

HOUSING



How does a pandemic change peoples' way of using their living spaces and how might this inform future housing designs?

Rethinking the role of the housing user during the covid-19 pandemic

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How does a pandemic change peoples' way of using their living spaces and how might this inform future housing designs?

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Stage 3 Research Thesis
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Abstract

The current covid-19 pandemic has undoubtedly affected people's lives throughout the world. Being forced to remain indoors due to lockdown restrictions has led to families and individuals having to adapt their living spaces to their changed lifestyles. This research thesis will focus on the impact of the pandemic on the small island of Mauritius, where I experienced two and a half months of strict confinement.

Through ethnographic research of two housing types and two housing users, I explore the ways in which the global pandemic prompted housing residents to act more creatively, more reactively and more carefully, in their adaptation and daily practices.

Drawing from this I reflect back to the way the user is conceptualized by interior architects, and how the latter might design differently in the future with a deeper understanding of the creative possibilities of the housing user.

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Introduction

Living in 2020, in the midst of the Covid-19 pandemic, has been a challenge for most people throughout the globe. One of the most exacting consequences of this pandemic has been the partial or total lockdown imposed by governments to minimize the spread of the disease. This enforced confinement within the walls of our own homes has led us to reflect on the changed status and role of our living habitats.

Significantly, overnight, the layout of houses or apartment buildings had to be adapted to their residents' new needs namely working or/and studying from home. Existing spaces had to become more flexible to allow for multi-functional spaces so that one's house could at once, become a place of work, rest and leisure.

Being from Mauritius, my research will be focused on how the pandemic affected this island and how two housing communities coped under these new circumstances.

Mauritius

Mauritius is a small island in the Indian Ocean, with a population of over 1.27 million and density of 625 people per km² (worldometer, 2020), but a large portion of our country is covered by vegetation and fields of crops. The average monthly salary ranges from 12,323.00 MUR (minimum salary) to 62,629.00 MUR (highest average) (salary explorer, 2020) which is equivalent to 237 to 1204 pounds sterling.

Housing in Mauritius is most concentrated in the Plaines Wilhems district which is the most populous as it comprises of 4 towns. Predominant housing types in Mauritius are single-family homes and apartment buildings, and the average household size is of 3.6 people.



Fig.1 *Single-family home, Mauritius* (2021)



Fig.2 *Heaven Heights apartment building, Mauritius* (2021)

The public health care system is free but not fully equipped to handle large numbers of infected covid-19 patients. Therefore as soon as the Government found out there were 3 local cases in mid-March 2020, they announced a countrywide lockdown (except for essential services) and closed our country's borders to limit the spread of the virus. The Government also took drastic measures including limiting access to supermarkets to two times per week only for each household. Moreover only vehicles with a government issued permit were allowed to circulate and this only till 7pm. People started working from home and students followed their studies online. This strict confinement was imposed for two weeks but was gradually extended to two and a half months.

The way families have coped with this pandemic differs from household to household, but what I aim to focus on is mainly two types of housing, namely gated communities and apartment buildings, I will compare and contrast their users in terms of how they adapted to the pandemic, then reflect and analyze each of their outcomes. Both housing types involve people living in groups, therefore I will emphasize on housing and the community in the Covid-19 context.

MAP OF MAURITIUS WITH DISTRICTS

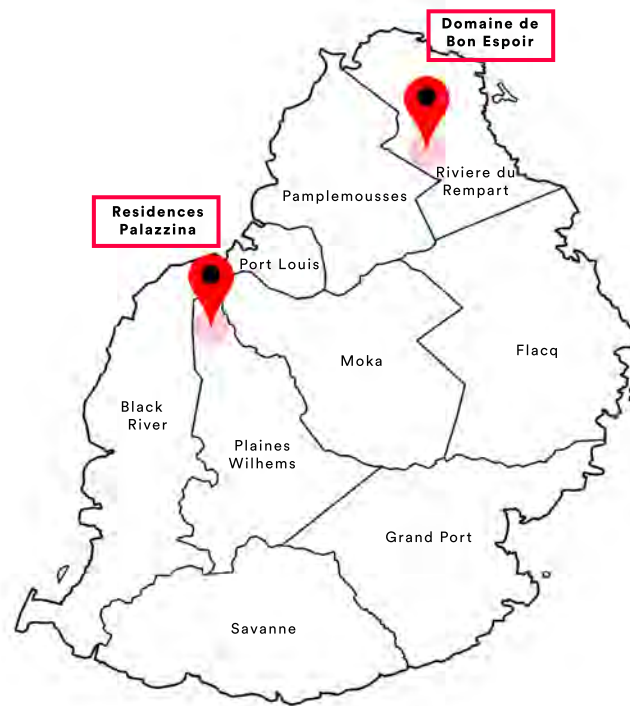


Fig. 3 Map of Mauritius pinpointing case study locations (2021)

The following aerial maps focus on the 2 areas in which the chosen case studies are located.

Chapter One: Literature Review

Introduction

This chapter focuses on literature review: theories being explored include the Ideology of housing throughout the years, flexible housing as well as housing communities. The rationale behind the choice of these topics are because the research question refers to the current pandemic and how users' lifestyles were affected by this event, therefore more general context needs to be given as to how Housing has been designed in the past and for what reasons. These reasons will differ in today's environment because we experienced a unique situation which forced us to use our living spaces differently. Furthermore, Housing communities will be analyzed as my two case study buildings are housing types which are based on community living.

Ideology of housing

In reading around the subject of housing a key theory that came to my attention was the ideology of housing over the years, and one concept developed by Michel Foucault is that of Biopolitics defined as "a political rationality which takes the administration of life and populations as its subject: 'to ensure, sustain, and multiply life, to put this life in order'" (Foucault, 1976 cited in Adams, 2017). This highlights the fact that the government is to some extent controlling its people through reproduction, in order to achieve an exploitable laboring population.

The need for reproduction is the basis of modern housing. To encourage people to drift away from the concept of work when they are in their living environment, there should be enough space for the key functions of the social reproduction of the family unit, for instance cooking, cleanliness and hygiene.... This is how the key term typology emerged, referring to a classification of spaces within the modern house, which ties each room with "a specialized function and corresponds to a family member or to a specific moment within daily family routine" (Aureli and Tattara, 2015). Each space is given a name such as "the kitchen", "the bathroom" to identify them more naturally and easily. "These rooms are organized as one coherent organism by the corridor—a space that both unites and keeps separate the differentiated parts of the house." (Aureli and Tattara, 2015)

Flexible Housing

In contrast to clear definition of types of spaces, is the approach to flexibility of function in housing. Schneider and Till discuss the latter in their book "Flexible Housing",

which refers to “housing that can respond to the volatility of dwelling, by being adaptable or flexible or both” (Till and Schneider, 2007:5). Spaces are capable of different social uses making them adaptable, and are flexible meaning they can achieve a range of physical arrangements.

Flexible housing is also relevant in terms of the residents’ constantly changing needs. A flexible house must be able to fulfill these needs before, during and after the house is occupied by users. “Adaptability” refers to the term polyvalency which explains how spaces can be altered to suit various functions without undergoing any physical changes (Till and Schneider, 2007). Therefore, with regards to the covid-19 pandemic, houses had to be quickly adapted by their users to carry out a multitude of functions such as working from home and carrying out physical activities indoors.

Friction/Frictionless domesticity

The general perception of homes is romanticizing them as safe havens, a place where the nuclear family is the priority, and where each member has his/her own private space away from work/school. However, even pre-pandemic, the crossing over of productive labor and reproductive labor existed under the same roof. “Overlapping of production and reproduction so typical of the postindustrial economy is at odds with the frictionless domesticity of family living, revealing the house, once more as a place where reproduction and production coalesce”. (Aureli and Tattara, 2015). During the pandemic, this tendency was accentuated with working from home and online schooling becoming the norm. Simultaneously, the house became a ‘refuge’ against the virus.

One key aspect mentioned above is “frictionless domesticity” (Aureli and Tattara, 2015) which is further explored by Jonathan Hill in his book “Actions of Architecture” where he refers to “The functional house for frictionless living”. He examines the ideas of friction and frictionless domesticity researched by Alexander Klein in 1928. “Friction” for Klein is considered negative as he interprets the house as a Fordist factory, where each member has their own spaces to carry out their own activities. Therefore, social friction must be avoided, as he “assumed that a one-to-one compatibility of a function and a space is necessary” (Hill, 2003:15)

However, it can be argued whether friction is always considered negative. In a natural home environment, it is essential to have encounters with other family members to maintain a healthy family lifestyle.

“Functionalism stresses function to the point where, because each function has a specially assigned place within dominated space, the very possibility of multifunctionality is eliminated.”

Henri Lefebvre, 1974

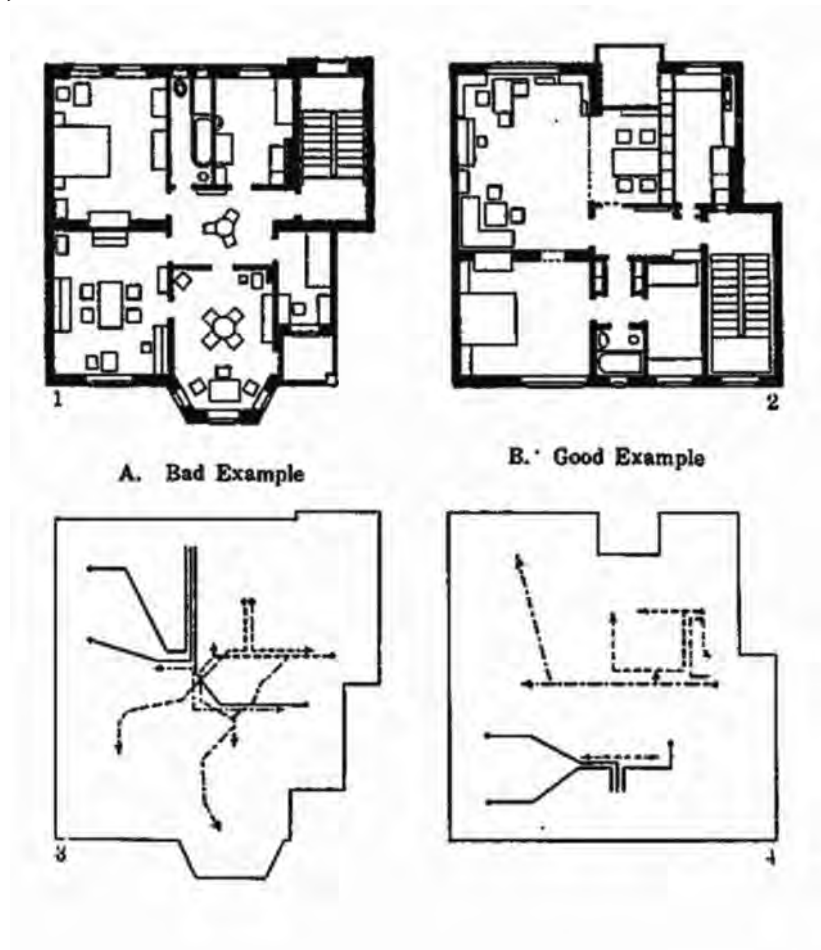


Figure 6: Alexander Klein, *the functional house for frictionless living* (1928)

Passive V/S Reactive or Creative users

Hill then links this idea of the house as a machine to another concept called the 'passive' user, which implies that "the user is passive and has constant and universal needs" (Hill, 2003:17) This suggests that these users have no control over the space, they learn how to use the space 'correctly' which in this case means how the space was designed by the architect to be used. The key words 'constant' and 'universal' highlight the assumption that users' needs will not change over time, and this is what has always informed architectural thinking. (Hill, 2003:17)

However, everyone has different needs and every family has their own requirements which suit their lifestyles. Therefore designing in a 'universal' manner hinders any kind of individuality or specificity of needs.

Contrarily, reactive or creative users have the ability to change the space but in different ways. The reactive user is limited spatially as the alterations he can make are based on the existing conditions, which have been preset by the architect. Essentially the layout can be modified but not to a stage of full transformation.

Creative users have complete freedom to either invent completely new spaces, or metamorphose the space's meaning by using it in an unintended manner. (Hill, 2003:88)

Relating these concepts back to my research question, the way people have reshaped the use of patterns in their homes varies depending on numerous factors. Being creative requires open-mindedness as well as a spacious layout to execute the desired alterations.

Housing Crisis

The current housing crisis is even more relevant today because of the pandemic as the issues related to live work, home studying have caused significant impacts on families worldwide. A house during the pandemic had to encompass several functions including a place to relax and rest, a place to cook and converse with family, a place for adults to work privately and for children to carry on with classes, but also a place of entertainment and leisure, all in one. The worlds of production and reproduction in this context are directly linked and happen under one roof. But to what extent is this practical, and beneficial to families, especially those who have relatively small homes? It could result into family conflicts if resources are limited, for instance a limited number of rooms, no garden, or living in a confined space such as an apartment building.

There has been a change in housing design which caters for more avant-gardist lifestyles which revolutionized ideas of co-living and co-working. These ways of living defy the traditional family oriented households which prioritized reproduction, and move towards a new generation of community based living promoting togetherness and unity. "Instead of being organized as an autonomous unit, housing must be conceived as a composition of equal private spaces organized in relation to shared collective spaces. Instead of being the quintessential symbol of private property, the house can be rethought as a system of collective property." (Aureli and Tattara, 2015)

Through these collective properties, new systems of dividing domestic labor can be set up such as cooking, gardening, carpooling, child care, which fosters a mutual agreement between neighbors or housemates. Co-operating to achieve common goals while being part of a community or group of people challenges the ideas of the nuclear family living.

Defining community

The term "Community" defined in this thesis is "A group of locally residing households, whose members believe that they share basic interests with each other which they share with no other, express these beliefs and sentiments through common activities and tend to interact positively with each other" (Zialcita, 2008:6)

Gated communities (GC) can be defined as a neighborhood which has been privatized through the installation of gates and security systems, and sharing amenities such as streets, greenspaces, pools...(Le Goix and Webster, 2008:2)

In the context of Mauritius, GCs are made up of several properties either owned or rented which are administered by a syndicate. These are referred to as Property Owners Associations (POAs) employed by a governing body formed from residents tied to a common set of interests by contract. (Le Goix and Webster, 2008:3)

From what has been researched previously, Gated communities can thus be classified as a collective property. However, all dwellings are private, but common activities can take place, and neighbours are able to achieve a sense of togetherness through them. A balance is thus created between the private and public spheres.

Furthermore, GC's have been associated with urban fragmentation. Being highly privatized in nature, "they form new extraterritorial spaces beyond public management and control and, consequently, they render the boundaries between public and private space increasingly irreconcilable" (Coy, 2006)

Methodology

This thesis has been informed by a combination of secondary data from literature and primary qualitative data produced by the author. The literature explored is based within the fields of architecture and housing studies, and further ethnographic research have been gathered to examine the two chosen case studies. The latter are two different housing types in Mauritius, more specifically a gated community and an apartment building.

I selected these types of housing in particular as they are different from one another in terms of layout, spatial arrangements and location (rural v/s urban), but share similarities such as common areas or high level security. A further reason for selecting these particular housing communities, was that I had access to potential interviewees through personal connections. I recognize that the choice of homeowners is not a representative sample of the whole of the island.

In terms of people's experience of the pandemic, people who have their own space and access to ways of changing it are in a privileged position. However, for my personal research, it was relevant to look at these groups as my interests lie within the scope of the creative user and how people shape their houses. Primary research has been carried out with residents of both regarding how they dealt differently vis a vis the pandemic, and therefore an overview of the outcomes has been acquired.

Face to face interviews (refer to appendix) have been conducted with the homeowners of both housing types, asking them a very specific set of questions on how they used their homes differently during the pandemic. As a form of visual architectural representation, the interviewees were asked to map/diagram/draw/annotate on a plan of their homes, whilst they were being interviewed.

I set up my phone on a tripod to record the interviewees while they answered the questions and drew on their plans.

The plans of the two homes were given by the interviewees themselves, which I printed out in an A3 format for them to easily annotate on. However, the plans had to be simplified on CAD so that the information being mapped out stood out and so that the plans were easy to understand at first glance.

Other visual methods I adopt in this thesis are taking photographs of the various spaces in the houses and later on layering them with sketches to make them into illustrations. These serve to communicate how the users were interacting with the various spaces of their homes.

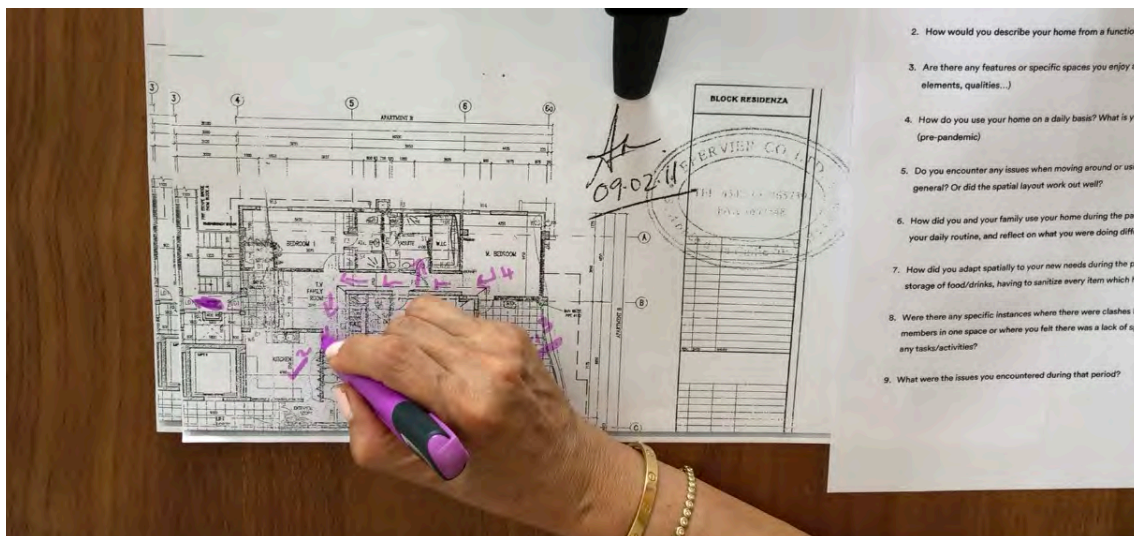
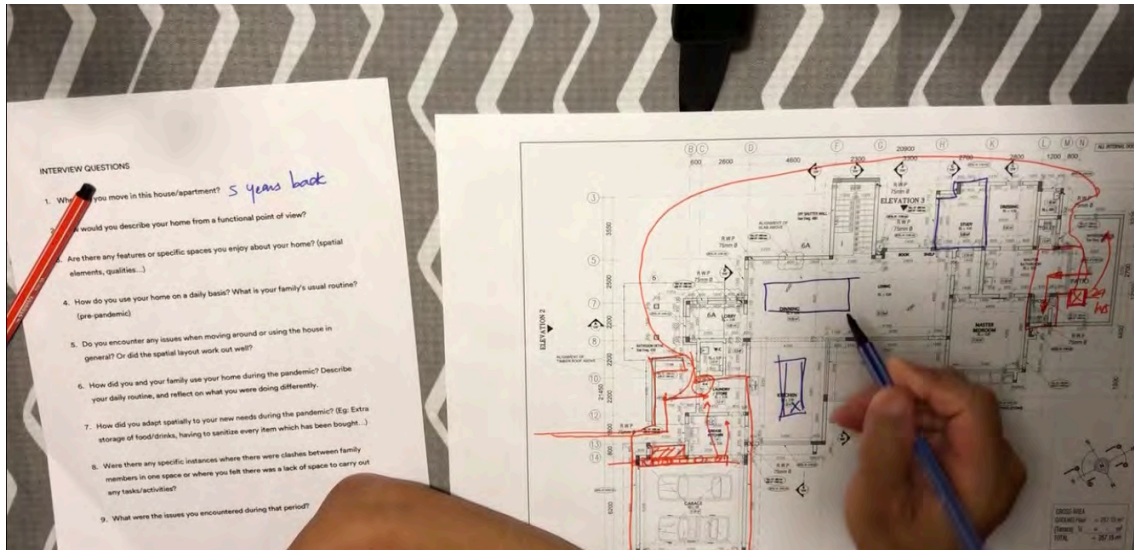


Fig.7 Max drawing and annotating on his house plans (2020)

Fig.8 Sherley drawing and annotating on her house plans (2020)

Chapter Two: Case Studies

This chapter highlights two popular types of housing in Mauritius, namely Gated communities (GC) and apartment buildings. We will look into more precisely “Le domaine de Bon Espoir”, which is a GC in the North of Mauritius, and apartment buildings “Residences Palazzina”, situated on the Central plateau in Rose-Hill city.



Fig.9 Aerial View of Bon Espoir scale 1:100 m (2020)



Fig. 10 Aerial View of Palazzina Residences
scale 1:100 m (2020)

Domaine de Bon Espoir

The “Domaine de Bon Espoir” developed in 2010, on 60 hectares, has a total of 84 houses. Built on 93 plots of land and is divided in 6 sub-neighborhoods. A portion of the property is privately owned, while the others are rented by mostly expatriates who live in Mauritius. The ‘domaine’ has many beautifully tended common green areas including a fountain, as well as a historical chimney where there is a swing and large trees. Streets within the CG also count as shared space and they are particularly large measuring approximately 3.5 meters in width.

Quality of life

One interesting building regulation pertaining to this GC is that owners are allowed to build only on 1/3 of their land. The remaining space is to be kept as green area. During lockdown, it proved particularly useful to residents who could enjoy this space for leisure related activities or/and start their own vegetable gardens which encourages the concept of being self-sustainable and contributing to a greener future. While many persons suffered physically and mentally from the confinement within their homes due to movement restrictions, the residents of this GC were able to enjoy a certain degree of freedom in that they were able to pursue activities such as jogging, cycling or dog-walking safely within the walls of this vast compound. This contributed to a general sense of wellbeing despite all the stress this pandemic engendered.

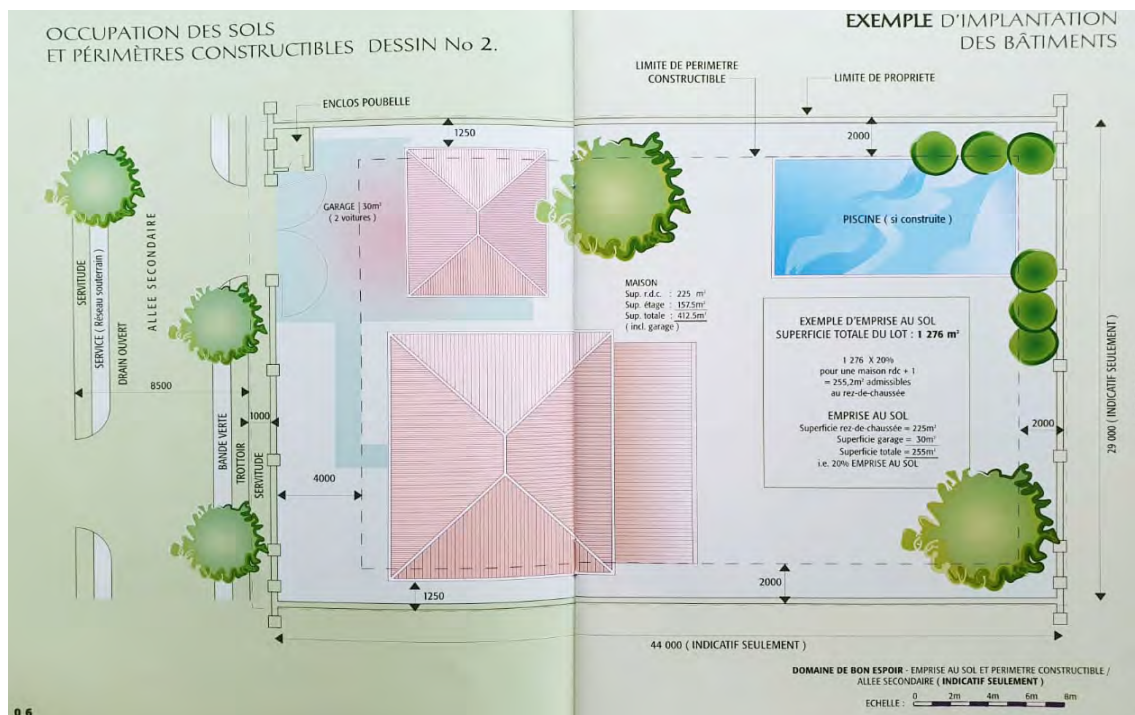
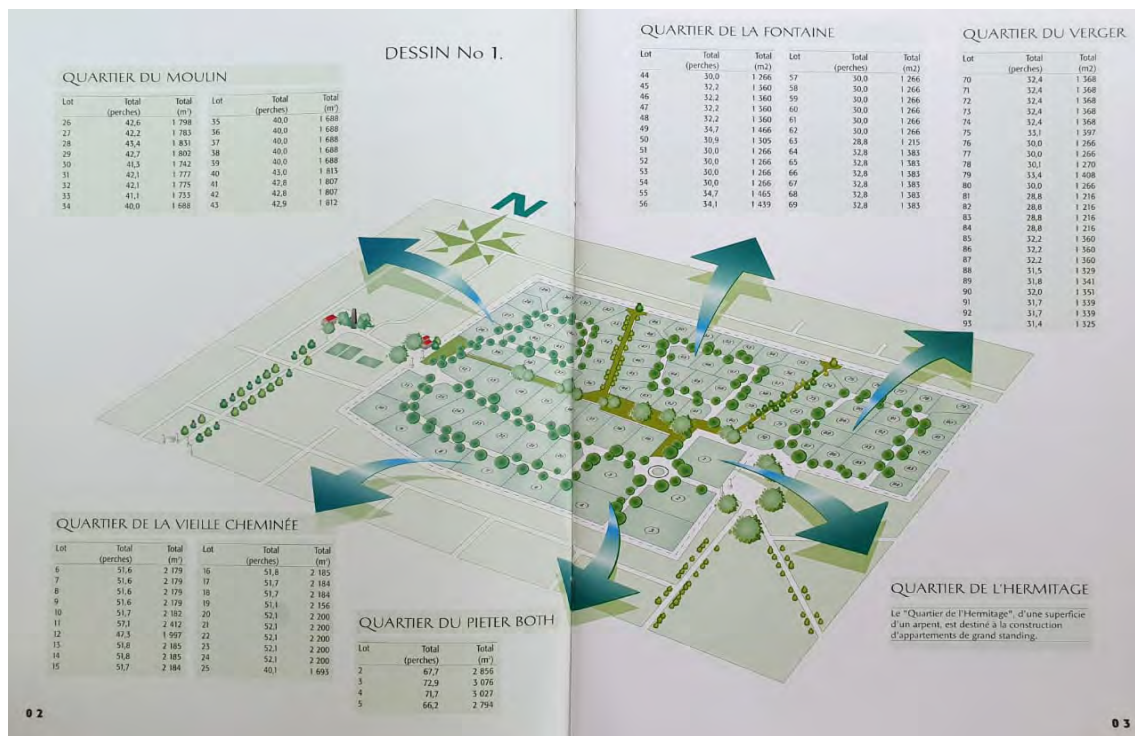


Fig.11 Plan of Bon Espoir (n.d)

Fig.12 Example of building layout (n.d)



Fig.13 . Gated entrance with security guard's kiosk (2020)



Fig. 14 and 15 Streets within the GC (2020)



Fig. 16 *Historical Chimney and common greenspace (2020)*

Fig. 17 *Fountain and common greenspace (2020)*

Grouped food orders and deliveries

When the Covid-19 pandemic hit in mid-march, Mauritius immediately went into complete lockdown, up to the point where supermarkets were forced to temporarily close down due to people not complying to safety measures. This prompted residents of this GC to mobilize and arrange with food and household goods suppliers, to deliver within the GC. These large food companies accepted to door deliver to this remote area given the substantial orders secured from this GC.

A process was set up whereby a family member of each household was added to an online group chat, with designated members responsible for a specific type of product (eg: meat, fruits, dairy, ...). A website was created and all orders were posted on that platform, grouped and ordered by responsible member.

The deliveries would then be effected at the main entrance with all parties abiding by sanitary regulations such as wearing masks, temperature checks and social distancing.

The numerous benefits of this system were that residents were bulk buying which ultimately allowed them to negotiate lower overall prices as well as prioritization of their orders and faster home deliveries. Even when supermarkets reopened residents still preferred to order in bulk with home delivery to reduce chances of getting contaminated by going out.

Common Activities

As a result of this pandemic, another initiative taken by this local community was to clean up all the greenery and debris that had been growing and accumulating on the common green spaces in the GC. Gardeners who usually maintain the outdoor green-spaces were not working during lockdown, so residents organized a gardening day where they could all come, bring any tools or equipment they had, and help with the gardening duties. Surprisingly, almost everyone turned up and as a community they divided and conquered.

Also, every week, they decided to collect green waste around the GC with the help of a trailer. People would take turns to move the trailer from one place to another to pile up the waste. This would then be recycled into compost to fertilize plants. Furthermore, another action taken by a group of people within the GC, was to carry out regular security patrols specially at night. Security guards were not working at night due to curfew so no one was surveilling the property at night. Since this GC is relatively isolated in a rural area, residents wanted to ensure that no one was trespassing.



Fig. 18 Residents collecting vegetables from delivery truck (2020)



Fig. 19-22 Community Gardening (2020)

Analysis

The way this particular community has responded innovatively and creatively in using their living spaces during this pandemic shows how an unexpected situation resulted in positive outcomes.

In the context of covid-19 this type of property has proved to be favorable, since the families themselves are confined within the safety of their own homes, but the GC offers these huge greenspaces on which residents can carry out any recreational activities either as a group or by themselves. All the common areas including the streets are spacious enough for residents to keep at least a 1 meter distance between them, which reduces the chances of contracting the virus through close contact.

Furthermore, this type of GC encourages and fosters better relations between neighbors and members of the community as a whole. The pandemic triggered a bonding among residents and this led to common decisions beneficial to their own living environment.

Nevertheless these GC in Mauritius are targeted towards a more exclusive group of people namely high income earners. The minimum size of land plots there, are 1266 square meters which make the acquisition and build up on one of them quite costly. In addition, there is a monthly syndicate fee of around 62 pounds sterling which residents have to pay to maintain the common areas. Furthermore, GC are located in remote areas far away from the city, which might make commuting more difficult unless the residents work from home.

Generally speaking GCs are not necessarily perceived as positive; studies have revealed the discriminatory nature of these compounds, which originally were built to gain exclusivity by the most elite group of people in a society (Crow and Mah, 2012). Living and forging connections within only a particular sphere, can lead to a type of isolation. It can be argued that GC inhabitants are disconnected from and therefore less empathetic to concerns and hardships of people living outside their own small “world”, more specifically those of lower social classes.

Yet another downside would be the building regulations which need to be followed in order to construct a house within a GC. Architectural freedom can be limited; to maintain a homogenous aesthetic, the syndicate can impose constraints regarding roof shapes, house colors, layouts...

Residences Palazzina

The Palazzina apartment building, situated in the busy town of Rose-Hill, was built in 2010 on 4400 square meters of land. It consists of 3, 6 floor high separate blocks with a total of 72 apartments inhabited by 150 residents.

Common amenities in this property are elevators, a courtyard, parking areas, a club house, a swimming pool as well as a fitness center. These are accessible to all residents and are frequently used.

Quality of life

Residents living in this Apartment complex have easy access to the common amenities and the pool and fitness center provided a distraction and entertainment during lockdown. Each apartment is at least 140 square meters which proves to be quite large in size. Furthermore, every apartment has its own balcony, and during confinement, the importance of balconies as breathers and a communication space between neighbors surfaced worldwide.

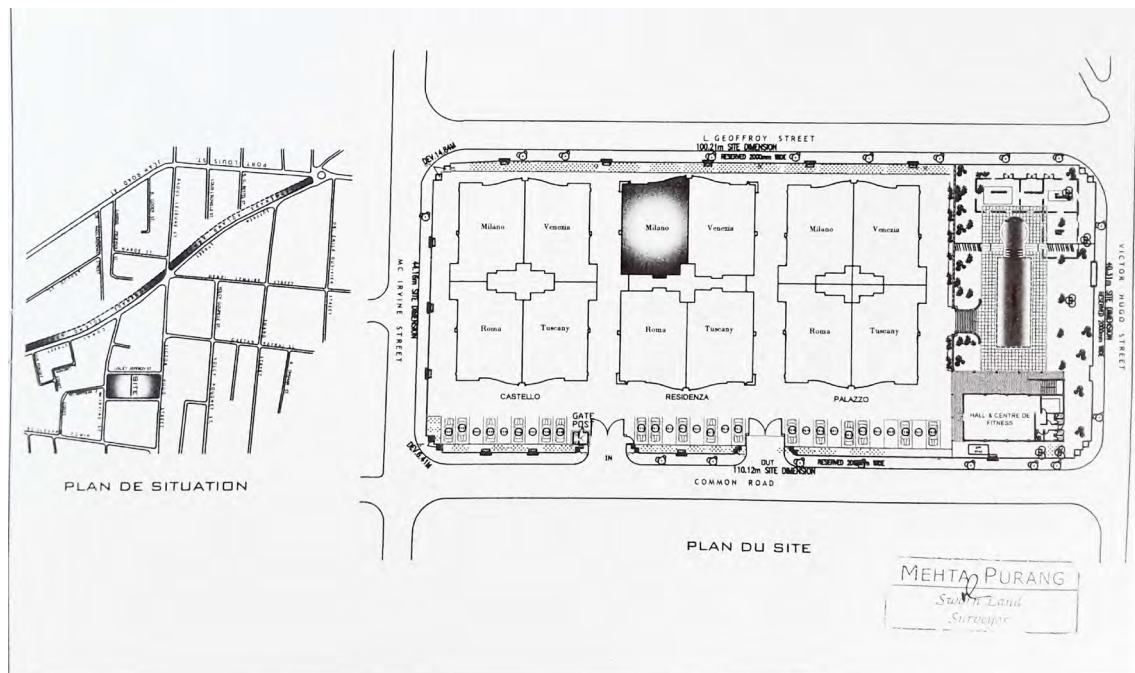


Fig 23. Site plans: Location plan (left), Site plan (right)(2011)

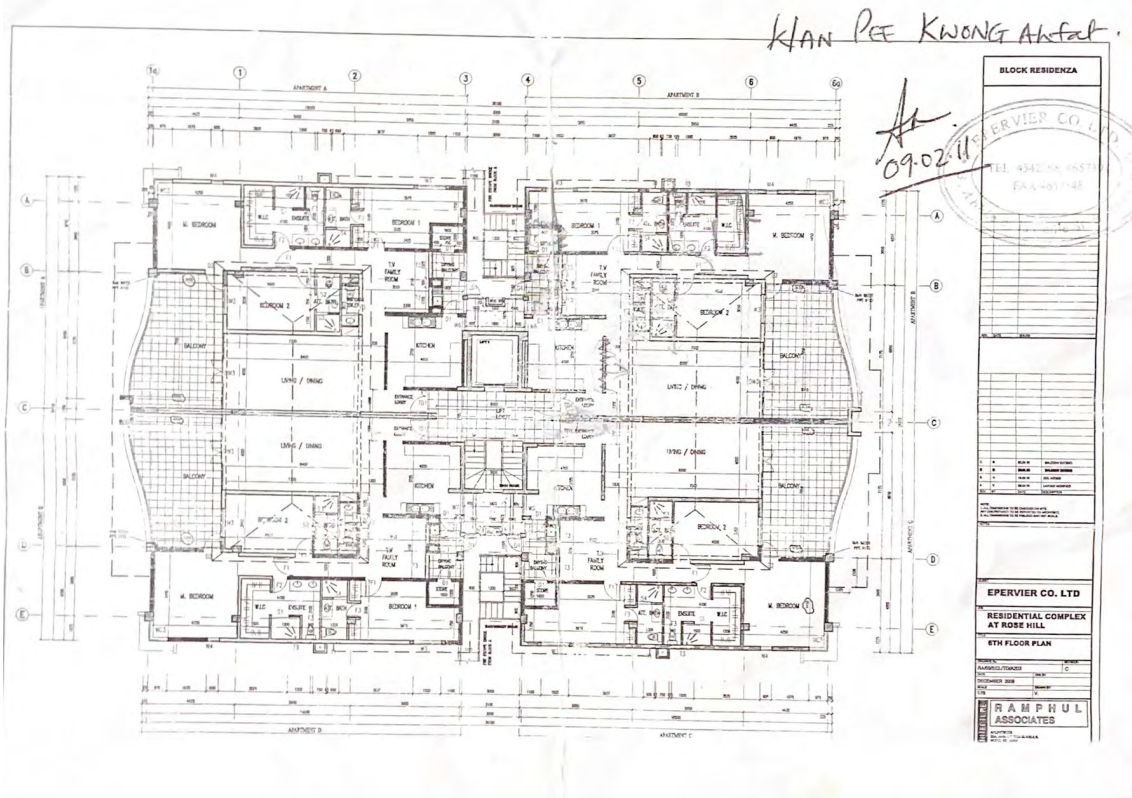


Fig 24. 6th Floor plan of Residenza block (2011)



Fig. 25. *Residences Palazzina* (2020)



Fig. 26 *Residenza block* (2020)

Fig. 27 *Connecting corridors from one block to the other* (2020)



Fig. 28 *Club House* (2020)



Fig. 29 *Swimming Pool*(2020)



Fig. 30. *1st floor entrance* (2020)

Fig. 31 *Parking area*(2020)

Dealing with the pandemic

This set of apartment buildings had another approach to dealing with the pandemic, as the syndicate did not enforce many health and safety protocols on the premises.

With regards to security, the guard was instructed to only allow residents into the building and refuse access to any outsiders/visitors. Regarding deliveries, temperature checks were carried out on the delivery people before they entered the courtyard where delivery would be effected. Also, as soon as residents stepped out of their apartments, wearing masks was mandatory.

To use the pool or fitness center during lockdown, residents had to prebook their time slot with the security guard to ensure no crowding there.

On the other hand several sanitary measures were not implemented, such as the installation of a sanitizer at every entrance, or limiting the number of people who enter the lift, or even social distancing on stairs or in corridors.

With regards to food deliveries, a few people were in charge of different food items. One person was responsible for vegetables being delivered twice a week and the other organized bread deliveries every two days. As there are three building blocks, communicating between all 3 can be difficult, therefore the information was written on pieces of paper and stuck to the apartment's mailboxes in each building.

Analysis

This particular housing community has dealt with the pandemic differently. Most residents living in the apartments know their neighbors and some are regularly in touch with one another. During lockdown, some residents have taken initiatives to help, for instance one of them owns a bakery, and had bread delivered every two days to the building.

However, these initiatives were quite limited and were taken by a few people only, and more important activities such as cleaning common areas were not carried out by residents.

The most important drawback however, was the lack of a sanitary protocol regarding common spaces such as lift and stairs. Had one resident contracted the virus, the whole premises would be at risk. Therefore, the question is would this apartment have been a more suitable place to live during the pandemic if sanitary measures were put in place?

On the other hand, this apartment building is of a high standard compared to most others around the island. The fact that it has common amenities such as a rentable club house, fitness center and a pool highlights its upscale nature. The apartments themselves range between 140-185 square meters, which is spacious enough for one family and is larger compared to standard apartments elsewhere which vary between 100-110 square meters and offer no extra facilities.

Therefore, syndicate fees for the Palazzina residence are as costly as the fees for the Bon Espoir residence. The cost of the apartments themselves, unfurnished were priced at around 140,000 pounds sterling, which is a high amount to pay for the working class Mauritians.

Chapter Three: Interviews

To achieve a better understanding of the interior spaces of the housing types previously explored, interviews have been carried out with one user of each. The interviews consist of a series of questions which refer to how each family's routine and habits were altered during the pandemic and subsequently how this pandemic affected the spatial use of their living spaces.

As a form of visual representation, I have asked the interviewees to map out the way they have used their living spaces during the pandemic on a plan of their homes.

Interview Summary Bon Espoir Resident

Mr. Max Li Ying, a 55 year-old fashion designer designed and built his house 5 years ago in the Bon Espoir Gated community. His family consists of 4 people, him, his wife and his two teenage sons. They all have busy work/school schedules and had to change their lifestyles due to the pandemic.

Max's home has been designed specifically according to his family's needs, and therefore each member has his own individual living space. The master bedroom is located on the ground floor, linked to a large walk-in closet and master bathroom which opens onto a private external patio rendering the space almost as its own studio. The teenagers have their own living spaces upstairs which comprises of 2 bedrooms, a shared bathroom, a TV/Game area and a large terrace.

The grease kitchen, laundry/storage, outdoor sink and garage areas are all located on one corner of the ground floor and all have direct access to outdoors, implying that they are accessible without going through the main interior spaces of the house.

The features his family enjoy the most are the 3 connecting open-space areas namely the kitchen, living and dining areas, as they allow the family to meet up, communicate and share family time. The house itself has 3 terraces, two on the ground floor and one on the first floor. These terraces are widely used all year round because of the tropical climate, and the openings, allow for a good airflow throughout the house, which is essential in hot temperatures.

The family's usual routine before the pandemic hit involved going to school or work everyday and therefore not being at home during the entire day. In the afternoon the kids would enjoy the green areas by walking the dog and meet other residents jogging or biking.

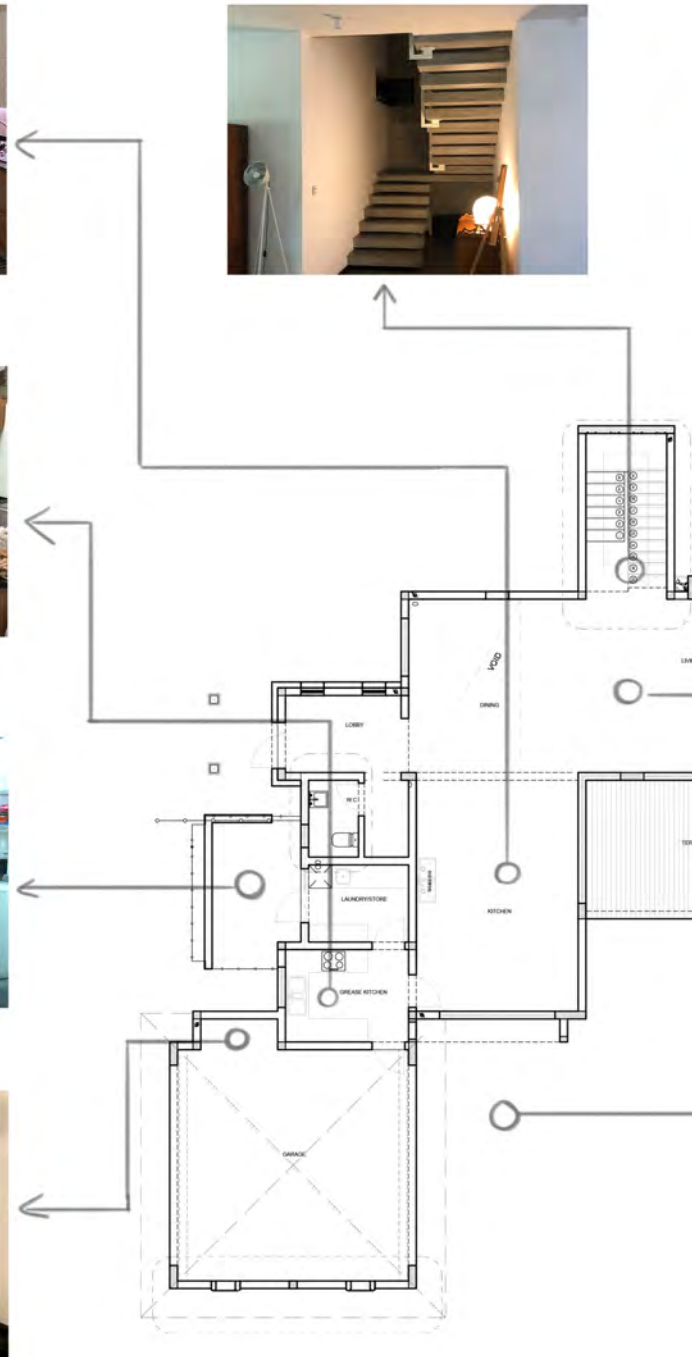
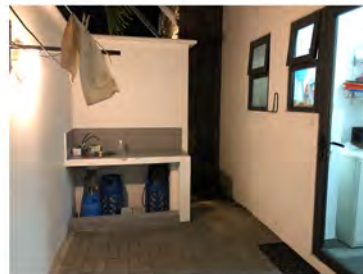
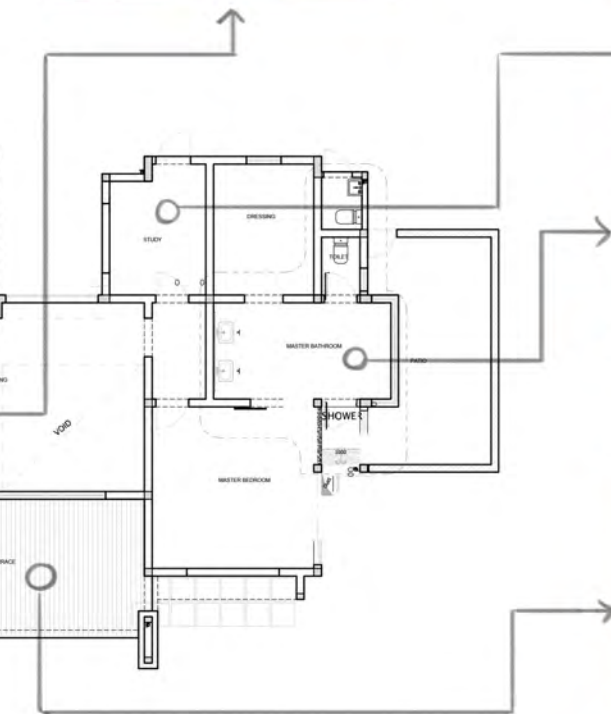
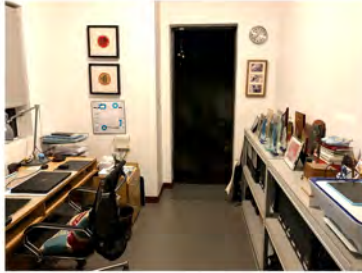


Fig. 32 *House plan with photos (2020)*



This pandemic generated a paranoia about bought groceries having no contact at all with the inside of the house. So this family took all sanitary precautions, starting off by using the outdoor sink to wash all fresh produce such as fruits and vegetables, and then stored them in the grease kitchen. Asian households have grease kitchens which are smaller functional kitchens as the food is commonly stir fried and generates smoke. Therefore to avoid spreading the smell throughout the house, the grease kitchen is used. Any other non-perishable items were kept in the garage where there is a storage closet, and additionally long tables were placed along the garage's walls to keep household items, which would then be quarantined for at least 3 days before being moved to the kitchen or laundry for storage.

Moreover, precautionary measures were taken to avoid any transmission of the potential virus through clothes or hair, and every time someone came back from an outdoor trip, they would wash their hands in the outdoor sink, leave some of their clothes in the washing machine, and walk around the entire house to the master bathroom's shower. There is direct access from the master bath to the outdoor patio and therefore the family could easily go from one place to the next without ever stepping inside the house. A laundry basket was installed outside on the internal patio, where clothing would be left for 24 hours before being transferred to the laundry room.

The family was working/studying from home during the pandemic, but fortunately each one had their own space. The dining table was shared between Max's wife and one of his sons, Max himself worked in his study and the other son worked in his bedroom. However, since the first floor is a mezzanine, and there is a large void, family members could not turn on the TV upstairs when someone was working in the dining room downstairs as the sound would echo throughout the house and disrupt the person working. So, they had to be considerate of each other's privacy and respect their personal space.

Given that they have a large garden, and already had a small vegetable garden, confinement spurred them to plant new varieties of herbs and vegetables. Over the 2.5 months of quarantine, they were able to use what they harvested to cook, which encourages this concept of self-sustainability.

The following plan illustrates Max's use of his house during the pandemic. An interview was carried out whilst he was mapping and annotating.

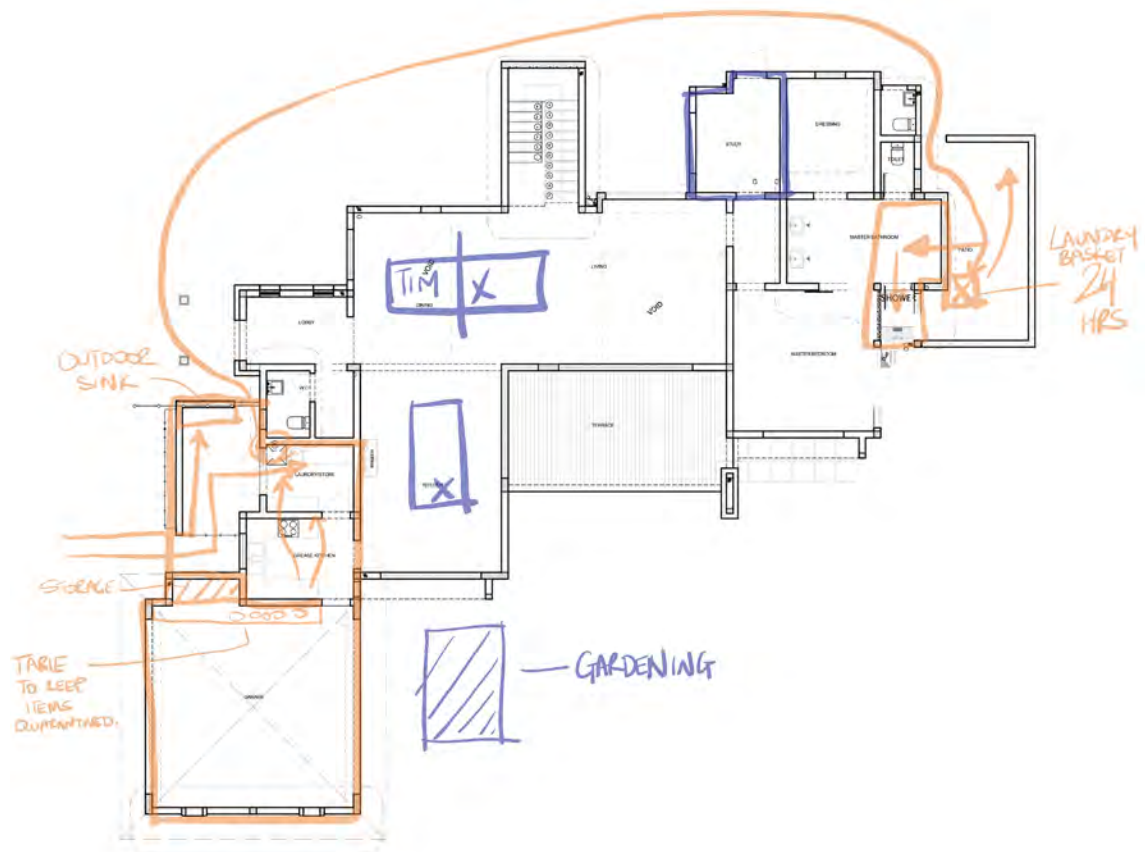


Fig. 33 Mapping Exercise (a) : Life during the pandemic (2020)

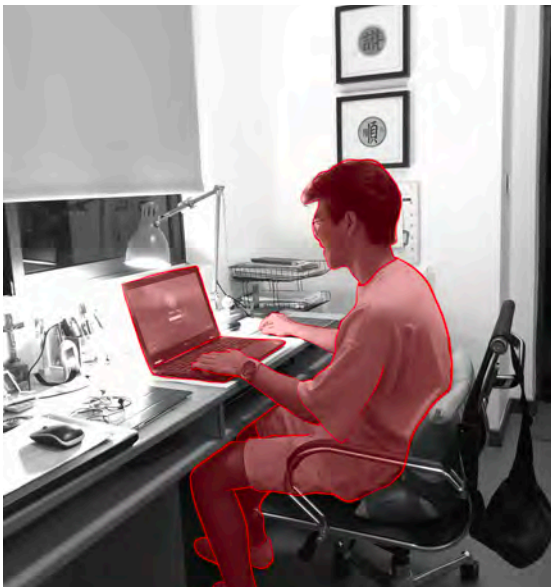


Fig. 34 *Gardening in Vegetable garden (2020)*



Fig. 35 *Work From Home in Study (2020)*

Fig. 36 *Washing groceries in Outdoor Sink (2020)*

Interview Summary Palazzina Resident

Mrs. Sherley Wan, a 55 year-old retired woman lives in one of the apartment units with her husband and her adult son. She has a very active lifestyle, and enjoys spending her time carrying out various activities. However, during the lockdown, she was forced to remain indoors which resulted in her and her family to change their habits and lifestyles.

Her 5th floor apartment of 185 square meters consists of 3 bedrooms, 3 bathrooms, a living space, a balcony, kitchen and grease kitchen linked to the emergency stairs. She describes her home as spacious enough for 3 people, and is content with the layout in general. However, she has made changes to the open balcony, converting it to a closed space by encasing it with large paneled windows.

She enjoys the open-plan feature of her house which merges her kitchen with the living area, as it allows for more natural light to come in and makes the spaces flow seamlessly together. The most functional part of her house is her kitchen and her grease kitchen which are connected and where she does most of her cooking.



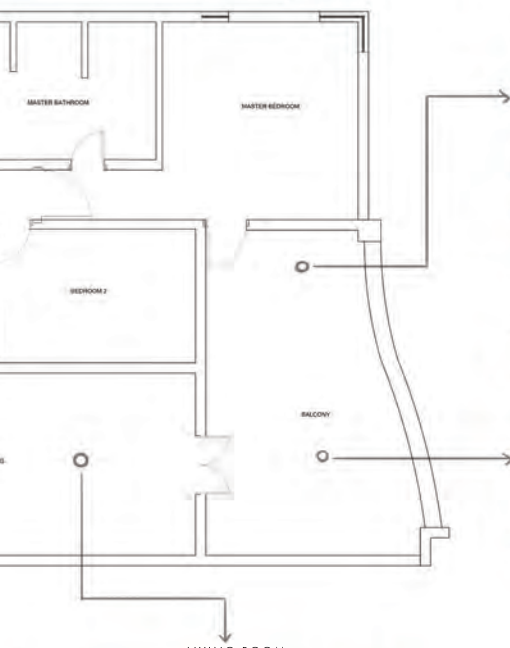
Fig. 37 *Apartment plan with photos (2020)*

HEN

GREASE KITCHEN



VERANDA



LIVING ROOM



Her experience of living in her home pre-pandemic does not include staying inside the house everyday. Although she is retired, she takes part in many activities every week and is often out. The common areas available in the premises are also crucial to her daily routine, for instance the pool and club house which she uses often to exercise or simply for leisure. Her son works and is therefore not at home except at night, and her husband also works part-time and is constantly in and out of the house.

Once the government imposed full lockdown, it took a while for this family to adapt to their new living situation. They felt anxious throughout this period and took extreme measures in order to stay safe. As the syndicate had not implemented many sanitary protocols, the family felt the need to go the extra mile to make sure they were safe. They proceeded in a very logistical manner when receiving any deliveries. Avoiding using the common lift, as well as refraining from entering through the front door and having to go through the living space was essential. So they climbed 5 flights of emergency stairs with their groceries, then left the products in the small corridor leading to their grease kitchen. All the products which were not being used straight away were left in this corridor for at least 2 days to quarantine. Any fresh foods or other items which need to be used immediately were washed in the grease kitchen's sink or sanitized. Afterwards they were moved to the fridge or to a clean counter space. Due to the bulk-buying there were instances where there was a lack of storage space in the grease kitchen for certain products, and they had to be moved to cupboards in the kitchen itself. Water bottles, were what they stocked the most and were also disinfected one by one before being stored on the balcony because of the limited space.

Sherley also commented on the lack of space to carry out her usual physical activities during that period and although she could move things around on the balcony to acquire more space, it was inconvenient to move large pieces of furniture every time. Although the common fitness center remained opened, there were little sanitary restrictions put in place, and therefore she preferred to avoid using them altogether.

Given that her son worked from home during lockdown, the family had to respect each other's personal space and privacy and set boundaries. This was done to prevent any disturbance and to avoid any conflicts between family members.

She also placed a sanitizer bottle and face masks in her entrance lobby so that she and her family would sanitize their hands when entering the house. Face masks are compulsory in public areas in Mauritius, therefore placing a box at the entrance makes it easier to remember to take one when going out.

The following plan illustrates Sherley's use of her house during the pandemic.

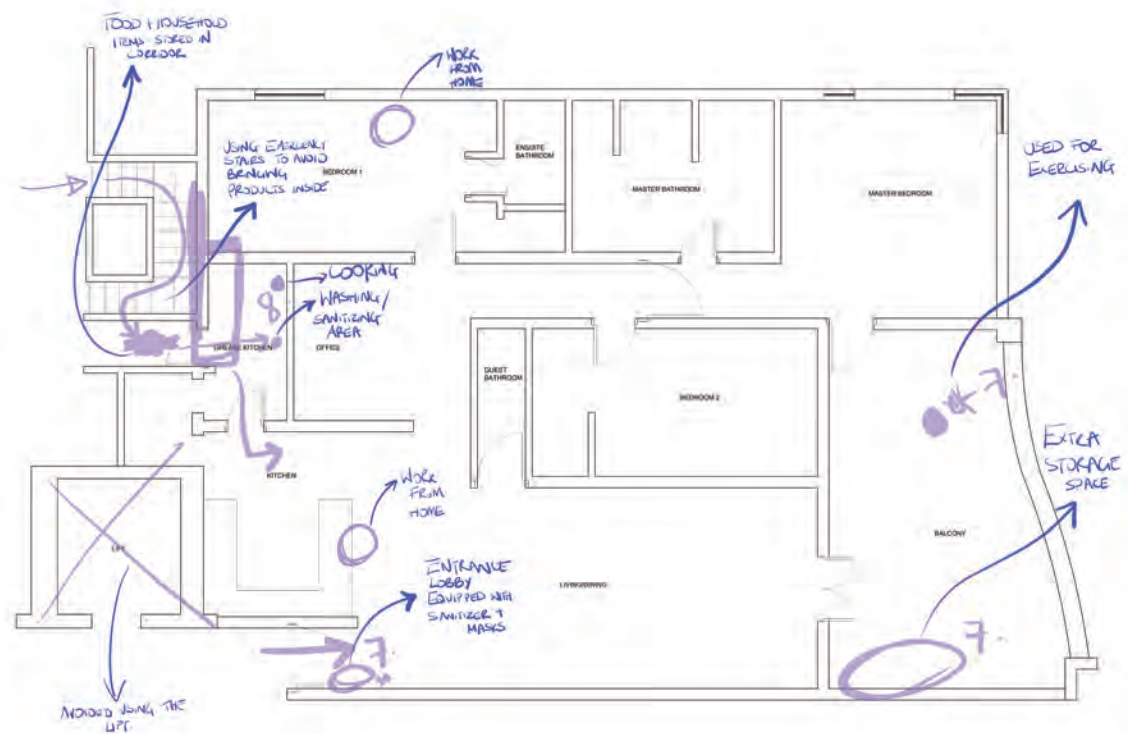


Fig. 38 Mapping Exercise (b) : Life during the pandemic (2020)



Fig. 39 *Exercising on the balcony (2020)*



Fig. 40 *Climbing emergency stairs with groceries (2020)*

Fig. 41 *Sanitizing hands at the entrance (2020)*

Chapter Four: Comparison and Analysis

The analysis explores how theories of firstly flexible housing and secondly friction/frictionless domesticity are relevant to the case study houses. This analysis also features annotated plans which are included as visual aids to emphasize on the various points being put forward. One interesting fact about both homes is that the owners were involved in the designing or modifying the layouts to suit their family's needs. From an Interior Architect's perspective, there is a direct connection between the design and the user.

Although pre-pandemic both families' houses/apartment could be categorized as 'modern and functional' housing as discussed in my literature, the transition to 'flexible housing' during the pandemic was effective only to a certain degree. The void in the 1st case created sound migration from upstairs TV room to downstairs common area used as a work area. And in the second case the open concept of living/dining table areas were not conducive to work when food was being prepared in the kitchen. Therefore 'friction' as defined by Klein did sometimes prevail in both cases and behavioral changes had to be adapted to be more careful, and take care of the different needs of the different users.

The house layout in both cases allowed the owners to keep their living quarters as a safe place free from the virus. The way Sherley adapted her house spatially to this particular situation was by making use of her grease kitchen and emergency stairs area to leave her products in quarantine or to disinfect them. This revealed to be unpractical with time as she had to climb 5 flights of stairs carrying her groceries and spaces were quite narrow and small which was limiting. Moreover, the fact that her opposite neighbor could see her groceries outside comprised her privacy.

In Max's case, the design of his house proved to be flexible and the fact that one specific section was dedicated to disinfection and storage of goods helped with limiting any contact with other indoor spaces. Additionally, direct access to one bathroom from outside meant that anybody could shower and have a change of clothes before accessing common areas of the house.

The theory of reactive and creative users is reflected in both case studies. Sherley's apartment in itself was designed to only allow flexibility to some extent, and it was her input as a creative user which transformed the balcony to a closed space allowing for multifunctionality during the pandemic.

Max was involved in the design process when building his house and therefore had planned for his family's evolving needs. He acted as a reactive user as he used his existing conditions to carry out changes to his new pandemic related lifestyle. The house ultimately was not physically transformed, the user was the one who creatively exploited some areas and found solutions to deal with the pandemic. From another perspective, Max was part of a creative gated community of people who initiated food deliveries and collective clean ups.

Conclusion

To conclude, this thesis has revealed that the pandemic has massively changed people's way of using their living spaces and they needed to be responsive, reactive and most of all creative.

Individuals are neither only creative nor only reactive users but will learn practices of both at some point. Looking at Max for instance, from the perspective of Hill's framework, he could be referred to as a reactive user. But the fact that he was so involved in the design of his home, seemed to have enabled him to think more creatively about these spaces which in the end provided room for more flexibility. The concept of the constant and universal design, is here not applicable given that Max was a private client who asked for a specific configuration of spaces which complements his family's requirements. Therefore, the design remains specific and unique to the family's ever-evolving needs, making the idea of changing uses more inherent in the design of that property.

The idea of 'taking care' is manifested under several forms: As creative and reactive users family members take care of one another by being respectful of each other's personal space. They also take care in terms of the virus, by changing their patterns and practices (disinfecting groceries, collaborating with members of their extended community, inventing new routes to avoid stepping indoors...) which all show how this concept happens on the level of the individual, of the family and of the wider community.

Given that people have changed their ways of living during the pandemic, this might inform future housing designs. Both case studies have shown the importance of the grease kitchen as a transition space between the potentially infected outdoors and safe indoors. Nonetheless, the stoves in the grease kitchen pose a fire risk during the process of disinfection. Hence, future housing configurations might include a barrier zone in which users can decontaminate their groceries as well as leave unsanitary clothing.

The way we as interior architects, conceptualize the user is crucial. We should think more carefully about intertwining the productive and reproductive spheres as they have been brought together during the pandemic. For instance working from home has been normalized during the pandemic and will likely become permanent for most in the near future due to technological advances and to economize resources. As interior architects, we are required to think about its implications. Designers need to understand the role which users play, particularly the creative and reactive users and work more respectfully and ambitiously to give them the necessary architectural framework to change their spaces and try out different layouts. It can be easier as interior architects

especially when being assigned large scale projects, to have in mind this idea of the constant and universal user. However, this thesis has now shown that as designers we can provide spaces which allow for more adaptability or recognize a need for changeability. One positive outcome of the pandemic is that people have proven to be incredibly creative, adaptable and resilient in many domains including housing.

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Appendices

Appendix A

Interview Transcript – Interviewing Mr. Max Li Ying, resident at Domaine Bon Espoir

User description

Name: Max Li Ying

Age: 55 years old

Profession: Fashion Designer

Number of family members: 4

1. When did you move in this house/apartment?

In 2015

2. How would you describe your home from a functional point of view?

The house has been designed specifically according to our family's needs, and it we personally enjoy it. The spaces correspond to each family member, and each member has their own individual living space. We are fortunate to have many green areas and we are also lucky to be in a gated community, meaning that it is a secured environment, it's very quiet and we have a good quality of life.

From a functional perspective, the house is functional because of its open spaces. We as a family enjoy that because these are spaces where we meet up and communicate for instance for meals. Private spaces stand on their own and everyone has their own private space. We have many terraces around this house which we are able to use nearly all year round because we are in a tropical country. As this house has a lot of openings (doors, windows) once we open up any window or door there is a good airflow throughout the house, which is helpful since the summers here are quite hot.

3. Are there any features or specific spaces you enjoy about your home? (spatial elements, qualities...)

I personally really enjoy the open kitchen which merges in the dining and living areas. They are the most used areas of the house and we are constantly moving around in these spaces throughout the day. The 3 areas are closely connected and they also allow access to 2 terraces, one at the front and a small one at the back. We use the front terrace at night especially in summer to have dinner and it's also useful when we have guests over.

Also, the master bedroom is located on the ground floor, which is convenient for us as parents. The master bathroom is linked to the bedroom and a large walk-in wardrobe, and also has its private internal patio which is practical and renders the space almost as a studio of its own.

The master bedroom is located next to a small study which enables us to separate working from relaxing.

My two children each have their bedrooms on the first floor, which is a mezzanine and has a TV/game room. They share a common bathroom. There is a large terrace as well on the first floor which is agreeable in summer but is very windy in the winter.

5. Do you encounter any issues when moving around or using the house in general? Or did the spatial layout work out well?

No, not really. Our house has been designed from scratch according to our needs, it took us 2 years to build it. The house is adapted to our current needs and to daily functions. In 5 years our needs have evolved, and they keep evolving as the pandemic has shown us, but the house itself remains enjoyable for our family and it is a long-term investment as well.

6. How did you and your family use your home during the pandemic? Describe your daily routine, and reflect on what you were doing differently.

During the pandemic I think that everyone has had a paranoia in terms of the products that had to be quarantined for at least 3-4 days before entering the house. Therefore we used the grease kitchen, laundry, outdoor sink and garage excessively during this period. We have this small outdoor sink on the side of the house, where we washed the fresh products such as fruits/vegetables or whichever items we had to use straight away, and then brought them inside in the laundry/storage area. The other products were kept in a small storage area in the garage, and we also configured a method where we placed long tables in the garage where groceries would be quarantined for at least 3 days before moving them to the grease kitchen or laundry.

Furthermore, when anyone would go out to supermarkets to shop, once they came back they left some of their clothing in the washing machine, then walked around the back of the house to access the master bathroom's shower. As it was recommended to take at least a 5 minute shower after going out to public spaces during the pandemic, we thought it would be a good idea to implement this in our household as a precautionary measure. We installed a laundry bag on the internal patio, where underwear or other clothing would be left for 24 hours before they were transferred to the laundry room. All this was done to assure the least amount of contamination possible and avoid entering the house with outdoor shoes or clothes as there were risks of transmitting the virus.

Another activity my wife and I have undertaken during the pandemic was gardening. Since we had free time, and already had a small vegetable garden, we decided to plant a larger variety of herbs and vegetables. In the end we were able to use what we yielded over the 2.5 months of quarantine.

7. How did you adapt spatially to your new needs during the pandemic? (Eg: Extra storage of food/drinks, having to sanitize every item which has been bought...)

Refer to question 6

8. Were there any specific instances where there were clashes between family members in one space or where you felt there was a lack of space to carry out any tasks/activities?

Given that the house is quite big, there were minimal clashes between family members. We were all working/studying from home, and I was in the study, my wife worked in the dining room or the kitchen and sometimes shared this space with my eldest son who would have Art projects to carry out. And finally my other son would work in his room, which made him isolate in his room for a whole day until dinner.

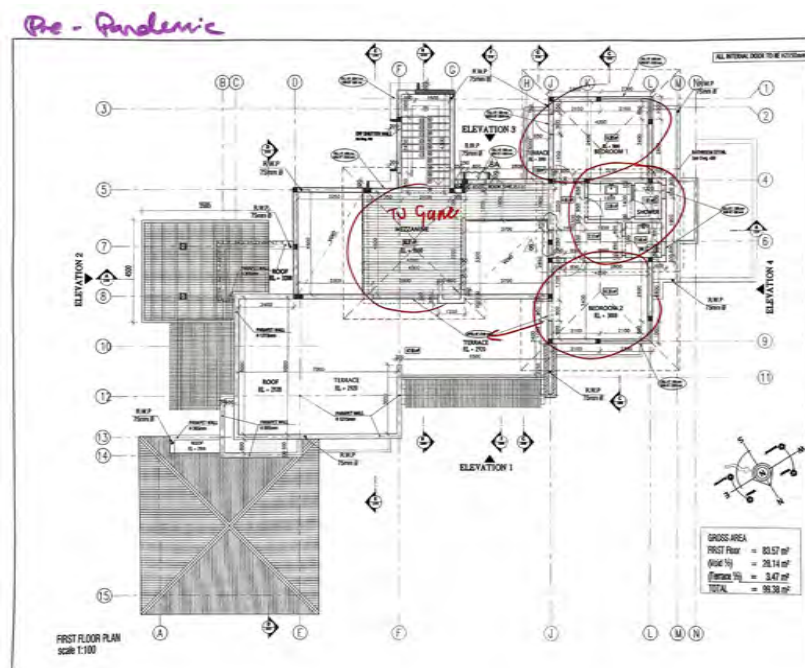
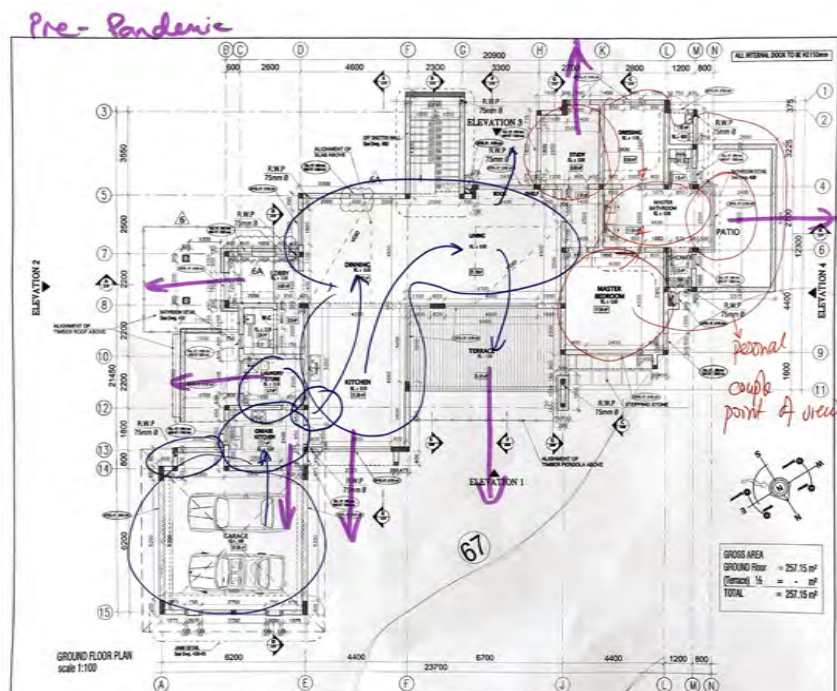
9. What were the issues you encountered during that period?

The primary issues we encountered was with purchasing groceries. But we were lucky enough to be in this gated community where we were able to group the groceries and buy in bulk. Given that this Gated community consists of around 100 families, this represents roughly 300-400 people. And for the firms that were delivering online, we ordered their products in bulk. The deliveries were controlled by the security guards, who checked the delivery people's temperatures at the gate and ensure they were wearing masks and gloves.

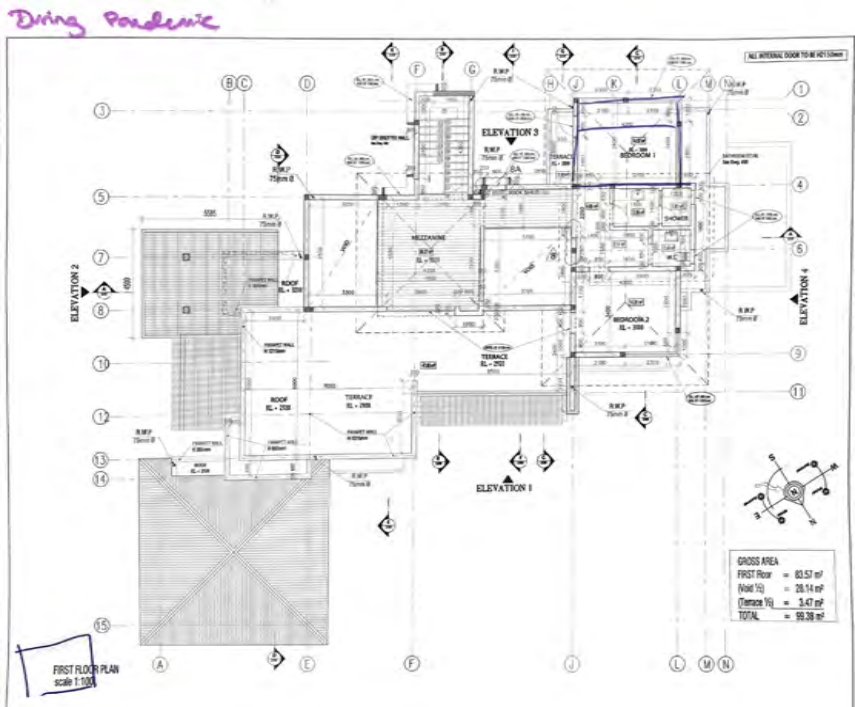
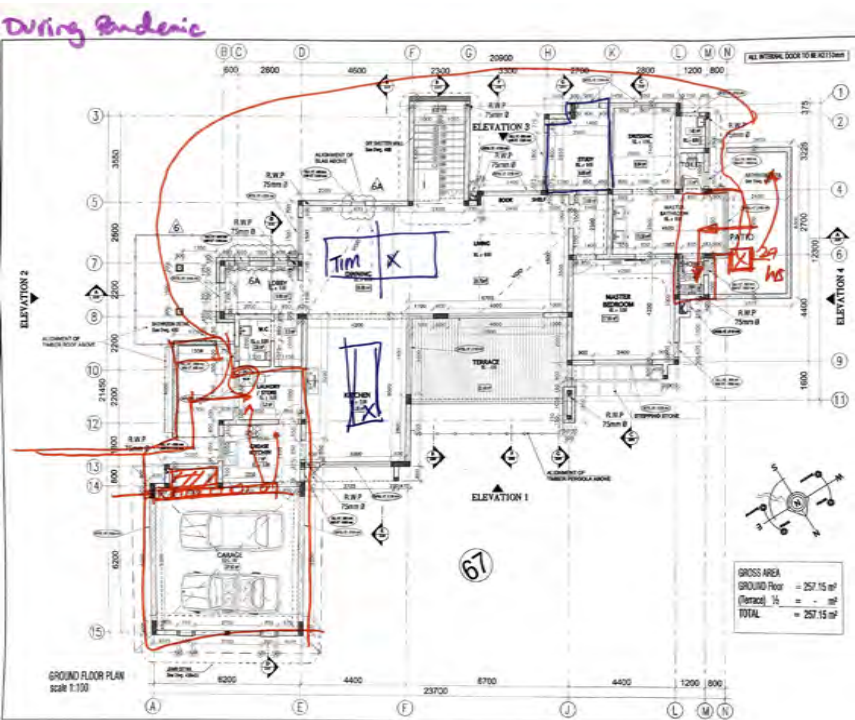
Appendix B

Mapping exercise with Max during interview – Scanned plans

Pre-pandemic mapping



During pandemic mapping



Appendix C

Interview Transcript – Interviewing Mrs. Sherley Wan, resident at Residences Palazzina

User description

Name: Sherley Wan

Age: 55 years old

Profession: Retired

Number of family members: 3

1. When did you move in this house/apartment?

In 2015

2. How would you describe your home from a functional point of view?

From a functional point of view, I have to say that I enjoy using my veranda which I recently converted into a closed space. Originally it used to be a balcony but I decided to add large paneled windows and close the upper part. I've done this to obtain a larger functional space and even added another living area as well as a long dining table.

Another part of my house I find very functional is my kitchen which has a bar area where my family and I usually enjoy our meals. The grease kitchen is also useful, it's where I cook the most since Asian cuisine tends to be oily, we don't actually cook anything in the kitchen itself. The grease kitchen is a smaller space and we close the doors to avoid smoke and smells to spread through the entire apartment.

Here as you can see we have an open plan kitchen which merges with the living area. As much as this is an aesthetically pleasing feature, it can also be a disadvantage at times because again the smell in the kitchen disperses around the living area, and there is also the noisiness aspect which can be problematic at times.

3. Are there any features or specific spaces you enjoy about your home? (spatial elements, qualities...)

My favorite feature would be the veranda for sure. The fact that you are able to open up the windows and see the view as well as let fresh air in is very enjoyable. It's also practical because in case of heavy rain or cyclonic weather I can close up the windows to prevent any damage.

I also enjoy the layout itself from the entrance to the veranda. Everything seems to flow since it is an open plan, and from the kitchen if I open up the doors to the veranda I can see the view outside.

4. How do you use your home on a daily basis? What is your family's usual routine? (pre-pandemic)

Usually I wake up in the morning, use my ensuite bathroom, then go straight into the kitchen to prepare food. If I have to cook I go in the grease kitchen as well to do that. Afterwards, I go out to carry out activities such as yoga or shopping, and often times I use the common areas in the premises such as the pool and club house. Then, when I come back from my activities, I cook dinner for the night and watch some television.

5. Do you encounter any issues when moving around or using the house in general? Or did the spatial layout work out well?

In general I think that this apartment is quite spacious for 3 people. It is approximately 2000 square feet, and common areas are large. So usually we don't have issues especially because most of the time my son for instance is out of the house for work, and I myself have my own activities outside the house everyday. Therefore the only times when we are together might be early during the day for breakfast or late at night for dinner.

6. How did you and your family use your home during the pandemic? Describe your daily routine, and reflect on what you were doing differently.

The main thing we did differently was we used the emergency staircase a lot when receiving food deliveries. Our apartment is on the 5th floor, which meant we had to climb 5 flights of stairs with the vegetables/fruits or meat products in our hands. The main reason we did that was because the emergency stairs are located outdoors and are linked to our grease kitchen. There is also a small corridor, where we could leave the products outside to "quarantine" if ever we did not need to use them immediately. We wanted to minimize any contact from products we received with our living environment. We washed our delivered products in the grease kitchen itself and kept them there or in the fridge.

We thought that if we used the lift, then it would also put us as well as others at risk since there were no limitations in terms of the number of people which could enter the lift. But we also thought that carrying these products which had not yet been sanitized and then touching the buttons inside the lift is also spreading germs. These were different and bizarre times, we spent most of our day sanitizing and washing products that were being delivered, and the rest of the day cooking food. On other days, I tried to exercise indoors on my veranda and relaxed by watching TV but there was not much else to do.

7. How did you adapt spatially to your new needs during the pandemic? (Eg: Extra storage of food/drinks, having to sanitize every item which has been bought...)

My answer to that will be similar to the previous question. I decided it was better to

sanitize and wash all the products which were being delivered as a sanitary precaution for my family and I. We also used the emergency staircase to avoid any contact in the lift as well as entering through the front door.

Any extra water bottles were stored on the veranda, and for food we kept everything that was bought in the grease kitchen. There was a lack of storage space in the grease kitchen, so we had to sanitize everything and move them in the kitchen cupboards.

When we went to the supermarkets, we also wore an extra layer of clothing on top of our clothes, which we then immediately threw in the washing machine (located in the grease kitchen) when we got back. We also took showers as soon as we got back.

My son had to work from home so sometimes to get a better internet connection he had to come in the living room. This meant that my husband and I could not watch TV or make noise in the kitchen as everything is open plan.

8. Were there any specific instances where there were clashes between family members in one space or where you felt there was a lack of space to carry out any tasks/activities?

There was a lack of space to carry out physical activities, since we are in an apartment and we don't have a garden. But we went for walks every afternoon in the courtyard, and had to take our precautions while doing so.

We chose to avoid using common areas like the fitness center, so we had to move furniture around in the house to do yoga or other physical exercises, which was problematic.

We also had to be considerate of each other as a family, and set boundaries. For instance when my son had to work via zoom calls we had to be quiet and avoid making noises around the house.

9. What were the issues you encountered during that period?

One major issue I encountered were with the deliveries. To avoid using the common lift, we decided to only use the emergency staircase to bring our groceries up to the apartment. We are on the 5th floor, meaning we had to climb up 5 flights of stairs which was exhausting at times and not practical at all.

However to minimize any contact between the groceries and the inside of our house, we had to implement this method. The small corridor we had to use to store our purchases was also very narrow and small so we had to sanitize and wash most of the items in the grease kitchen. One issue we later realized was that keeping a sanitizer in the grease kitchen was a dangerous fire hazard.

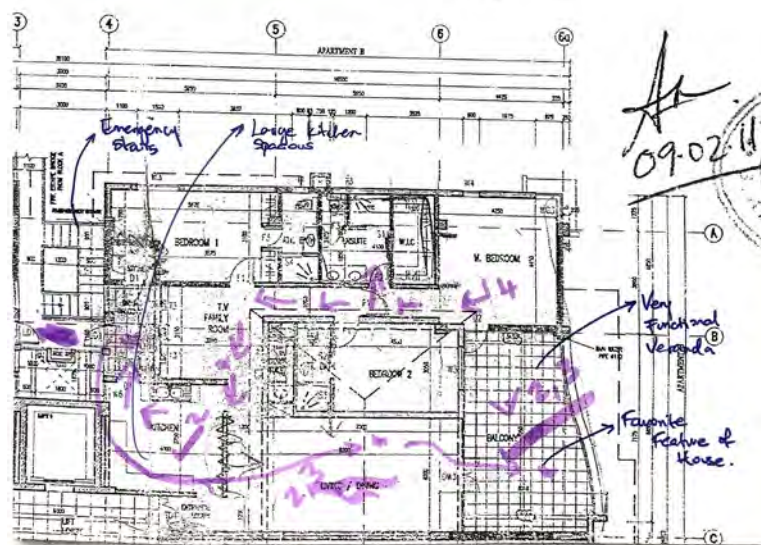
Finally, we were worried of what could happen if we got any maintenance issues during the lockdown period. Usually we call a handyman if there are any problems, but during this period, no outsiders could enter the premises. So we would have had to contact the syndicate and arrange with them which could have taken more time.

Appendix D

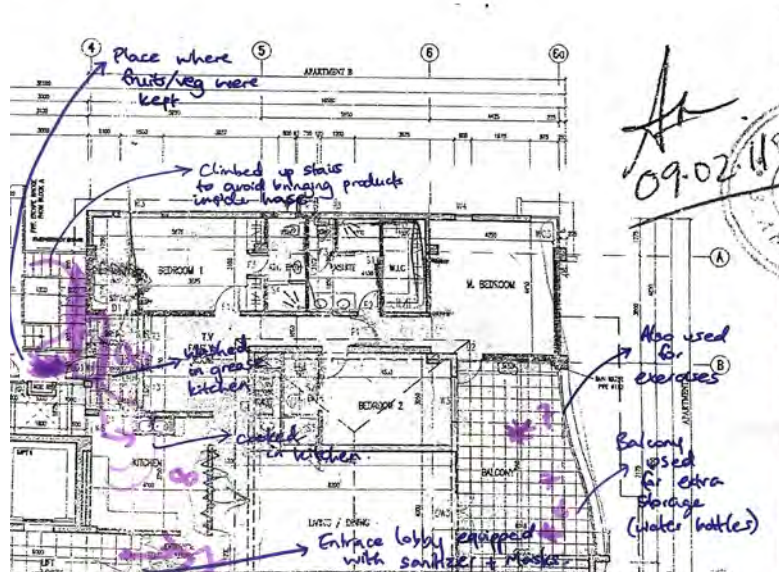
Mapping exercise with Sherley during interview – Scanned plans

Pre-pandemic and during pandemic mapping

Pre-pandemic



During Pandemic



HOUSING

BA (Hons) Interior Architecture & Design
Stage 3 Research Thesis

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