house plan.

As well as Reale (2015) stated, a crucial moment in modern architecture period was the shift of interest from aggregated single-family houses to collective residences.

"The experimentation of the last century on housing typology has resulted, in many European countries, in so advanced results that makes it difficult the development of truly innovative solutions which would be able to completely question the typological and distribution system". (Reale, 2015, p.25, author's translation).

So, given that, and the challenge of the current complex situation, it is not easy at all to answer the question of what the post pandemic dwelling will be like. A first steps will be understanding what home feels like during this period which is the focus of this study. The isolation within the physical boundaries of the house call the epistemological question raised by King "how do we respond to the physical box we call the dwelling?" (King, 2004, p.17) Just as he expresses himself, each one in his own way, separately, though the dwelling is general and inclusive in itself.

2 METHODOLOGY AND SURVEY DATA ANALYSIS

This research seeks to understand the behavior and perception of residents during quarantine regarding their living space. The method used is the surveying.

It is composed of 17 questions of different characters. There are multiple-choice questions that direct the answer in a few preset data. There are different questions related to grouping, such as question of family composition, age, type of apartment etc. Dichotomous question which filters relevant information to the topic.

The number of participants is 200 from a random selection, their age² is 69% between 19-35 years old which represent the student and junior labor force, 26.5% are between 36-60 which still personifies a labor force and mostly parenthood. From the results, 88.5% have worked or studied during the lockdown which has added a new temporary activity that demands its space and supplies and it is a worth data for the topic.

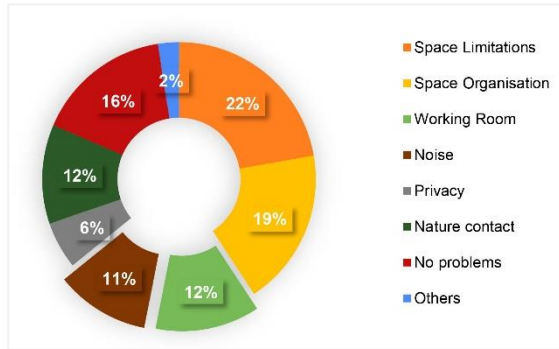
Even though the main focus is the collective building, the single house/villa is a comparative component developed in the survey. So, 30.5% of the participants live in a single house and a general view revealed fewer complaints. This is shown mostly in their reply to the question related to any specific difficulties experienced, the answer of which was "we did not encounter any difficulties" and was often accompanied by the addition "because I live in a villa".

"When choosing between the family house and the apartment, most would usually favor the former" (Stoiljkovic et al., 2015, p.208). For 56% of them the most utilized spot for working was the bedroom. Beyond what previously mentioned, 29% of those who live in a single house wished they had a dedicated studio. It is a considerable percentage, almost one third, which shows the intricacy that everyday working indoor-home brings while the design, like these cases, does not include any extra room apart from the basic living one.

First let's frame a general assessment for the collective building by evaluating the open-ended questions³ used in the questionnaire to have a more free and detailed answer related to the encountered problems and the needs raised during this period. From the analysis, the problems that the participants reported can be grouped as the chart⁴ (Figure 1) shows.

The '*space limitations*' category includes the answers which expressed: feeling place as small, not having enough space, need for another room etc., it covers 22% of the chart. It occurs that 70% of those who replied live in 50-80 m² home surface shared with 4 members.

Figure 1: Encountered problems



Source: Author

To better understand the space, the answers are categorized according to quantity, like the first category explained and quality of the arrangement. Concerns like the position of bedrooms in relation with the living room, toilets far from the entrance, their natural ventilation, a second toilet, an extra room, one side home ventilation etc., are parts of the 'space organization' category.

Even though ventilation issue is determined first by building overall configuration and layout, apartment air circulation is one of the most relevant things we should take in consideration for the topic in focus discussion. Speaking of apartment's interior, the organization of the premises in relation to each other, the fluidity between them directly affects the ventilation.

The detachment of the workplace from housing has impacted the design composition of this last one throughout history. The mechanization of work shifts working-activity always farther from housing. The industrial revolution will deepen this division which will break away completely during the 20th century when the home would mean a shelter and most basic living activities.

Technological breakthroughs of the last years of the past century and the beginning of the 21st created many new jobs, unaffiliated to a specific place. In this context, online-internet connections enabled recovering most of the work during self-isolation, but what did this cause to the home-environments where such intense activity indoor was not foreseen?

It is shown in the stated concerns by survey participants, where 23% have had difficulties in performing their work because of a proper place and noisy. Amongst them, 70% have shared the room they were working⁵ in. These two data, the 'noise' and the 'working room' are shown in two separated groups in the chart, in order to give the proper importance to each of them. So, 11% have had problems with noise and the lack of calm needed to focus at work. But even in the case of not sharing the same space, partition walls fail to ensure

the acoustic isolation⁶. For 12% of people lacking a proper working place, like a studio have been the most difficult part.

More than 68% have been spending time mainly grouped with family⁷ members for a long uninterrupted time, this has caused the feeling of lack of privacy. Referring to the number of members of the family and the rooms of the house, the children mainly share their bedroom so it is difficult for the given spaces to create privacy in such conditions.

During data processing, various parameters are linked which will give us a better understanding of the space stipulation, direct and indirect interrelation among components, in order to have a base to rethink the future design of the home as better prepared space to accommodate similar situations.

After a general assessment, to further deepen the discussion and to understand if any apartment typology⁸ had shown to be a better solution during this period let's compare the answers of the inhabitants of the two different typologies for the same questions.

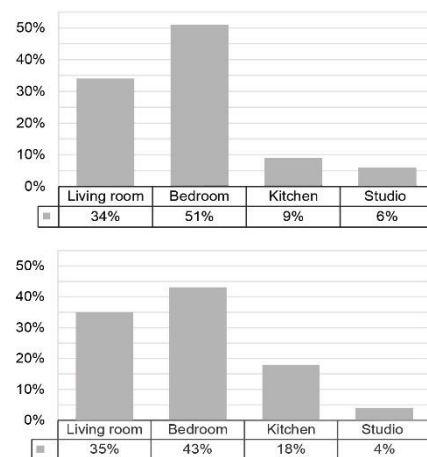
To understand if there was any difference in the everyday routine of exploiting space they were asked: "Which was the room they utilized most". The answers don't show any variation in room usage apart from the fact of the corridor component being exposed to the close plan design.

Table 1 : Most used areas in residential building, Close plan (CP), Open plan (OP)

	Living room	Bedroom	Kitchen	Studio	Balcony	Corridor
CP	40%	20%	19%	3%	16%	2%
OP	38%	23%	18%	3%	18%	0%

Source: Author

Figure 2: Working place during quarantine



Source: Author

This liminal area according to the comments is useful for cleaning purposes and they better serve while having direct access to the toilet. In some cases, they were an acoustic buffer from the night zone.

Being deprived of outdoor interaction it led us to evaluate the balconies more. The Table 1. shows a percentage of usage of balconies comparable to other main rooms like bedrooms and kitchen emphasizing the relevance of this space and its role during the quarantine.

What is noticeable by comparing the charts which show *'where family members were located to work'*, (figure 2) is that in both typologies, bedroom dominates and then the living room, but in the case of the open-plan, their difference is greater. By coupling the chart of the *'problems encountered'* we can explain this difference. Living room as the largest medium in the house invites more people into it. In the open-plan design where the kitchen is an integral part of the living room, the use of these two areas as workplaces or combined with their primary function does not provide the necessary comfort or tranquility. Meanwhile, the indicator of the kitchen environment in the closed plan has a significantly higher percentage compared to the other typology.

Based on their activity and their needs at the end participants are asked *'what additional space have they wished to have'*. Persons living in a close design⁹ apartment preferred they had larger balconies or another one in their room. Then a proper working room would have been good. But in the case open floor design apartments the responses that prevails are *'the need for a studio-room'*.

In the last thirty years the way we use home and what we use it for has changed, as Reale cite in his research of collective residences, "home is not a only a dwelling machine that push way working and socializing spaces but it has been transformed into a multifunctional space that includes many -if not all- occasions for meeting and relaxation". (Reale, 2015, author's translation)

But the configuration of this multifunctional space should take in consideration many derivatives of such assembly. The home spatial configuration is defined first by building geometry itself, from the number of sides orientation, structure type, lighting, dimensions, functions and by the market demand of apartment type.

2.1 Domestic space graphic analysis

This chapter presents graphically the two typologies in the study. The examples chosen are about the same size in order to have more real results in comparative analysis.

the residential construction was based in preset typological models and they were state owned.

"The apartments of Communist period (1980-1990) are relatively small and similar in area" (Yunitsyna 2019) After the 90` with the political changes and market liberalization residential constructions has undergone big changes in structure terms, space terms and typology. Apartments enlarge their surfaces. In this graphic analysis the first plan (on the left of the images) is an example of open plan design, a construction of the last 10 years and the other (on the right of the images) of close plan design selected from communist period legacy.

Figure 4: Itineraries



Source: Author

Table 5: Workplaces and Noise



Source: Author

Table 6: Walkable surfaces



Source: Author

One of the problems raised was managing the overlap of online studying and online working, home working and child care. There was an overlap

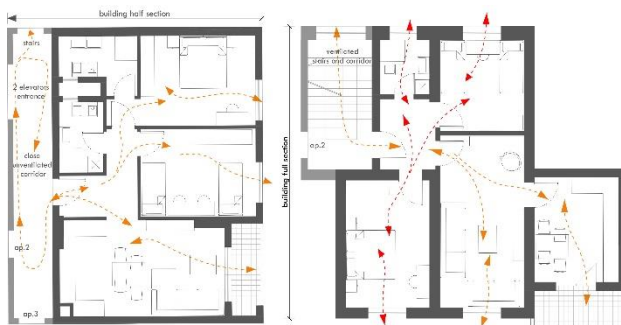
of performing activities. The peak hour was morning to afternoon, during working time.

Figure 4 represents in a schematic form the movements of family members in the morning. The red spots (figure 5) identify the working place and concentric circles simulate the noise. The intersection of circles indicates the noise problem. In the majority of the buildings post 90` in Albania the partition walls can't provide the acoustic isolation, on the other hand the communist constructions because of the structure solution can offer a better wall isolation.

In such situation where natural ventilation should ensure a healthy environment the importance of configuration of premises is essential.

The differences that can be noticed in figure 7 are The differences that can be noticed in figure 5 are the buildings section. The first plan (left) apartment is one side oriented and main rooms are planned along building facade and it is because of the building long section. The second plan is 2 sides oriented and the apartment cross both opposed facades providing direct ventilation which in the first case it is impossible to be reached.

Table 7: Natural Ventilation



Source: Author

3 CONCLUSION

This paper examines the exploitation of domestic space during the quarantine through the survey and graphic analyzes. As mentioned above, the research aims to understand the performance of open and closed apartment typologies under the tense conditions of the lockdown, so it is important to emphasize this is not a comparison of these two typologies on the whole.

The analysis reveals that the problems raised during quarantine in each apartment typology are of the same nature but depending on the apartment typology they are not of the same quantity. Also, from what the indicators have shown single-family house has better responded to such instances. While Stoiljkovic sought ways for multifamily housing design to be more attractive and

acceptable to their inhabitants she built an analogy with a single-family house and its living conditions to be approximated. The inconstant needs of household over time challenge the design of the apartment to be flexible and adaptable. She states that "open plan enables overlapping and combination of different activities at different parts of the day...despite its potential for certain family organizations usually those with children "more classic organizations of apartments, which include a certain constancy are more acceptable". (Stoiljkovic et al., 2015 p: 208-214)

Based on the above analysis, having a dedicated working-place was very important. It seems that the open typology suffers the most from the creation of noise and overlap. Of course, having a desk in the kitchen area makes it a good working spot, but not in the case when kitchen is an integrated space in the living room where usually other members are set to work.

But does it mean that we should turn to design more close spaces? The close design had better react in terms of hygiene, noise, and privacy but the charts show their need for nature contact is greater. Wong claim that open plan is the best approach to achieve most flexible space within the house. (as cited in Grozdanovic et.al, 2014) It also resulted from the survey that perceiving successive space sequences from different points of home helped with the feeling of closer and space lacking.

Since the beginning of the 20th century, Klein considered the psychological effects in its scientific study of rational residential typology. He had not only defined the necessary surface-based on numbers of bed/members, but he had accentuated circulation issues and organization of the premises, believing that poor planning organization in the plan have psychological effects in people's everyday life. (Baffa Rivolta & Rossari, 1975).

Pandemic highlighted more the problems of design, quality of building process for collective apartments buildings in Albania. We cannot say that there was a suitable typology that responds better to this situation because each typology prevailed in different situations. Residential spaces are designed for unidentified inhabitants and generalized basic needs not thinking of the unpredictable changes in the housing program an exploitation. What should be considered in further designs, is the possibility to have more flexible spaces, the ability to adapt them to our needs. Živkovic an Jovanovic (2012) rank flexibility and adaptability as key feature of design for the multifunctional contemporary houses.

The pandemic COVID-19 is not only a health crisis, it is also a design problem.

¹ Changes in socio-economic realm, large demographic movement and technological progression are the main factors which run the building environments transformations.

² Age of the participants in the survey

Age	<18	19-35	36-60	>61
	2%	69%	26.5%	2.5%

³ The 17th question is “What kind of problem and difficulties have u met during your self-isolation at home?”

⁴ Persons who have expressed that they have not had problems occupy about 16%, this should be considered in a broader background where 82% of those who live in collective housing have had various difficulties. Linking this answer with others it turns out that 47% of them need additional facilities (whatever they maybe) which indicates that this value by pondering might be lower.

⁵ It includes also the online study activity.

⁶ In Albania, the partition walls are 10-12cm perforated brick, they don't have any acoustic isolation layer.

⁷ Or home-sharing members if they are not blood related as “family” traditional concept firstly indicate.

⁸ The open and close apartment plan. In the survey each participant describes his apartment, if the kitchen and living room are a shared space, if they have a close, semi close or open corridor to the entrance. They are asked about the year of building construction classifying them before or after 90`, as far as this year is a kind of millstone not only in social political aspect but also in architecture design.

⁹ The table below shows what additional space have habitants wished they have had. To specify the second column; Close plan apartment habitants (3%) has asked for a larger kitchen. Open plan apartment habitants (10%) has asken for a separated kitchen.

	Extra Bedroom	Larger/ separated kitchen	Extra Toilet	Studio	Balcony	None
CP	17%	3%	11%	29%	34%	6%
OP	11%	10%	5%	47%	24%	3%

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