ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL OF SCIENCE ENGINEERING AND TECHNOLOGY

A VISUAL METHOD OF ANALYSIS FOR USER MODIFICATIONS IN CLIMAT DE FRANCE

Ph.D. THESIS

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Department of Architecture

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

CLIMAT DE FRANCE KULLANICILARININ YAPI ÜZERİNE UYGULADIKLARI DEĞİŞİKLİKLERİN GÖRSEL ANALİZİ

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To my father,

FOREWORD

September 2020   Amina REZOUG

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ABBREVIATIONS

CIAM   **:** Congres Internationale d'Architecture Moderne
FIS   **:** Front Islamique du Salut
FLN   **:** Front de Libération National
FLC   **:** Fondation Le Corbusier
PSB   **:** Les Pierres Suavage de Belcastel
OPGI   **:** Office de Promotion et de Gestion Immobiliére

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A VISUAL METHOD OF ANALYSIS FOR USER MODIFICATIONS IN CLIMAT DE FRANCE

SUMMARY

Architecture is first shaped in relation to certain intentions and motivations of the designer and then appropriated by the user according to the needs and practices. This thesis proposes a visual computational methodology for analysing residents' modifications in the modernist mass housing project of Climat de France. It inquires into the user context of its inhabitants and the design context of the architect and authorities' intentions.

The problem of modern housing has been a demanding issue in architecture since the industrial revolution. Modern architecture addressed this problem with mass housing, to provide access to hygiene and functional dwelling. This modernisation disseminated around the world with the idea of universal human needs, however, it was European ideas that disseminated and left little for plurality and diversity. European colonies in Africa were seen as vast lands to explore the modernist housing experiment and test its extents regardless of the different cultures, geographies and climates. A global movement of modernist functionalism was adapted to implement the idealized dwelling. Algeria, an important colony of France had been introduced to modernist housing through a program called "the housing battle" during the last years of the French occupation. Mass housing projects known as the grand ensembles were not only implemented as ideological tools to modernize the Muslim local population but also as political tools to repress the growing resistance against colonialism. This dissertation focuses on Climat de France, a monumental modernist project constructed within the housing battle program that has been the background of many conflicts and transformations since its realisation. Originally built as *evolutif* housing, this project offers very tight layouts with minimal fittings that fall short to satisfy the basic needs of the crowded Algerian families. Climat de France as many other projects implemented in the same period have been transformed by its residents during the years in order to adapt the space to their needs and lifestyles. The inadequate living conditions in the grand ensembles that are still inhabited by their first residents have been a persuading social issue in the Algerian agenda and demolishing certain settlements was adopted as a solution by the local authorities.

This dissertation offers a visual and computational analysis of the residents' modifications in Climat de France in order to expose the use of space and its temporality in relation to the socio-cultural factors of its users. Climat de France is an important case besides its architectural value as a colonial modernist project, with all the residents' modifications it holds additional value as an inhabited space. It showcases an important example of how design intentions have been invalidated by the residents in their use of space and making it their own. Home making is an extensive field of study in social science, I refer to this literature in order to ground residents' modifications with the concepts of self expression and making oneself

home. I distinguish the design context and the user context in order to identify the duality of Climat de France and explore their interrelation in shaping each other. Iintroduce the user context in order to understand the use of space and the temporality of domestic spaces as manifested in residents' modifications. There is much to learn from the continuity and discontinuity of the socio-cultural acts and idealized forms, especially from the point of view of sustainable environments and reuse of the existing structures. In the case of reuse and renovation of the existing ensembles, the user context holds an important potential that should not be disregarded. The exploration of residents' modifications and their space making patterns does not only help us understand the temporality of inhabited spaces but also holds the potential to develop new perspectives and methodologies for renovating the existing architectural heritage in relation with the user context.

As methodology, a visual computational approach is adopted in documenting and analysing the residents' modifications. Grounded on anthropological field research, the documented residents' modifications are abstracted into two-dimensional drawings enhanced with textual labels that specify their context and reason of use. The highly modified façades that are the subject of this dissertation showcase a variety of modifications realised by the residents through different periods of time, reflecting different temporalities. Each modification on the South-West façade is documented and fragmented into visual rules of its making process. Visual rules of different dwelling activities are introduced and identified on the façade in order to achieve a holistic picture of residents' modifications. Further, the visual rules for each apartment and their corresponding textual labels have been analyzed and compared for the whole façade in order to interpret the embodied experience behind residents' modifications beyond their formal properties. The analysis reflects the building deficiencies residents endure and how they address them individually or collectively with the limited resources they have.

The dissertation offers two main contributions: firstly, the formal method that enhances visual rules with socio-cultural information, and secondly, a visual computational approach anthropological field research to increase its capacity and extend its impact in field research. A future automation of the proposed methodology can contribute to establish a descriptive theory of space use and residents' space making within existing buildings. The formal representation of the user context can bridge the gap between the idealized design forms and the inhabited spaces.

CLIMAT DE FRANCE KULLANICILARININ YAPI ÜZERİNE UYGULADIKLARI DEĞİŞİKLİKLERİN GÖRSEL ANALİZİ

ÖZET

Bu tezde, Cezayir'de modern bir toplu konut projesi olan Climat de France'da yaygın olarak gözlemlenen kullanıcı müdahalelerinin ardındaki gündelik hayat aktiviteleri ve sosyo-kültürel etkenlerin araştırıldığı biçimsel hesaplamalıvbir yöntem önerilmektedir. Kullanıcı müdahalelerinin mekan kullanımına dair işaret ettiklerinin ve tasarım bağlamı ile kullanıcı bağlamı arasındaki etkileşimin anlaşılması amaçlanmaktadır.

20. Yüzyılın ilk yarısında modern mimarlık akımı toplumların modernleşmesi için büyük çabalar göstermiştir. O dönemin en önemli konularından biri hijyen ve fonksiyonel yaşam alanlarını herkes için sağlamayı amaçlayan toplu konut projelerinin geliştirilmesi olmuştur. Modernist fonksiyonelliğin içinde çok sesliliğe ve popülerizme yer verilmemiştir. Cezayir'de modern mimarlık 1950'lerin sonu ve 1960'ların başında Fransız sömürgeciliğinin son yıllarında bir politik araç kullanılmış, modern toplu konutlar yerli halkı Avrupalılaştırmak ve onları kontrol altına almak için geliştirilmiş ve yoğun bir programla inşa edilmiştir. Cezayir ve diğer Afrika sömürgeleri, sahip oldukları geniş arazileri ve artan şehirleşme ihtiyacı ile Avrupalı mimarlara kentsel ve mimari deneylerini gerçekleştirmek için bir çok fırsat alanı yaratmıştır. Cezayir'de modern toplu konut projelerinin inşasından neredeyse altmış yıl sonra, ilk kullanıcıları tarafından hala kullanılmakta olan bu konutlar, sosyal ve toplumsal problemlerin merkezi olmaktan kurtulamamıştır. Projelerin çoğu, tanınmayacak şekilde kullanıcıları tarafından dönüştürülmüş ya da yetersizliklerinden dolayı yıkılmışlardır. Bu tez kapsamında, o dönemde inşa edilen projelerden bir tanesi olan Climat de France'a odaklanılmıştır. Fransız mimar Fernand Pouillon tarafından 1957'de inşa edilen bu proje, kolonyal ideoloji ile şekillenmiş ve anıtsal mimari kompozisyon ile ele alınmış 4.493 konuttan oluşan mega bir yerleşkedir. Dönemin belediye başkanı Jacques Chevallier tarafından başlatılan "Konut Muharebesi" programı sürecinde uygulanan bu proje ile yerli halkın hızlı bir şekilde gece kondularından çıkarılıp modern apartmanlara yerleştirilmesine odaklanılmıştır. Bu program kapsamında yerel halkın modern konutlara uyum sağlayamayacağı düşüncesi ile onları modern hayata hazırlayacağı savunulan "evrilebilir konut" tipolojisi üretilmiştir. Bu tipoloji, modern konutlara göre oldukça küçük yaşam alanları sunan, mutfak ve tuvalet gibi ıslak hacimleri ise minimum donanımda olan daireler sunmuştur. Evrilebilir konutların Avrupalılar için inşa edilen modern konutlardan daha ekonomik ve küçük olmaları programlanmış, bu sayede Fransız yönetimi, vadettiği yüksek sayıda konut üretimini sağlayabilmiştir. Bugün ilk kullanıcıları tarafından hala kullanılan Climat de France ve benzeri diğer projeler kullanıcılarının ihtiyacını karşılamakta yetersiz kalmaktadır. Bu yerleşimlerdeki kullanıcılar yıllar içinde kendi ihtiyaçları doğrultusunda yaşadıkları mekanları dönüştürmeye başlamış, hatta bazı kullanıcı müdahaleleri binaları tanınmayacak derecede değişikliğe uğratmıştır. Bu tezin odağı Climat de France projesindeki kullanıcı müdahalelerini mercek altına

alarak, tasarım bağlamı ile kullanıcı bağlamı arasındaki ilişkinin irdelenmesidir. Climat de France gibi tarihi değere sahip yapıların yetersizlikleri nedeniyle yıkılması yerine, kullanıcı bağlamı ile ilişki kuran yenileme ve uyarlanmalarına yardımcı olacak bir yöntem önerilmektedir. Kullanıcıların mekanı yaşayarak dönüştürmesinden sosyal ve toplumsal olarak öğrenilecek ve tasarım bağlamına katkı sağlayacak önemli bilgiler vardır. Bu tezde de tasarım ile kullanımın bağlamı arasındaki diyaloğu kurmanın araçları araştırılmaktadır.

Bu çalışma, mimari mekanı fiziksel yapısının ötesinde kullanıcılarının ev kurma pratiklerini de gözeterek tanımlamaya çalışmaktadır. İncelenen yapı, kolonyal bir alt metin ile inşa edilmiş olup, kullanıcıları üzerinde hakimiyet kurmayı amaçlamıştır. Cezayir bağımsızlığını kazandıktan sonra ise bu yerleşim kullanıcılarının ihtiyaçları yerel yönetim tarafından göz ardı edilmiştir. Bu durum kullanıcılar üzerinde baskı ve öfkeye neden olmuş, kendilerini ifade etme ve yaşam alanları üzerinde söz hakkı sahibi olduklarını göstermek için yaşadıkları alanları zaman içinde dönüştürmeye yönlendirmiştir. Bu tezde, kullanıcı müdahaleleri, sosyal bilimlere referansla kendini ifade etme araçları olarak ele alınacak ve kullanılan mekanla ilişkisi irdelenmiştir. Mimarlığın tasarım ve kullanıcı bağlamlarının ikiliği üzerinden tasarım ile kullanıcının etkileşimi tartışılmaktadır. Tasarım yöntemleri literatürüne referansla Kroes'un tartıştığı tasarımın çift yönlülüğünü ifade eden tasarım ve kullanıcı bağlamları ile kuramsal bir çerçeve tanımlanmıştır. Tasarım bağlamı, mimar tarafından kurgulanan tasarımın fiziksel ve ilişkisel olarak şekillendirilmesi, kullanıcı bağlamı ise tasarlanan mimarlığın kullanıcı ile buluşup onun tarafından dönüştürülüp, manipüle edilmesi sürecini ifade etmek için kullanılmaktadır. Bu iki bağlam üzerinden Climat de France projesi ve kullanıcı müdahaleleri tartışılmaktadır.

Konut mimari bir problem olmanın yanı sıra önemli bir sosyal olgudur ve evi, fiziksel bir mekan olarak tanımlamak yanlış olacaktır. Yuva, ev gibi kavramlar sosyal bilimlerde oldukça geniş bir literatürde ele alınmaktadır. Aidiyet ve yer edinme ile güçlü bir ilişkisi olan evi fiziksel bir mekan olarak ele almak potansiyelini göz ardı etmemize neden olacaktır. Dolayısıyla konut tasarımında kullanıcı bağlamı her zamankinden daha büyük önem taşımaktadır. Kullanıcının ev yapma pratikleri sosyal bilimlerdeki araştırmalara referansla tanımlanmıştır. Bu aşamada İngiliz antropolog Tim Ingold'un tabiatın geçiciliği üzerine yazdığı metne referansla, "mesken edinme eylemleri" ve "işlev uzantısı" kavramları ödünç alınmıştır. Mesken edinme eylemleri, Climat de France cephelerinde gözlemlenen kullanıcı müdahalelerinin mekansal ihtiyaç eğilimlerine işaret ederken, işlev uzantısı spesifik olarak müdahalenin hangi işlev için uygulandığını ifade etmekte kullanılmıştır.

Climat de France'a gerçekleştirilen saha gezileri ve arşiv araştırmaları sonucunda projenin orijinal ve güncel hali ile ilgili veri toplanmıştır. Yerleşim sakinlerinin mahremiyet hassasiyeti ve evlerini açmaya sıcak bakmamaları sonucunda yeterli sayıda iç mekan örneğine ulaşılamamıştır. Toplanan bilgiler ışığında, projenin dış cephedeki kullanıcı müdahalelerine odaklanılmış, kullanıcı müdahalelerinin iki boyutlu temsilleri geliştirilip ilk tasarım ile karşılaştırılarak değerlendirilmiştir. İlk tasarımın yaşanılan mekana dönüşümünü analiz edebilmek ve örüntüleri belgeleyebilmek için görsel hesaplama yöntemine başvurulmuştur. Kullanıcı müdahalelerini temsil eden görsel kuralların tanımlanması ve bu kuralların hangi aralıklarda ve sıklıkta tekrar ettiğinin takip edilmesi ile çalışmaya analitik bir altyapı kurgulanmıştır. Yöntem olarak, görsel hesaplama yönteminin kullanılmasında iki amaç güdülmüştür: birincisi görsel kuralların tasarımın fiziksel özellikleri, malzeme, doku ve yapı bilgisinin ötesinde sosyo-kültürel bilgilerle donatılarak, formal

soyutlamanın yanı sıra kullanıcının donanım ve isteklerine dair bilgileri de barındırabileceğini göstermetirk. İkincisi ise antropolojik yaklaşımlarla incelenen ve ele alınan bir konunun hesaplamalı yöntemlerle irdelendiğinde daha geniş sayıda ve alanda uygulanabileceğini göstermektir. Görsel hesaplama yöntemleri, Palladio villalarının tasarım kurallarını tanımlayıp, bu kurallarla yeni tasarımlar üreterek başlamış olsa da, var olan tasarımların günümüze uyarlanmasında da sıkça kullanılmıştır. Bu çalışmada farklı olarak, görsel hesaplama kuralları yeni bir tasarım üretmek için değil, var olan kullanıcı müdahalelerini anlamlandırmak üzere kullanılmıştır. Tasarım dilini değil kullanıcı dilini temsil etmeye odaklanan bir gramer önerilmektedir. Önerilen görsel gramer, kullanıcıların tercihleri, ihtiyaçları ve donanımları ile ilgili bilgilerle tanımlanmıştır. Tüm cephedeki kullanıcı müdahalelerinin kural dizimine bakıldığında ise kullanıcıların arasındaki etkileşimi, kültürel eğilimlerini ve tasarımdaki bazı yetersizliklerini ortaya koyduğu görülmüştür. Önerilen kullanıcı müdahaleleri grameri, tamamen sayısallaştırıldığında yüksek sayıda alanı tarayıp aralarındaki ilişkileri örüntüleyebilecek altyapıyı sunmaktadır. Geliştirilen yöntem, yüz yüze görüşme ve kullanım sonrası değerlendirme gibi mevcut yöntemlerle ile birleştirildiğinde ise daha etkili sonuçlar elde edilebilir.

Geliştirilen kullanıcı müdahaleleri gramerinin analizleri sonucunda elde edilen veriler üç ayrı açıdan ele alınmıştır. İlk olarak, kuralların uygulanma sıklığı ve yoğunluğu incelenmiştir. Örneğin perde kullanımının katlara göre nasıl ve neden değişkenlik gösterdiği bu analiz sonucunda açıkça görülmektedir. İkinci olarak görsel kurallarda kullanılan etiketlerin incelenmesi sonucunda kullanıcıların becerileri, bütçeleri ve binaya yaptıkları müdahalelerin ölçeği ile ilgili çıkarımlar karşılaştırılmıştır. Bu karşılaştırma sonucunda kullanıcılar arasındaki bilgi alışverişi ve dayanışmaya dair bulgulara ulaşılmıştır. Son olarak, fiziksel yapının soyutlaması olarak kullanılan görsel kuralların temsil ettiği biçimler karşılaştırılmıştır. Bu karşılaştırma sonucunda yapının sunduğu mevcut fiziksel özelliklerin, kullanıcıları bazı müdahaleleri yapmaya nasıl yönlendirdiği tartışılmaktadır. Yürütülen analizler sonucunda bazı bulgular beklenen sonuçlara ulaşılmış, ancak bulguların nedenlerine yönelik spesifik bilgiler ve göz ile tespit edilemeyecek örüntüleri ortaya çıkarmıştır.

Tezde kullanıcı ve tasarım bağlamlarının birbiri ile ilişkilendirildiği bir çerçeve ile incelenen kullanıcı müdahalelerinin formal yöntemlerle soyutlayarak tespit ve analiz eden bir metodoloji önerilmektedir. Çalışma, kullanıcı müdahalelerini mimariye yapılan birer vandal girişimin ötesinde, yapı ve kullanıcı arasındaki sosyo-kültürel boyutu mekan yapma ve ev kurma pratiği ile ilişkilendirerek ele almaktadır. Bu bilgiyi formal veriye dönüştürerek ve tasarım bağlamı ile olan ilişkisini ortaya koyarak, kullanıcı bağlamının önemini vurgulamaktadır.

1. INTRODUCTION

In the first half of the 20th century, the modernist movement in architecture delivered designs for modernizing societies. One of the urgencies was to issue mass housing for minimal, hygienic and functional dwellings for all. Within modernist functionalism, there was little space for plurality and populism, and the society was expected to adapt to an idealized living. In Algeria, modernist architecture was applied as the colonizer's tool. The colonizing powers seized an opportunity to experiment with urbanism in Algeria's vast land and with the native population. In the capital Algiers and all around the country, sixty years later, most of these buildings are either unrecognizably transformed by their inhabitants or already demolished due to social incompatibility. This dissertation focuses on one particular project, Climat de France a massive housing project implemented by the French rule in Algiers in 1957. Residents have transformed it over the years according to their lifestyles and local resources, establishing a user perspective.

As with the case of Le Corbusier's worker housing project Pessac, one could debate whether Climat de France is a success as an "open system" its basic modular structure ensures or, it is a failure because, as a "closed masterpiece" (Ratti & Claudel, 2015) of clean-cut lines and repetitive minima, it was destined to be altered. In the Anthropocene, neither a luxury to demolish all failure, nor a neglect of the past architectural value of grand projects of modernism is likely. Climat de France has architectural value in its own right, in its place in the history of colonial modernism, and is, physically, there. Additional value comes from what the users attributed through use and modification. There is much to learn from the continuity and discontinuity of the socio-cultural acts and idealized forms, especially from the point of view of sustainable environments that require reuse of existing structures.

Remodeling projects with stature such as Climat de France is a thinkable action. However, there is also a need for methodologies to look beyond the formal properties of such architectural heritage, and understand from within the locality and past use in analyses towards any reuse. Methods should hence be accessible to many so that

anthropological and social factors and manifestations of inhabitants' lifestyle are not only the subject matter but a part of any systematic analysis. With interest to employ a visual computational approach to understanding and laying bare some of the design values of the *200 Colonnes*, the large complex within Climat de France, both as the idealized design and the lived-in space, its representation we seek is with regards to the embodied experience, the deficiencies residents endure and how they address these in the case of the *200 Colonnes*. Beyond a formal analysis, the methodology offers an integration of two perspectives: one that distinguishes the user context from the context of design as identified by Koers (2001), and the other that systematizes, through visual computation, the knowledge at hand for broader and automated use.

The intentions of the design context versus appropriations of the user context in modernist housing

The study explores an architectural space beyond its physical structure, revealing relations and connections that makes it home to its inhabitants. These apartments were built by the Colonial French authorities to consolidate control over people (Utting and Jacobs, 2018), and have been mostly neglected by the current Algerian authorities who left them to condemned depravity. Its residents have been fighting against this alienating environment by way of physical adaptations. These kinds of inhabitant actions find counterpart in sociology of appropriation and accommodation such that Lefebvre (1974) recognizes appropriated space as a familiar space and Miller (2001) describes the concept of "accommodating to" something as the process of getting used to the inhabited space by transforming it. Architecture theorist Habraken (1972) on the other hand reacts to the severity that his profession imposes on people and claims that destruction is the only tool of self-expression left for the alienated mass housing residents. In the frame of this study, I recognize the residents' modifications in Climat de France as attempts of familiarisation, accommodation and self-expression in the used/inhabited space.

Use is an aspect that has been widely investigated in design methods since the 60's (Cross, 2001). The dual nature of the designed artefact as the physical object on hand and the intentional object in mind have been explored by Kroes (2002) who distinguishes the two as the different contexts of human action. "Context of design" as manipulated by the architect/designer is based on the physical and relational properties of the design where as the "context of use" on how architecture (artefact) gets

manipulated and transformed by the users according to their needs and purposes. Modernist architecture in this aspect has a strong ideology behind the design context that inevitably have consequences on the use context, in the case of Climat de France these consequences are residents' modifications. A similar distinction is explored by the anthropologist Tim Ingold (2000) who identifies a "building perspective" and a "dwelling perspective" to recognize the temporality of used space. Dwelling is a wide phenomenon explored in social sciences, Heidegger (1971) relates dwelling to the existential dimension of human being. Home on the other hand is defined as a complex process of making that involves inhabitants and their changing social relationships (Daniels, 2001). Rather than the traditional approach of translating residents' needs observed in the user context to a design context, this research seeks emphasis on introducing the user context as basis for critical reflection and alternative expansions in the design context.

A visual method of analysis for user modifications

Recently, formal methods in architectural computation have expanded to visual, spatial and material grammars that involve dynamics, such as the user and the making process. The case of the *200 Colonnes* shows that the local trends, cultures, ways of life can guide how a generative grammar can be devised for an architectural system. This study is limited with the visual material gathered from archives, films and photography. The visual act as a source of evidence and form of reasoning on which this research is built up on. This attribute to the visual supports the locality of this research. This approach can be valuable in formal methods as well as social sciences. I introduce the user context with a set of dwelling activity rules that the users have been applying to transform the building they have been inhabiting. This study depicts that formal rules can imply user data such as cultural aspect, geographical constraints and personal preferences.

I use shape grammars to transform the visual data of residents' modifications into analytical data. The application of shape grammars to analyse existing architectural design is one of its first and most common uses in the field of architecture. Stiny and Mitchell (1978) illustrate it first in the grammar of the Palladian villas. Duarte identifies this kind of shape grammar application as analytical grammar and has developed an original grammar of Alvaro Siza's mass housing designs in Malagueira (2005). The Malaguiera grammars developed in conversation with the architect are

one of the few examples of a generative mass customized project that include input from its future users. Similarly, the transformation grammar (Eloy and Duarte, 2011) developed for housing rehabilitation is based on needs and demands of future dwellers. Differently, I focus on input from how the past and current users have transformed the design. This is a recognition of the temporality of the building, i.e. how it changes over time once it is lived in, and an early step of a larger agenda for methods primarily for studying existing architecture and potentially for future reuse or rehabilitation of heritage.

The scope and limits of the research

The research has been shaped by limitations related to the visual nature of the proposed methodology, as well as its references in academic literature from a wide variety of fields that include anthropology, home culture, colonial modernism and modern architectural discourse. Additionally, site conditions, challenges of fieldwork, and obstacles in gathering information determined some of the limits.

I rely on shape grammars as a formal methodology to identify and analyze residents' modifications. The Climar de France residents' modifications rules are inferred mainly in comparison of the original and modified façades of the building. The differences on the façade are identified, decomposed into smaller components and labeled with related dwelling activities. Due to the visual nature of the analysis of proposed transformations, these can be decomposed differently in other contexts. Therefore, there is a relativity in the proposed visual rules and their identification to be acknowledged. However, the proposed method is open for use by other researchers to investigate the relationship between residents' modifications and their implicit knowledge in many different aspects. The visual character of the method provides a level of abstraction that links architectural form with dwelling activities as observed by the researcher.

Climat de France is still inhabited by its first residents and their families multiply. Generations of each family continues to live in the family apartment. This leads to overcrowded extended families sharing the same tiny apartment. Even unmarried adults were never able to leave their parents' house. More than sixty years after its completion, Climat de France suffers from over population due to the housing shortage in Algeria. Initially designed as *evolutif* apartments, the apartment layout has been

designed with limited square meters, crowded families adding up to the disadvantaged interiors result in tense and inhumane living conditions.

The residents I spoke to in interviews attest to these conditions. The son of Hadj Benali, the guardian of Climat de France's construction site in the 1950's, explains that he has been living with his parents in a four-room apartment in the *200 Colonnes* when his father was in duty during 1957. In 1990, he moved with his wife and two daughters into a one-room apartment in the same block (in author interview on 21.04.2018). Refika, another resident of Climat de France, has been living here since 2001 when she got married. The two-bedroom apartment she lives in with her husband, two daughters and son belong to her mother-in-low (in author interview on 23.04.2018). Madame Hedjari another ancient resident, moved in a two-room apartment in 1959 and is still living in with her husband, son, her married daughter and her grandson in author interview on 24.04.2018). These are some of the residents that I have interviewed during my fieldwork. The general profile of the residents is composed of extended families living together in difficult conditions. These residents have been living in Climat de France since it was first built. They know the building, its architect and the history behind it. The residents' modifications are acts of approrpriation that have been taking place since the first day and intensified with time.

One of the constraints of my fieldwork was not being able to visit the interiors as much as I would have preferred. The few residents that agreed to interview, talked to me in public spaces. Even a smaller number of them agreed to show me their home. The number of residents (twelve) that invited me to see their homes was insufficient to establish reliable data. This reinforced the focus on the façades instead of the inaccessible interiors. Demographic and statistical information on the neighborhood could not be retrieved from the local authorities due to difficult beaurocracies. Local scholars were difficult to reach due to unvailable contact information. A survey of the current building and its interiors was not possible due not only to the sheer size and unwilling residents but also to the exclusive and unsettling character of the low-income and radically politicized neighborhood.

The visual materials that establish the basis for this methodology are collected through audio-visual media, archive documents, observations, and interviews. Archival documents are available at the association "Les Pierres Sauvage de Belcastel" (PSB) which was created in 1996 in behalf of the work of the architect Fernand Pouillon. The

association is in charge of the archives and all kind of documentation of the architect. The construction of Climat de France was realized during the ruthless years of the independence war between 1954-1957. Therefore, the documentation of the building confronted major ruptures. No significant drawings of the building are available, only photographs from the construction and after the realization are available in the PSB. Climat de France has been an appealing site for many photographers and movie makers since its construction. Numerous photographers raised consciousness about resident modifications in social housing in Algiers of the 50's and Fernand Pouillon's architecture in particular. My field visits in August 2017 and April 2018 added to this visual documentation of the outside appearances.

In light of this data, the focal target of this dissertation is the façade and its transformations. Looking at the façades instead of the plan, counteracts the modernist doctrine that "the plan is the generator" (Le Corbusier, 1986, p.45). The significance of the façades, differently than the modified interiors, is that the display of residents' expression of spatial needs and cultural appropriations outside is more daring. The modifications made by the residents inside their apartments are usually accepted or overlooked by the architects and the authorities. However, if the appropriations become visible from the outside they are regarded as a social intimidation. The case of Climat de France and many similar modernist mass housings dispersed in Algeria constitute rich cases of residents' creativity and the extent of self-expression. Therefore, the façades of the *200 Colonnes* block in Climat de France is the ground for my analysis.

Structure of the thesis

In chapter 2, "Design Context of Modern Housing and Climat de France: Intentions and Achievements" I explore the design context and ideology behind mass housing from a perspective of architectural history. In this path I follow CIAM as a guide and observe the *evolutif* housing definition through their meetings, talks and conference themes. As I set the background to the context in which Climat de France was conceived, I explore both ideological and architectural intentions. After introducing the project Climat de France, I focus on the design of the architectural features of the building the *200 Colonnes*. Then, I discuss current living conditions of residents of *Climat de France*.

Chapter 3 entitled "Use Context of Modern Housing and Climat de France: Inhabiting and Appropriating" involves a broad literature review that introduce the house beyond its physical structure as an inhabited space and identifies connections between space and its inhabitants. This literature guides me to shift the canonic architectural building perspective to a dwelling perspective centralizing the residents in space making. Based on this, I evaluate residents' modifications regarding previously discussed architectural intentions.

In chapter 4 entitled "The Residents' Modifications in Climat de France", examines the resident modifications and identifies them on the façade of the *200 Colonnes*. The data gathered in the field work is illustrated, organized and categorized in relation to the dwelling perspective borrowed from Ingold (2000). After evaluating visual processing methods, I finally introduce the dwelling activities observed on the façades of the *200 Colonnes* to be explored through visual computation in the next chapter.

In Chapter 5, "The Lived-in Grammar", I present the visual grammar of residents' modifications in Climat de France. The main objective is to formalize the daily use and dwelling activities of the residents using visual computation. How the visual rules of lived-in grammar are inferred in relation to dwelling activities and enhanced with social, cultural information is illustrated. After exploring how to infer the rules of the lived-in grammar, the computation of each block from the South-West façade of the *200 Colonnes* is illustrated. The rules are identified during the process of block computation. After calculating 24 blocks of the designated façade, I acquire a dataset of residents' modifications enhanced with the following information: visual rules of modifications, the dwelling activity they are related to, skills required to achieve them and their impact on the building. Further, different relations between (1) dwelling activities, (2) visual rules (shapes) and (3) labels in the attained dataset are explored. Chapter 6, "Conclusion: The Formal Method of User Context", summarizes the thesis and discusses the user context in reference to different temporalities and emphasizing the dual nature of architecture. The temporality of the user context across different circumstances transforms into a communication tool against socio-political power structures. Further, the contributions of the proposed methodology are discussed in terms of its formality, the data it generates and the patterns and relationships it unveils. Finally, the universality of this approach and its adaptability to similar contexts in

different geographies are discussed to illustrate future potentials of the proposed methodology.

2. DESIGN CONTEXT OF MODERN HOUSING AND CLIMAT DE FRANCE: INTENTIONS AND ACHIEVEMENTS

The clash between the intentions and realities in mass housing are proverbial. In this dissertation, I associate intentions with the design context and the realities with the user context in reference to Kroes (2002). To identify the duality of design and use, I discuss the design context of mass housing first, and then move on to the user context of resident modifications. The design context of mass housing cannot be investigated without looking at the dynamics of its conception. As an important production of modern architecture, mass housing emerged after the industrial revolution and gained further globality and significance after WWII (Frampton, 1973). Intentions shape the conception of mass housing and its evolution in architecture. Before contextualizing the residents' modifications, it is essential to understand the design context that consists of intentions and the physical artefact. Conceived in a complex colonial background Climat de France is an intricate product of modern architecture in North Africa. It is a modernist project realized with colonial intentions. In order to draw a realistic portrait of it, I explore architectural and socio-political history to untangle its design context.

The boundaries of the design context are drawn regarding intentions in reference to architectural history and physical artefacts such as drawings, models and the building itself. I start exploring the design context with an overview of the modernist ideology and how mass housing was used as a "modernizing tool for society. Modernist dogmas such as "modernize your house and your life will follow" (Le Corbusier, 1986) emphasize the importance attributed to the house and housing in modern architecture. The living conditions and the increasing number of informal settlements in the cities due to rapid urbanization made housing the main agenda of the pioneer modernist architects. In this respect, I concentrate on *Congrès International d'Architecture Moderne* (CIAM) to explore the evolution of housing definition in modernist discourse that started with minimal existence '*existenzminimum*', moved to the biological

metaphor for the smallest component 'biological cell' of *'La Ville Radieuse'* and finally shift into culture oriented 'habitat'.

The design context of mass housing has never been a purely design-oriented process but it was related to the political and socio-economic situation of its period. CIAM discussions, talks and meetings are rich sources that illustrate the direct connection between design and the political, scientific and social flux of that time. Le Corbusier suggested that standards should be established as a basis for design and once the common needs are established, new forms of architecture would be developed (Broadbent, 1975, p.2). He advocated that all human kind has common needs that could be addressed in new forms of architecture (Le Corbusier, 1986). There were many attempts to identify the common needs and establish physical terms for them. These physical terms were referred to as "function" among architects. Function and architectural forms are widely discussed in the modernist discourse, yet they are not the only components of a design context. Although Le Corbusier pursued the common need of mankind, the political and economic dynamics of the period were indispensable inputs in reshaping and reidentifying the human needs especially in "other" geographies.

Climat de France is located in the heart of all these discussions since it was constructed during 1954-1957, just after the 9th CIAM 'the Charter of Habitat' 1953, which was supposed to take place in Algiers but moved to Aix-en-Provence due to security concerns (Archival documents from Fondation Le Corbusier). That particular Congress Focused on the African settlements through projects presented by GAMMA and ATBAT-Afrique from Morocco, CIAM-Alger from Algeria and British architects from Ghana with Volta River Project (Dainese, 2019). CIAM-Alger presented one of the largest slum neighborhoods in Algiers known as Mahieddine. Some of the residents of Mahieddine settlements were later moved to the newly constructed Grand Ensembles, among them Climat de France (Pelletier, 1955). Fernand Pouillon was commissioned by Mayor Chevallier to design and construct Climat de France exclusively for Algerian population. This was a first. Chevallier conducted a campaign that he refered to as the battle of housing in which he prioritized housing local population (Algerian people). Before Climat de France, he worked with Pouillon on Diar el- Mahçoul which consisted of two sections divided by a boulvard, one side of which was for the European and the other for Algerian population. The design context

of Climat de France incorporates monumentality, local references and oppression at the same time. It is a complex reflection of colonial rule and humanistic sensitivities of the last years of French colonialism in Algeria.
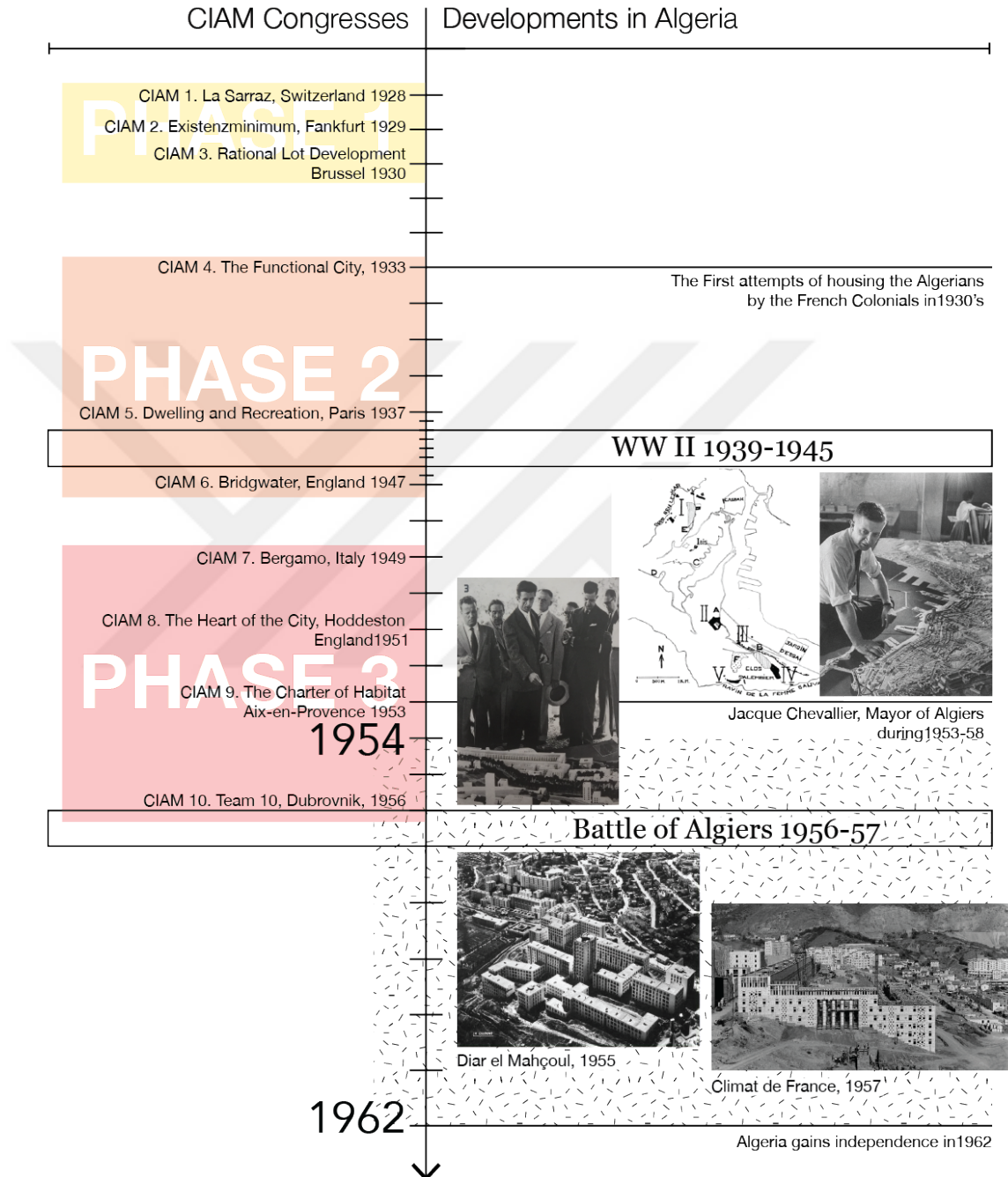
Figure 2.1 : Timeline illustrating the overlapping events of CIAM9 (1953), the Tenure of Mayor Chevallier (1953-1958) and the battle of housing he conducted, Pouillon's Diar el Mahçoul the first Grand Ensemble assigned to Algerian people (1957), the construction of Climat de France (1957), and the battle of Algiers (1956-1957) until the independence of Algeria (1962).

My attempt below is to elaborate a critical perspective to the discussion that shaped Climat de France before introducing the project itself. I discuss the project of Climat de France in relation to the context it was implemented in, before moving to its spatial qualities and architectural characteristics. After exploring the intentions and the artefact, I discuss how people were expected to live in the settlement and how they are actually living.

2.1 From Dwelling to Habitat, A Background of Modern Housing Through the Lens of CIAM

The two kinds of context of human action as defined by Kroes (2002) are design and use contexts. The former's "main emphasis lies on how to construct a physical system (object) that realizes a certain function" (Kroes, 2002, p.297). In the case of mass housing the main aim is to design and construct buildings that meets the required main function of sheltering. I would like to expand the design context definition for the scope of this dissertation. Although the goal is mainly to house low income communities, the intentions of modernist architects evolved in relation to ongoing socio-political events. Therefore, the design context of mass housing is not only related to the fulfillment of the expected function but it holds political and social intentions as well. The Industrial revolution and WWI & II are major events that created paradigm shifts in mass housing discourse. The impact of the social and political events was huge in shaping and addressing mass housing beyond functional expectations. The history of mass housing from the 1930s to the 1960s, up to the realization of Climat de France in 1957, is relevant to the theoretical and historical debates that contributed to its development.

In the first half of the 20th century, the modernist movement addressed the rapid urbanization and informal settlements caused by urban migration. Housing was a prioritized problem for modern societies. Poor sanitation, bad daylight and inadequate ventilation for the working class was the major concern of architects who were aiming to issue mass housing for minimal, hygienic and functional dwellings for all. CIAM, *Congrés Internationaux d'Architecture Moderne* provides a rich source to understand the housing problem, its evolution during the years and the deviating attitudes of European architects towards European colonies in the Global South. CIAM continued to be organized from 1928 until 1956 gathering architects from all over Europe in order

to discuss the movement of modern architecture and its emerging principles. Although explored differently, housing was always one of their major concerns. Their different approaches are identified under three different dominances by the British critic and historian Kenneth Frampton (2007), first, the German architects' influence lead to the minimum dwelling, second, Le Corbusier's "Ville Radieuse" projection and the 'biological cell' as its smallest part and last, after WWII the shift towards a more humanistic approach that replaced the world "dwelling" with "habitat". It is crucial to keep in mind that the first two approaches were intentionally developed for the European cities until the last one highlighted the global impact of modern architecture and searched for local references in European colonies especially the ones situated in Africa.

2.1.1 Rationalized minimal dwelling

In 1928, Walter Gropius and Ernst May, two CIAM members and German architects, were commissioned to construct low-cost housing to meet the severe housing shortage Germany was facing after WWI. They explored taylored production of minimum units with minimum cost to develop affordable and fast housing settlements to the urging problem. During the congress, Gropius and Le Corbusier were holding lectures on housing standardization and rationalization simultenously (Mumford, 2000). An exhibition on minimal existance dwelling showcased different dwelling units calculated and designed according to cost, location and local wage levels in different German cities (Mumford, 2000). The closure talks by Le Corbusier drew attention to "the poverty and insufficiency of traditional technique" to meet the housing shortage and the need for "standardization, industrialization and taylorization" (Mumford, 2000, p.39) to answer to the increasing need. CIAM published its first book during this congress, "The Dwelling for the Living Income Earner" that included an introductory text by Ernst May. There was a focus and effort applied by both young and accomplished architects for solving the pressing housing issue.

The intentions at that time were to reduce the needs and functions of a dwelling to the minimum. Typologies of minimum space were discussed and the most efficient apartment layouts were generated with living room, bathroom and the revolutionary Frankfurt Kitchen (Teige, 2002). Not only space but furniture was designed in order to achieve space efficiency. The ultimate intention of this period was to establish the

minimum standards for habitable dwelling which were implemented in Frankfurt estate houses during the years 1925-1933 (Teige, 2002).
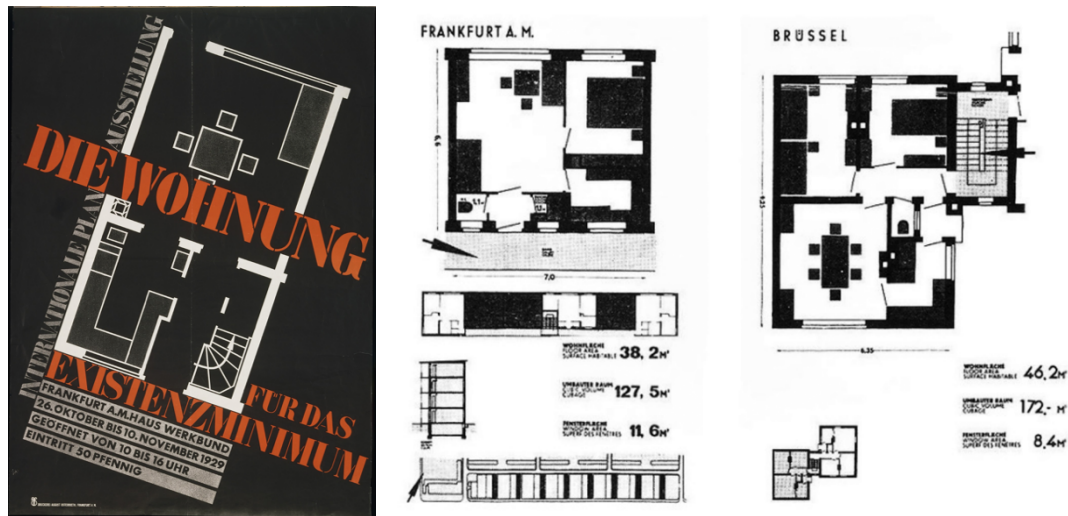
Figure 2.2 : CIAM2 Conference poster titled Die Wohnung für das Existenzminimum (The Dwelling for Minimal Existence) on the right and Existenzminimum dwellings for Frankfurt and Brussel on the left (Migotto & Korbi, 2019, p.303).

The founding fathers of modern architecture such as Le Corbusier, Gropius, Mies and many others have been rationalist by nature (Broadbent, 1975). They were fascinated by positive science and biology and tried to construct self-evident truths and laws. Le Corbusier's passion to create standards related to human needs to translate to design is found "almost behaviorist" by design scientist Broadbent (1975). Gropius similarly was aiming to create a variety of standards that would raise the social level of the whole population (Gropius, 1965, 38). Under the influence of this rationality and taylorism, the house was identified 'as a machine for living in' and the architects were working hard to identify the standards of this machine.

Broadbent point out the behaviorist architects' tendency is to "force people to live in a certain way" (Broadbent, 1975, p.64). A correlated proposition is made by Le Corbusier who proposed to "modernize your house and your life will follow." The modern architecture was identified as the ultimate tool to modernize people, which was efficiently appropriated later by colonial rules in the African colonies. It is clear that the behaviorist notion in modern architecture gets more visible once it is executed outside Europe. Although Le Corbusier believed that "all men have the same need" (Le Corbusier, 1947, p.22), his future work implied that some needed to be modernized more than others such as Chandigarh where the modern city was a symbol of power

and decolonialization (Kalia, 2004) rather than a necessity of modern society. The symbolic power of canonic modern architecture become much present rather than the ideology of providing equal environments for people.

2.1.2 Le Corbusier's biological cell as the smallest component of la *Ville Radieuse*

In the following years, Le Corbusier's dominance over CIAM became stronger and his revolutionary urban plan *La Ville Radieuse* became prominent. As Frampton (1973) discloses during 1933 and 1947 CIAM was under the supremacy of Le Corbusier and his *Ville Radieuse*. *La Ville Radieuse* is a metaphor of the city-as-body (Mumford, 2000) and dwelling is its smallest particle identified as the "biological unit". Settled on a centroidal axis, *La Ville Radieuse* consists of a business district as the brain, a cultural district as the heart and its veins reach out to seven types of biological units "that granted fourteen (later reduced to ten) square meters per resident" (Mumford, 2000, p.49). This revolutionary urban plan was not only segregating work and leisure but focusing on vertical growth to provide wide openings on the ground for public use. Planned rationally with minimum standard for habitable dwelling as the previous attempts, the biological unit offers a reduced kitchen size and an extra closet space and bathroom for the bedrooms. The intention of Le Corbusier was to create a dwelling unit that is a part of a greater system that regulate the city.
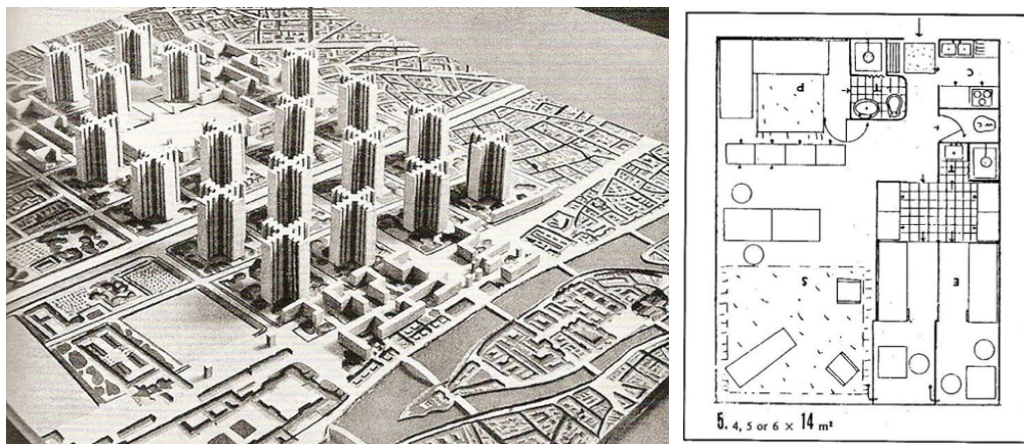
Figure 2.3 : Photograph of La Ville Radieuse model on the left and the Biological Unit plan proposed by Le Corbusier on the right.

2.1.3 The new perspective of a context conscious habitat

The impact of WWII induced a new conception of modernity that led to a paradigm shift in how housing is defined. This shift was directly reflected on the language, the

word dwelling was replaced by habitat and the housing definition evolved from the rational materialist attitude to a more humanistic one which prioritized the satisfaction of the people's material and emotional need for the first time in Modernist discourse (Crane, 2013). The influence of North African groups (GAMMA and CIAM-Alger) and the Smithsons on CIAM9 created an impact on "the social and architectural importance of the relation between men and things" (Mumford, 2000, p.238). The Moroccan group GAMMA conceptualized 'habitat' as an evolutionary process of housing that can be partially self-built and would evolve towards a more complete housing solution. The self-build tendency pointed out the new awareness of local cultures and vernacular settlements that have been neglected in modernist discourse. CIAM-Alger on the other hand focused on one *bidonvilles* (slums) in Algiers and presented a detailed report on its problems, potentials and cultural aspects. They aimed to display a synoptic view of how the built environment has been shaped through culturally specific patterns of construction and inhabitation (Crane, 2013). CIAM-Alger developed an alternative modern housing project for the residents of Mahieddine (See Figure 2.4) based on the analysis they conducted. However, the appearance of the proposed project did not differ than any other modernist mass housing project on the site plan, they consantrated on transferring the knowledge they get from the site to design the living units (bottom image in Figure 2.4).
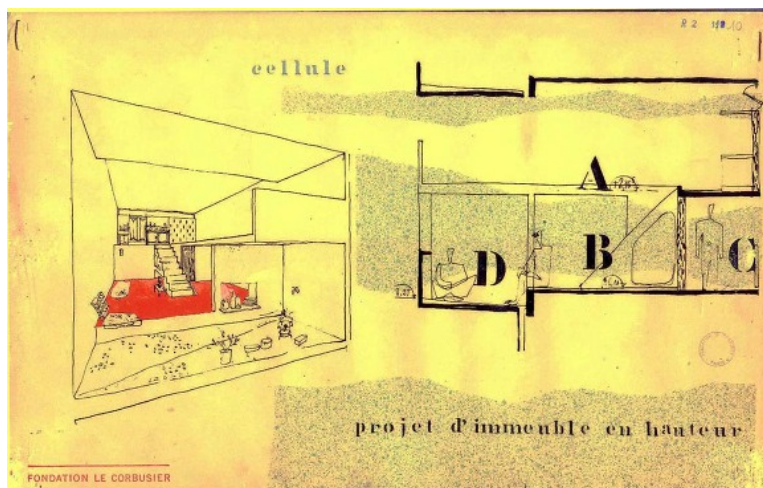
Figure 2.4 : The housing unit developed by CIAM-Alger for Mahieddine (Archives FLC, CIAM Alger Grid, 1954).

2.1.4 CIAM-Algier's interest in the informal settlement of Mahieddine

Mahieddine, one of the largest slum neighborhoods in Algiers was investigated by CIAM-Alger in detail. The self-built barracks were documented from the inside and the outside, and different practical and social problems of the settlements were identified. Everything was documented through drawings, diagrams, photographs and interviews with people living there (Figure 2.5). CIAM-Alger's study has been identified as an epistemological shift in modern architectural discourse, and it was a revolutionary attitude in modern architecture to design based on the living conditions and the needs of local people (Çelik, 2003, Karakayalı, 2010 and Crane, 2013). It was an early example of the use of anthropology as a tool to understand the role of everyday life where the users were identified as active agents (Çelik, 2003). The bidonville residents were viewed through the concept of "heroic entrepreneurialism" (Crane, 2013, p.108), which relates to the acts of spontaneous and creative responses developed by people in order to satisfy the basic needs of impoverished masses (Roy, 2005).
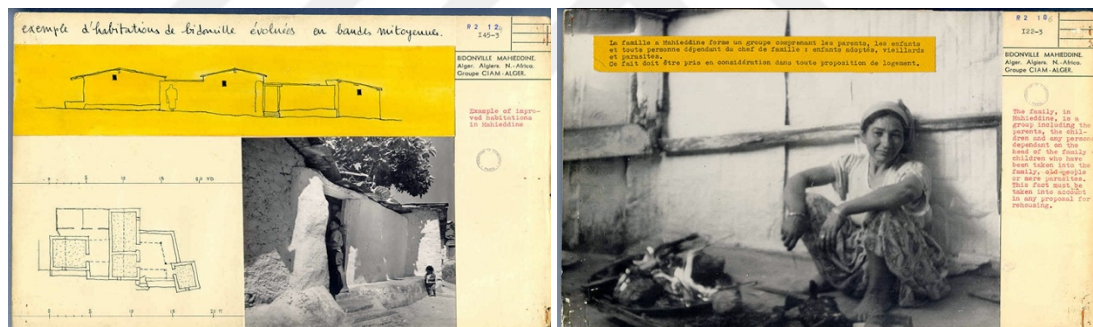
Figure 2.5 : Images from CIAM-Alger's Grid presented in 1953 on Mahieddine Bidonville (Archives FLC, R2-10-6-001(left), R2-12-4-001 (right), 1954).

The bidonville in Algiers as creating a social and political thread to the French protectorate. The rapid informal urbanization was capturing the city from its parameters creating overcrowded neighborhoods with no infrastructure, bad living conditions (Figure 2.6). At the meanwhile, the Algerian resistance was growing fast in these crowded settlements and the French rule was losing control over it. Therefore, controlling the slums and eliminating them was not only a social but a political concern of the Colonial France. In the 1950's, an intense housing program was executed by the French protectorate to house the Algerian population. The main objective of this program was to provide modern settlements to control the native population that were migrating from rural areas to the cities and prevent them from constructing further

bidonvilles. The projects designed for the native people targeted moving them from slums to modern life. The constructed houses were not designed as modern as European houses but as scalable houses, "*logement evolutif*" (Pelletier, 1955, p.286). The French authorities proposed that the native people would not be able to directly adapt to modern houses and needed a transitional phase such as scalable houses before stepping into modern life. Designed as an indigenous housing complex, Climat de France is one of the projects that offers *evolutif* apartments with modest sanitary facilities and minimalistic spatial layout.
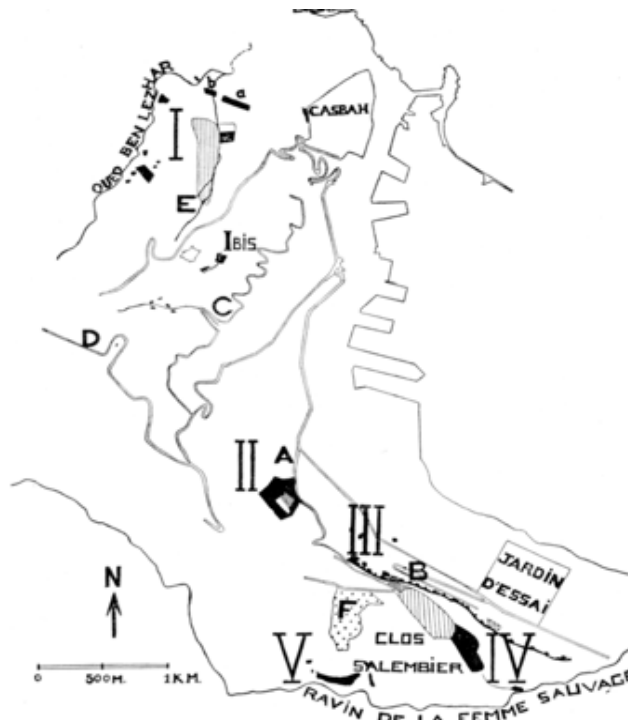
Figure 2.6 : The distribution of the bidonvilles (shantytowns) around the city Algiers. Group I: Ben Lezhar, group II: Mahieddine, group III: la Falaise Cerventés, group IV: Clos Salembier, group V: La Femme Sauvage (Pelletier, 1955, p.281).

2.2 Understanding the Grand Ensembles in Algiers

How home is defined and how places are made into homes by any individual or group at any given time cannot be discussed independently from the broader historical and social context (Mallet, 2004). The Grand Ensembles in grow out of the French colonial discourse and the dynamics that led to urban development. The replanning of the city of Algiers was an important issue in the French agenda since its European residents needed to be lodged and the city needed to be Europeanised (Çelik, 1997). However with time, French authorities realised that lodging the local people could be intrumental in achieving peace in the country. Many policies and different strategies

were implemented to the city of Algiers. Before introducing these policies the typologies such as the Casbah, bidonville and rural settlements help understand the urban context inhabited by the local population.

2.2.1 The Casbah

The Casbah was and still is the iconic settlement of the Ottoman city of Algiers that greets new comers with its siluette descending toward the harbour. The old town has been an issue for the French planners during the whole time they were in Algeria.

After a century of French occupation, the dramatic demographic growth leads to an increasing intensification of the old town in the early 1930's. The overcrowd started to push the boundaries of the old city and first squatter settlements (bidonville) emerged at the edges of the old town. The reason they were called bidonville is the material used in their construction which was basically any available 'material including reed, zinc sheets and large metal containers (*bidon*)' (Çelik, 1997).

2.2.2 The Squatter Neighborhoods/ Bidonvilles

The first bidonville in Algiers emerged around 1930's in response to rural migration to cities. French anthropologists Descloitres and Reverdy (1961) conducted a comprehensive study on squatter settlements in Algeria, they argued that the problem was neglected by authorities when it first appeared. By 1930's the bidonville entered the French agenda and started to be discussed by the colonial authorities.

In the 1930's the French administration began to take action in improving housing conditions of the Algerians and started a housing reform to gain the support of Algerians. Home was the unconquerable space that buffered the family against the colonial society. The Algerian house was considered as the shell of resistance and a major threat to colonial existence. In order to break this shell, the colonial authorities assigned ethnographers to study and understand the Algerian house.

2.2.3 The Ethnographic Studies and The Rural Focus

Ethnographic studies conducted in Algeria go back to the 1880's. However the major work accumulated in the 1920's and 1930's where the ethnographic research were

used as the main source of knowledge for European architects creating mass housing for the local population.

The French anthropologist Emile Masqueray is known to be the first to conduct an extensive field research to investigate the domestic vernacular architecture in Algeria. In *La formation des cites ches les populations sedentaires de l'Algerie* (The formation of cities among the sedentary populations of Algeria, 1886) Masqueray studied the collective life and habitat in Berber (Kabyle) settlements reading the conclusion that Berber living in the rural area were more assimilable compared to Arabs living mostly in the cities. His work set a method for future scholars studying in Algeria, mainly focusing on the rural population and their habitat.

The increasing number of studies commissioned by the French administration focus on the sociocultural meaning of housing, and further on the woman in order to understand the family structure.

The growing importance of the habitat and its cultural dynamics led to the emergence of women ethnographers in the 1920's, since their gender granted them access to the habitat. Two important names of that period were Amelie-Marie Goichon and Mathea Gaudry. Gouichon (1927) published *La vie feminine au Mzab* (The woman's life in Mzab) and Gaudry (1928) publishes *La femme chaouia de l'Aures* (The chaouia woman of Aures). Gaudry dedicated more attention to the dwelling presenting it as the primary frame for material conditions surrounding women. She categorised the houses of the region into three types: the dechra, the house proper and the tent.

Another woman scholar Therese Riviere (1938) studied the housing pattern of Ouled Abderrahman Chaouia and she recorded three house types: terraced house, underground house and tents or shelters under cliffs. Laure Bousquet-Lefevre (1939) published La femme Kabyle (The Kabyle woman) in which she introduces the extended family compound. Different components of the extended family lived in separate small structures surrounding a communal courtyard.

Most of the ethnographic studies were on establishing an Algerian housing typology, however different categorisations were defined in each study. Furthermore, the focus was on the rural areas, but research was used for the design of urban housing.

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2.2.4 Policies for Housing the Algerians & *Les Grand Ensembles*

The colonial administration's first radical step to assume responsibility for the improvement of the housing conditions of the Algerian begins in the 1930's. As Zeynep Çelik points out in her extensive book *Urban Forms and Colonial Confrontations* (1997), the conditions recorded by ethnographers gave policymakers the fundamental data on rural housing. The main goal of the French administration was to provide hygiene and comfort standards fitting the cultural and social context of native population. There have been three phases of policies for urban housing. The first phase took action during 1930's, and only three projects were constructed during this period: Boulevard de Verdun Housing in 1935 by François Bienvenu, Clos Salembier in 1936 by Albert Seiller & Marcel Luthuillere and Boucle-Perez in 1952 by François Bienvenu. The second phase of urban policies is the tenure years of Jaque Chevallier. Mayor Chevallier, argued that France needed to built in Algeria day and night, as much as possible so that she would not worry about political problems with indigenous people anymore. During his years of tenure an intense housing construction program was executed. Two important architects emerged in this phase. One is Chevallier's chief architect Fernand Pouillon and the other is Roland Simounet. During this period the following grand ensembles have been executed: Diar el Mahçoul & Diar es-Saada in 1957 by Fernand Pouillon, Climat de France in 1957 by Fernand Pouillon, Carriere Jaubert Housing in 1957 by Simounet, Daure & Beri and Djenan el-Hasan in 1959 by Roland Simounet. In the third and final phase, the Plan Constantine has been built between 1958-1961. This was a speedy housing program implemented to solve the uncontrollable growth of slum settlements. The grand ensembles constructed during this period are Cite des Dunes, by Gouyon, Bellisent and Regeste, Diar es Shems, by Challand and Cite Haouch Oulid Adda in 1959 by Marcel Lathuilliere & Nicholas Di Martino.

2.3 The Housing Battle and the Conception of Climat de France

The housing program projected by the French protectorates was an important agenda studied in detail before executed. This agenda was led by an important political figure the mayor of Algiers. One year after CIAM 9, in March 1954 the mayor of Algiers Jacques Chevallier declares "a new and deadly battle: the battle of housing" (Crane, 2017) in a ceremony during the construction of Diar es-Saada a French housing district

designed by his head architect Fernand Pouillon. Construction was an essential political tool for Chevallier, during his rule, Algiers was endured by modernist architectural and urbanistic experimentations. Chevallier was determined to win the heart of the Algerians and the battle against the Algerian revolution by initiating the "battle of housing" (*La bataille de logement*). The French colonial policy against local population has changed and architecture was the new oppression tool that aimed to keep the Algerian population under control and provide hygiene and comfort standards fitting the expected cultural and social level. In the following years this approach was explored to the extremes with "Plan de Constantine" implemented by the General Charles de Gaulle who neglected the architectural quality and focused on fast, cheap and efficient high-rise linear block constructions.

Fernand Pouillon, the head architect of Chevallier, supported the "programmatic modernism" (Griffin, 2007) implemented by the French Colonials. This term is defined by Griffin (2007) as "the mission to change society, to inaugurate a new epoch", Pouillon did that by providing the Algerian population large numbers of evolutionary dwelling as fast as possible and with modest budgets as expected by the authorities (Loex & Avermaete, 2010). The main aim of the housing program was to provide modern houses to the native population that was continually migrating to urban areas and constructing *bidonvilles* (slums) at the skirts of the city. The French authorities projected that native people cannot directly adapt to modern apartments and needed a transitional phase before stepping into modern life. Climat de France as many other projects, offered evolutionary (evolutif) apartments with modest sanitary facilities and a minimalistic spatial organization to provide a gradual adaptability to modern life (Figure 2.7). Today, still occupied by its first residents, the initial design layout of the apartments falls short in satisfying basic necessities. The residents developed over time their own interventions to address their specific needs.

| living room | bedroom | bathroom | kitchen | patio |

Diar el Mahçoul	Diar el Mahçoul	Climat de France
Confort Normal	*évolutif*	*évolutif*
Apartment	*Apartment*	*Apartment*
(78 m²)	*(40 m²)*	*(42 m²)*
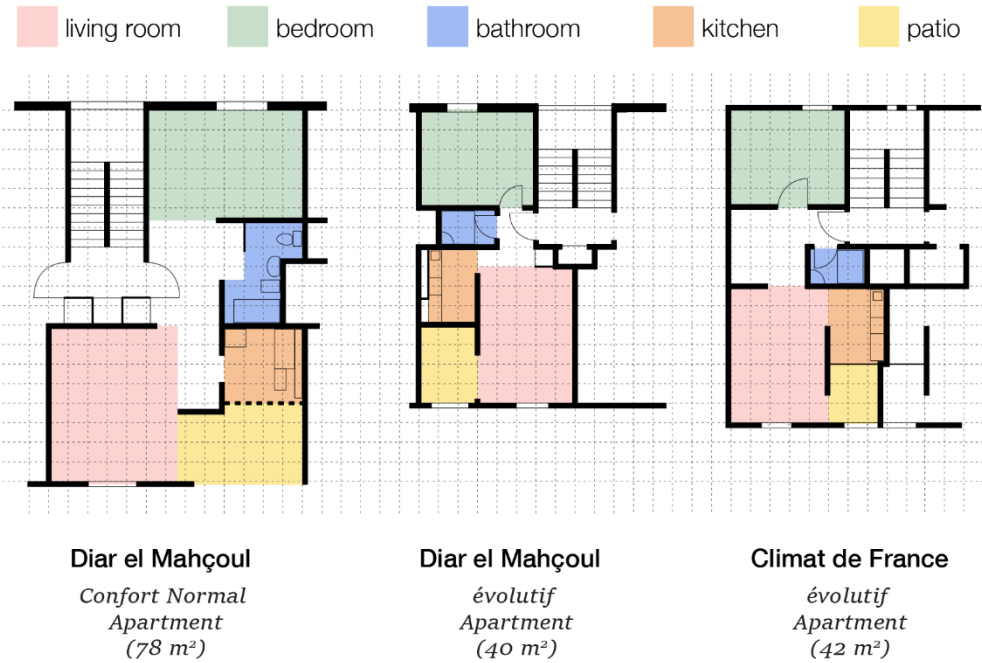
Figure 2.7 : From left to the right, plan of one-bedroom confort normal apartment from Diar el-Mahçoul, plan of one-bedroom evolutif apartment from Diar el-Mahçoul and plan of one-bedroom evolutif apartment from Climat de France.

Although Pouillon did not adopt the strict modernist repetitive urban plan, he sacrificed the light and aeration of some badly located apartment in order to achieve the "harmonious façade and well-proportioned square or garden" (Loex & Avermate, 2010, p.176). He was after monumentality and proud of housing the poorest of Algeria in a monument (Çelik, 1997). Pouillon with his attachment to the formal integrity and programmatic modernism in Climat de France illustrates a purely behaviorist approach. The intention of the design was to control people within the monumental panoptical shaped building while transforming them into fitting modern citizens (See Figure 2.7).

2.4 The Design and Construction of *Climat De France*

Climat de France was one of the first projects committed solely to the indigenous population influenced by the historical and political context of the modernist housing movement (Çelik 1997). The project was conceived to accommodate 40.000 people within 4.493 dwelling units spread on a sloping terrain of 30 hectares (Bataille du Logement, 1956). The panopticon shape of the monumental massive block called the *200 Colonnes* was projected as a biopolitical tool to subjugate and control the colonies (Utting & Jacobs, 2018). Due to the sloped site the rooftops of the *200 Colonnes*

created a continuous surface with a wide view over the neighborhood for the French Soldiers' watch.

Figure 2.8 : Snapshots from a propaganda movie showing daily life in the newly accomplished Climat de France. A family dining on the table on the top two images, a woman in the modern kitchen on the bottom left and a mother with her baby listening to the radio in the bottom right image. (Url-1).

The site plan consists of differently shaped buildings, some linear with inner courtyards other L, U and S shaped each consisting of two or more blocks (Figure 2.10). The lower part of the sloped site is traced by a linearly curved monobloc as a frontier of the site with the Avenue Askri Ahcene. This building is referred to as the serpent by the residents of Climat de France. The serpent and the *200 Colonnes* are the two largest buildings in the site defining two distinct parts. Each of these two parts consist of smaller buildings with modest urban squares and aisles connecting them. The irregular distribution of the buildings refers to the organic settlement of the Casbah. Inner courtyards shared by four blocks have similar sizes to the traditional Casbah house shared courtyard.

All buildings initiate with the maximum height of four floors but can extend to six or even eight in some cases in relation to the inclined terrain. The entrances of the blocks were carefully inserted from the highest level possible so the residents on the tall blocks would be subjected to optimum level number of four. Pouillon was very sensitive on creating blocks with two apartments on each floor connected by main stairs however he broke this rule in some cases to assure continuity and repetition on the overall design.

In this dissertation I focus on the *200 Colonnes* that offers a rich material on how the monobloc is modified within its repetitive spatial organization. Climat de France was built in 1957 during the intense years of the Algerian Revolution and the project documents were not properly kept or got lost during that period. Les Pierres Sauvages de Belcastel (PSB), the association in charge of the architect Fernand Pouillon's work, does not have significant documentation for this particular project, other than plans from the proposal phase of the design and photographs of the construction phase. Although site plans exist in the archives of the local government, a survey of the current building does not seem possible in the near future due not only to the sheer size but also to the exclusive and unsettling character of the low-income and radically politicized neighborhood. I developed the following drawings in light of the existing document from the presentation prepared by the architect Fernand Pouillon and archived in PSB and the digital district map provided by the OPGI (*Office de Promotion et de Gestion Immobilière*) in Algiers.

2.4.1 The 200 Colonnes

The name of the *200 Colonnes* (columns) refers to the two hundred columns surrounding the inner courtyard of the monumental building that dominates the site and emphasize the iconic architectural nature of the project. Constructed out of concrete, stone and brick, *200 Colonnes* was a revolutionary project in terms of material choice and construction technology. Built in a remarkable period of time of two years considering its size and architectural quality even for today it is an ambitious realization. Nowadays referred to as the marketplace, the *200 Colonnes* is the heart of the settlement not only because of its central location but for providing a social and commercial attraction center to the neighborhood. It offers us an abundant source of residents' modifications on its façades due to its repetitive base features as well as its physical accessibility.

The structural system of the *200 Colonnes* consists of two different grid systems, the exterior stone load bearing walls and the concrete waffle slabs. These two systems are regulated by two different grids that juxtapose. The first grid is a 100x100 cm grid that organizes the two hundred columns surrounding the inner courtyard and the load bearing exterior walls. The second is a 60x60 cm grid for the structural waffle slab and the apartment layout. Each of the three axes of the second grid overlay with one axis

of the first one. All interior partitions are constructed by 10 cm brick walls based on the inner grid of the 60x60cm waffle slab (see Figure 2.11).

Figure 2.9 : An aerial view of Climat de France, the 200 Colonnes the large rectangular mass located in the center of the site (Archives PSB).
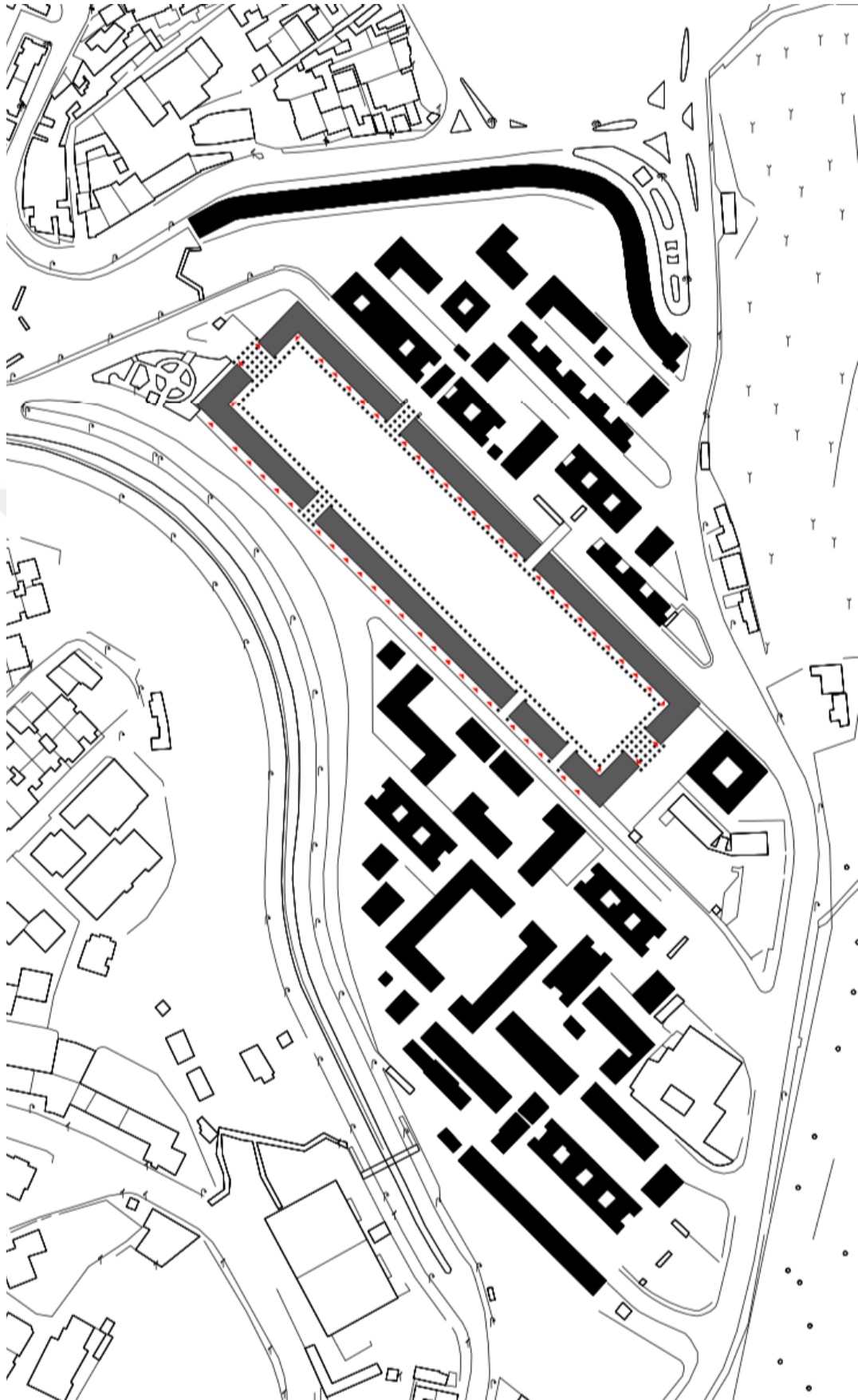
Figure 2.10 : Site plan of Climat de France retrieved from OPGI.
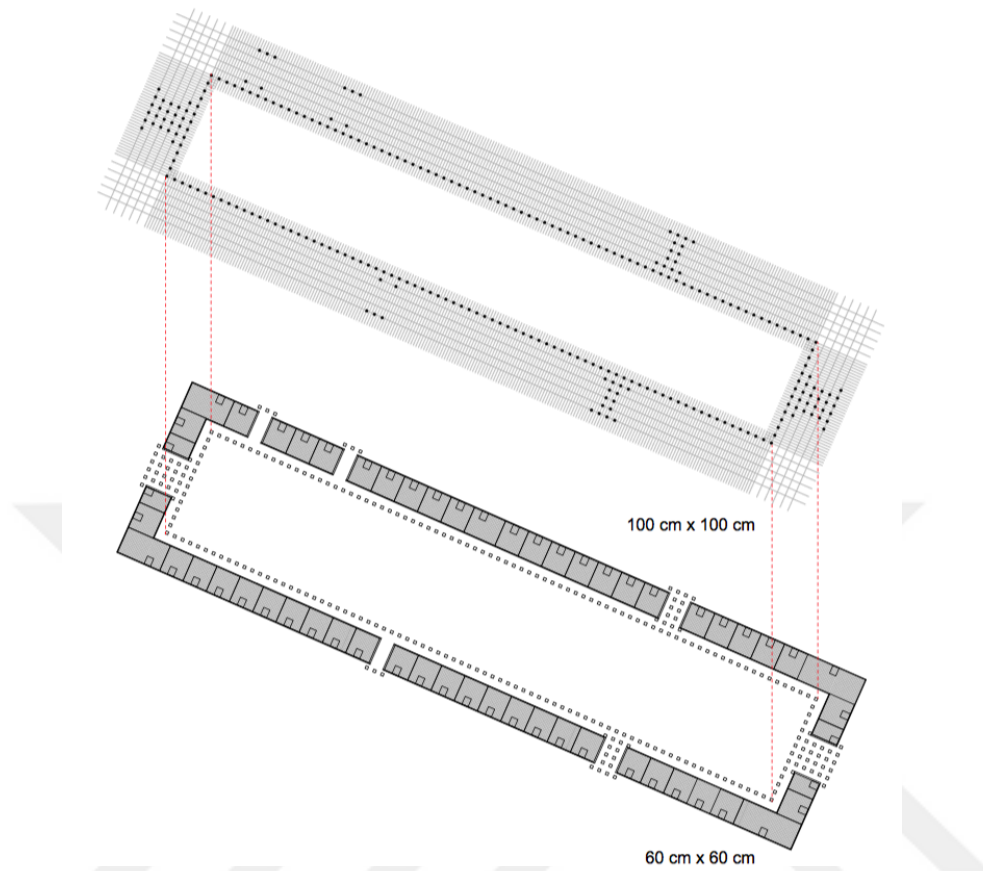
Figure 2.11 : The two juxtaposed plan grids used in the 200 Colonnes. The upper one is the 100x100cm grid with columns illustrated and, on the bottom, the 60x60cm grid that regulates the interior divisions of the blocks.

2.4.2 Block types

The building consists of 56 blocks. Due to the sloped site, entrances on different levels were introduced for different block types. There are 15 different types of blocks with similar visual appearances that provide a consistent and repetitive visual set of openings on the 230 meters long façades (See Figures 2.12 and 2.13).

The block typology differs based on section and topography into four main block types in the *200 Colonnes*. The other block types are variations of these four. Type 01, the block type with entrance from the street which goes around the outer façade of the *200 Colonnes*. Type 02, the block type with entrance from the courtyard, this kind of blocks are higher than the one with street entrance. Type 03, the block type that is adjacent to the colonnaded passages and have extended apartments on the upper levels on the top of the colonnaded passage. Type 04, the block type that is located at the corners of the

building contains a larger number of apartments with more variety than the other blocks.
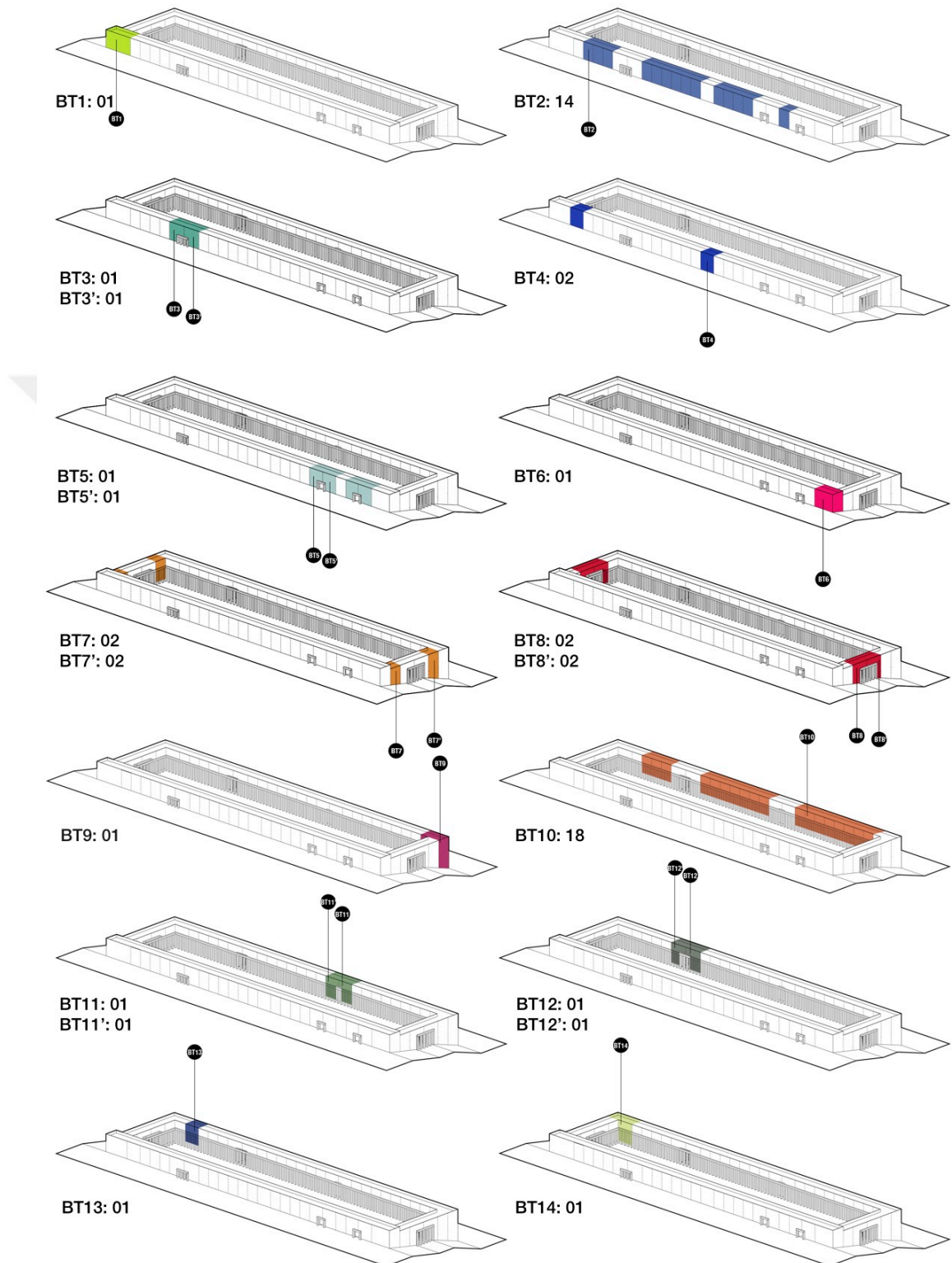
Figure 2.12 : The 15 different types of blocks in the 200 Colonnes.

Block Type 01

Block Type 04

Block Type 02

Block Type 03

Block Type 03'

Block Type 05

Block Type 06

Block Type 07 & 08

Block Type 09

Block Type 10

Block Type 11

Block Type 12

Block Type 13
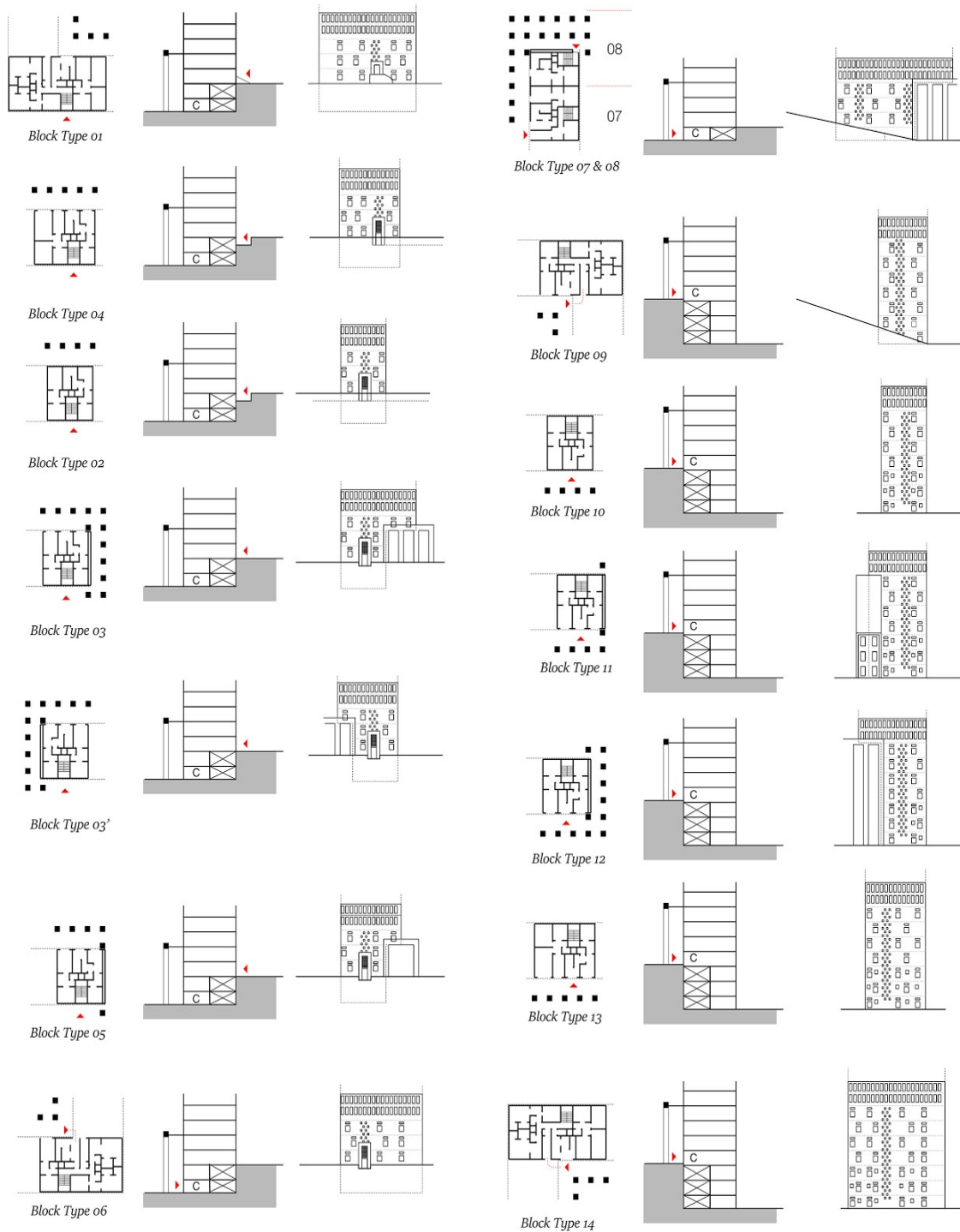
Block Type 14

Figure 2.13 : The plan, section and elevation of different block types in the 200 Colonnes.

Type 01, block with entrance from the street:

Due to the sloped terrain the *200 Colonnes* has different heights on each façade. The longitudinal north-east façade of the monuments sets on the lower level and the south-west façade on the higher level of the site. The shorter side façades are cascades on

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three different levels connecting the middle level with the courtyard and cascade the other two into stairs or ramp to connect the upper and lower levels of the site.

The south-west façade consists of four upper and two basement floors. The bottom basement floor is connected to the courtyard of the building. The entrance of the block is from the street level. There is a main staircase in the center of the block attached to the outer façade connected to the street. There are two apartments at each level, with bedrooms looking at the street and kitchens and living rooms looking at the courtyard. On the basement floors there are studio apartments consisting of one room, storages and commercial areas on the bottom level connected to the courtyard. This is a typical block type that is replicated with minor revisions on the South-West façade of the *200 Colonnes*. BT2 and 4 are examples of this block type.

Plan   Section   Outer Façade
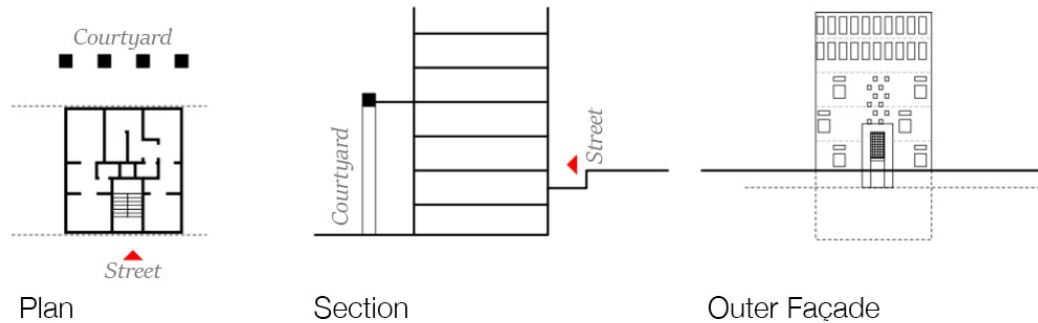
Figure 2.14 : Plan, section and exterior elevation of a block with entrance from the street level.

Type 02, block with entrance from the courtyard:

On the north-east façade of the *200 Colonnes* the blocks height duplicates in comparison to the south-west façade due to topographical inclination. These blocks consist of eight floors and have their entrance from the courtyard level that divides the eight levels into equal sections of four floors. By switching the direction of block entrances Pouillon equalized the height differences between the residents of this type of block. The staircase located in the center, dividing the two different apartments of each floor, is still attached to the outer façade of the block. The floors located under the courtyard level have only one façade and no chance of cross ventilation. Therefore, a new type of window with a different size is inserted in these apartments with single façades in order to improve aeration. Between the ground and these one-sided apartments, a void space was created in order to provide isolation without expensive isolation materials but only using air at a large scale. BT13, 10 and 7 are examples of this block type.
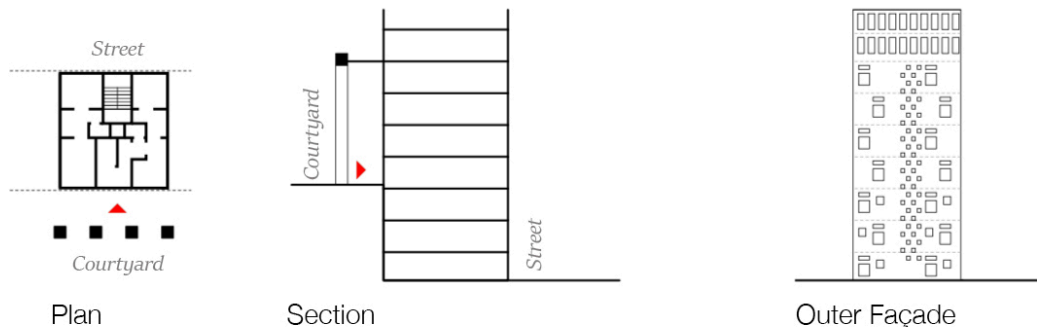
Figure 2.15 : Plan, section and exterior elevation of a block with entrance from the courtyard level.
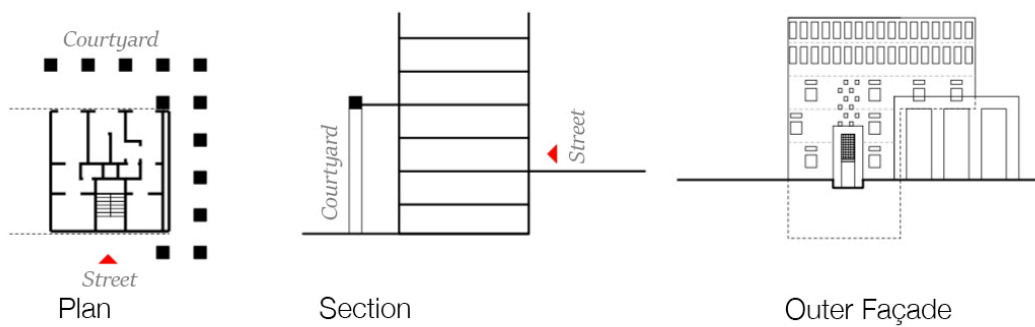
Figure 2.16 : Plan, section and exterior elevation of a block with extended upper floor.

Type 03, blocks with extended upper floors:

There is one colonnaded passage on each of the North-East and South-West façades, three colonnaded passage from the upper level of the South-West façade and two from the lower north-east façade. These passages are mostly connecting the courtyard level with the surrounding streets by stairs. These are important connection points that prevent the *200 Colonnes* from having an isolated courtyard and instead creating a connection hub for the whole neighborhood. The block typology is bend according to these passages in order to protect the consistency of the design. The passage height is set as two floor height from the south-west façade, four floor height from the courtyard level and seven floor height from the north-east façade. This height leaves two floors on the south-west façade and one floor on the north-east façade to cover it. The blocks adjacent to these passages connect from both sides on the higher levels and create larger apartments than the one on the lower levels. The only three-bedroom and four-bedroom apartments of the buildings are located on top of the passages. BT3, 5, 8, 11 and 12 are examples of this block type.

Type 04, corner blocks:

There are four blocks at the corners of the *200 Colonnes* that differ in size than the others. These blocks are in the size of two blocks with a single staircase and different spatial organization. Due to the limitation of the documents the exact plans of these blocks are not clear but a general arrangement of the floor is illustrated. There are many dark units with limited light access which have been used as storage or mechanical space. BT1, 6, 8, 9 and 14 are examples of this block type.

Figure 2.17 : Plan, section and exterior elevation of a corner block.

Figure 2.18 : Types of openings used on the outer façades of the 200 Colonnes.

The spatial diversity of the blocks and the apartments is well masque by the strongly repetitive exterior pattern on the façades. This is important because the exteriors reflect important information on the insides if examined closely enough. A critical perspective is set on this research in relation to façade exploration on how it reflects the design context as well as the user context. The openings used on the outer façades of the *200 Colonnes* carry information on the space they illuminate. There are two types of block entrances all located on the south-west façade, they differentiate according to the slight level differences on this façade. Window type 01 is the typical window opening used on all bedrooms looking to the street on all floors other than the top floor. Window type 02 is the window used in the bedrooms of the upper floor apartments. Window type 03 is basically window type 01 with an additional square window used in the apartments with single façade to provide better aeration. On the staircases of all the blocks a combination of small square openings is used which we identify as staircase openings (See figure 2.18).

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2.4.3 The Apartment layouts

Most of the blocks have a central staircase and one apartment entrance to its each side on every floor. The layout was arranged according to the evolutive apartment standards. The locals were not expected to adapt to the apartments Europeans locally lived in, therefore the colonial rule introduced the notion of evolutive apartments (Pelletier 1955). One-bedroom apartments are around 40 m2 and, as shown in Figure 2.19, their layout consists of a small entrance space and the bedroom on one side and a small toilet area on the other side. The toilet consists of a sink and a toilet with a total area of 1,9 m^2 and no space for shower or bathing. At the end of the entrance space is a larger opening that leads to the living room which is connected to the kitchen with a small patio.
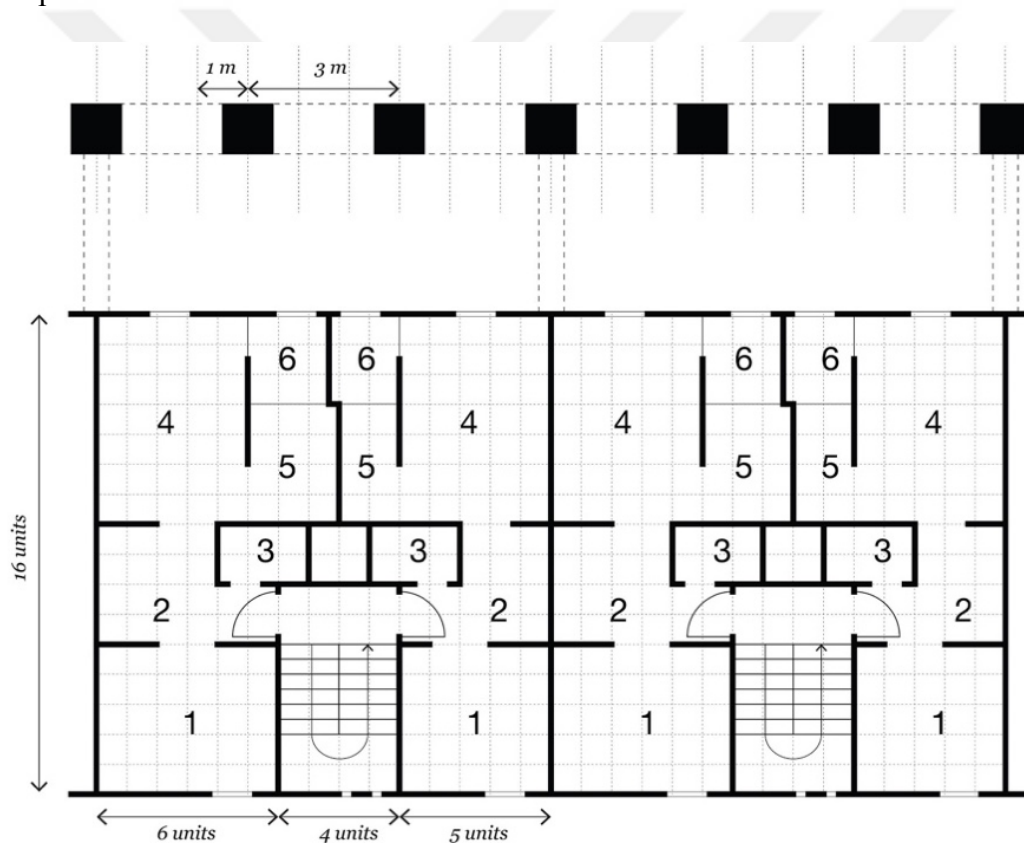
Figure 2.19 : The plan of two adjacent blocks from the 200 Colonnes demonstrating the apartments' layout. (1) bedroom, (2) entrance, (3) toilet, (4) living room, (5) kitchen, (6) patio.

2.5 Lived-in *Climat de France*

Pouillon was proud of his project, which he defined as an agent of social reform catering to the Muslim. He announced that with Climat de France, for the first time Algerians would live in a real city. The monument of Climat de France, the *200*

Colonnes was intended for the lowest income groups, he claimed that perhaps for the first time during modern times, the poorest man is placed in a monument. The project was constantly compared with shantytowns and repeatedly reported to be like "paradise" (Çelik, 1997, p.156).

During the last 60 years Climat de France have been no paradise. The population of this neighborhood decided to join the rebelling during the independece war despite the fact that they accepted to move into houses provided by the French which was accepted to be treason in the colonized Algeria. In December 1960, the French forces strike the *200 colonnes* during a massive uprising and killed 60 residents to suppress the massive demonstration (Celik, 1997).

The neighborhood has been an anthill full of unsatisfied, angry inhabitants that pour into the street in all occasions. Today the site is impenetrable, famous for drug deals and guerillas. Neither the police nor the tax officers can enter it. They can only surround it (Url-2). With time the neighborhood became famous for its major political and social protestation, most of its population don't vote and don't see the need or the purpose of voting. The dominant air of desperation arises from the lack of basic needs; inadequate shelter is only one of them.

Figure 2.20 : Yayhia with his daughter (Url-2).

The inhabitants of this neighborhood, one of the poorest in Algiers, have been settled here since the 60's. They are still living here growing in number with three generations, grand-parents, married children and grand-children under the same roof. Therefore, apartments with one or two bedrooms host 15 to 21 people in many cases (Merzelkad, 2014). Yayhia, a clerk of the court lives with six other members of his

family in a small apartments (Figure 2.12) whereas his sister in law lives in the other room of 9 m^2 with seven people (Figure2.13). During the day, all the clothes blankets and mattresses are piled against the wall, and at night they are spread on the floor to transform the rooms into sleeping quarters (Url-2).

Figure 2.21 : Yayhia's sister in law in her room (Url-2).

3. USER CONTEXT OF MODERN HOUSING AND CLIMAT DE FRANCE: INHABITING AND APPROPRIATING

The user context of Climat de France comprises the phase in which the completed design meets its end users and start to be actively used. In order to discuss the use aspect of architecture, I start my discussion with design methodologies and the exploration of use and user from an architectural history point of view, similar to the previous chapter. In the search of an architectural science, modern architects address architecture as a positive science that can create perfect living machines with the right combination and formulas. The strict functionalism and concept of dwelling as a "machine for living" changes direction after WWII, which is visible from CIAM discussions. Dwelling was taken further by TEAM 10 afterwards. I will continue to explore the changing dwelling definition from the user context through CIAM meetings and themes with a focus on the conception of use and user. The recognition of the user in modern architecture was initiated by CIAM9 and explored further by TEAM 10 that moved towards a new perspective with modern utopian architects. Simultaneously, design science explored different methodologies for user empowerment in the design process. The user explorations in design methodologies started with the motivation to predict users in order to design more compatible projects and expanded into flexible, manipulative and responsive spatial solutions (Negroponte, 1975). The duality of design objects before conception and after completion, the "Design context" and "Use Context" as identified by Kroes' (2002) are further explored to understand residents' modifications in Climat de France. The residents' modifications are identified as products of the user context and are explored from an anthropological perspective to understand its social circumstances. Before diving into the culture of modifications, I investigate first the conception of home and the idea of dwelling, then explore home accommodating and cultural appropriations.

Residents' alienation in mass housing is widely explored in social sciences and means of residents familiarizing themselves or making themselves home are discussed. The indispensability of user modifications, transformations and adaptations in the process of making themselves home is emphasized in this study. However, the extent of the

adaptations and transformations are important. Therefore, I explore different intensities of fighting mass housing alienation spanning from familiarizing oneself to revolting. In the case of Climat de France, its residents are highly active manipulators of space that expand their modifications in many directions. They have been using space appropriation as a tool against cultural alienation as well as a tool for rebellion. In this aspect, the temporality of the building and its potential is investigated through images from different periods. These images constitute evidence to the flexibility and spatial potential of the *200 Colonnes* on one hand and the temporality or severity of its residents' modifications on the other. Temporality is discussed in correspondence with Kroes' duality of design (2002), and from an anthropological perspective with reference to Tim Ingold's building and dwelling perspectives (2000).

3.1 The Interpretations of Use and User in Design Methodologies

3.1.1 Towards a "modern architectural science"

After the second industrial revolution, dwelling for minimal existence held the objective to create a housing formula with an optimum proportion of modern functionality required in a dwelling (Mumford, 2000). Le Corbusier (by Cross, 2006), claims that in the pursuit that the key component of modern architectural science was to combine and interpret the exact functions. He explains that "the use of the house consists of a regular sequence of definite functions. The regular sequence of these functions is a traffic phenomenon" (by Cross, 2006, p.49). According to Le Corbusier architecture is about putting objects and functions in order. Function has been the key component of modernist architecture and there were many attempts to identify it as precisely as possible. Function is the only connection to the users and how they are expected to use space. In order to have a good building that works well, it needs to be functional. Function was the axiom of modern architectural science.

Following World War II, the first attempts of design methodologies that focused on performing better functionalism by integrating design with cultural data began to appear (Crane, 2013). This falls with the same period that CIAM-Alger was studying Mahieddine *bidonville* (shatytown) and other groups focused on vernacular settlements outside Europe to gather social information on how people contribute in the space making of their environment. The social data collected by the modernist architects from the local context was translated to cultural forms applied in the design

such as the patio, courtyard or mashrabiya in the case of Algiers. Even though design methodologies started to recognize the user, their attempts were design process focused and aimed to improve the design through the collected data on the end user. An important aspect missed by modern architects interested in vernacular contexts was the cultural practice embedded in these sites. Karakayalı (2010) claims that the rupture in translation of local contexts reflected the colonial ideology in two ways, one is the need of the superior European guidance and instructions to adapt cultural practices to modern constructions and the other is purging the social and political dimension embedded in the cultural practices of building.

3.1.2 The revelation of human relationships

After CIAM dissolved, modernist architects continued their exploration under a new group TEAM 10, where they focused on how human communities might function instead of how they should function (Sadler, 2005). The behaviorist approach of canonic modern architecture starts to dissolve into a more structuralist one. One of the most influential figures of structuralism Aldo van Eyck, co-founder of TEAM 10, presented in the final CIAM congress, CIAM 11 in 1959, a collage of drawings, photographs and texts called the Otterlo Circles. One of the two Otterlo Circles is a diagram that combines three great architectural traditions: the classical, the modern and the archaic. The second circle on the other hand identified by the caption "for us" highlights the social values and the evolving aspects of human societies. Van Eyck, emphasized the duality of architecture and developed mottos such as "vers une Casbah organisée" (Mota, 2014, p.34) to combine the two approaches highlighted in the diagram. According to his diagram, architecture is not only expected to keep up with the unfolding human reality but also deal with its constants (Strauven, 2007). According to Van Eyck the temporality of societies contributes to an architecture that overcomes the contradictions of previous architectural traditions.

Another influential TEAM 10 member Giancarlo de Carlo, proposed fundamental discussions on the incorporation of users in the architectural process. De Carlo was one of the first architects to propose participatory process and dialogue with residents (Bacova et al., 2011). He projected that users in the future would design the architecture by inhabiting it and the architect would be just informed (Ratti & Claudel, 2015). A passionate opponent of the analythical method adopted in *Existenseminimum*,

De Carlo advocates that there is no 'model-man' that rational standards can be formulated based on. He describes this design approach as the "authoritarian perversion of the design process" (Wilson, 2005, p.75) and explain that it consists of three steps, (1) assignment of function, (2) the exploration of architectural forms and (3) the assessment of the outcome in practice. De Carlo point out that in the authoritarian approach the third phase is directly bypassed which leads to a linear design design process instead of an iterative one (Colin, 1993).
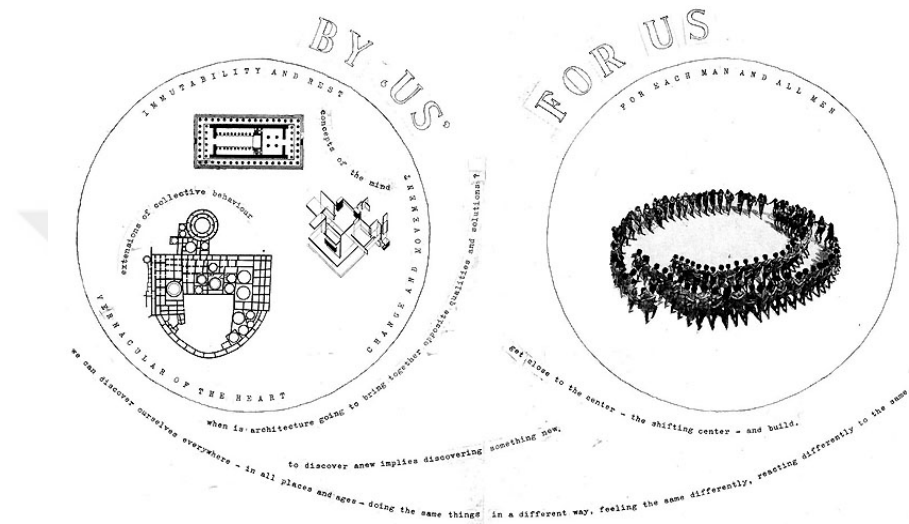
Figure 3.1 : The Otterlo Circles presented by Aldo van Eyck in CIAM 11, 1959 (Url-4).

The theorist and architect Habraken, emphasizes that relational architecture is a continuum of small acts of design (Ratti & Claudel, 2015). He clarrifies that "house types were never architectural inventions but came to full bloom by interaction" (as cited by Ratti & Claudel, 2015, p.26). The behaviorist approach in early modernist architecture elaminated all interactions and adopted a behaviorist approach that forced people to live in a certain way. This approach has been widely criticized by the following generation of architects that dreamt of an open-ended architecture that would be mold and shaped by its residents.

3.1.3 Change as a design strategy

It was argued by many oppositional architects that the architect had no right to tell people how to live and they advocated that space use is "the user's prerogative and at most architect should offer technology and assistance" (Broadbent, 1970, p.68). Avant-garde architects such as Archigram, Superstudio, Price, Cook, Crompton and many others worked on the uncertainty principle (as cited in Sadler, 2005) that they

borrowed from quantum physics. They advocated that "buildings with no capacity to change can only become slums or ancient monuments" (as cited in Sadler, 2005, p.94) and proposed a more general principle of indeterminacy to consider growth, change, flexibility and ageing buildings. Unfortunately, these attempts stand far from reality and stayed as imaginary future projections of society and a living architecture.

3.1.4 User empowerment and computational approaches

In the late 60's use and user have been widely explored in design methods (Cross, 2001). The idea of function, how it was understood in an object, and how it connected to the physical properties of the object had not received explicit attention before the emergence of systematic design methodologies (Vardouli, 2015). The first generation of design methodologists rejected the concept of function that architects traditionally used in architectural programming and replace it with concepts such as "activity" or "tendency" (Vardouli, 2015). The design was reconstructed as a process of embodying these anticipated activities or tendencies in the physical form of a building or object. Using computational analysis and predictive decision-making techniques design methodologist initially aspired to detect deficiencies in a design before its manufacturing, distribution, or use (Jones, 1963).

Soon after design methodology emerged, design researchers turned from quantitative categories such as "tendencies" or "activities" to qualitative methods for understanding human needs (Vardouli, 2015). The collaborative design appeared as an acknowledgement of users as intentional entities and their inclusion as an active participant in design decisions making. Both rationalist or phenomenological participatory approaches in design research assume that intentions frames, goals posed and decisions made in the context of the design has special authority in determining how things function and how they are used (Vardouli, 2015). The problem with these methodologies is that they assume a direct translation between the artifact description made by the designer and the user's interpretation of it. As mentioned previously the architect's implementation of cultural information about the need and the activities of the users is not sufficient to provide the artifact's success. Hill (1998) claims that in its construction of a myth of purified community, community architecture suffers from the same utopian tendencies as the modern architecture. Hill (1998) explains that it is

a matter of power and a new model between the architect and user that needs to be developed in order to reconfigure power balance.

The founder of MIT's Architecture Machine Group, Nicholas Negroponte (1975) identifies the commonly discussed attributes to define architectural environments during the late'60s as flexible, manipulative and responsive. He explains that "flexible" refers to the cohabitation of two activities, "manipulative" implied multiplicity of uses achieved by physical transformations dictated by the users ("from closing a curtain to moving a wall") and "responsive" in which space takes an active role in the change "that could become manifest in homes of the future and be viewed as intelligent behavior" (Negroponte, 1975, 132). He refers to responsive environments as the "new humanism" that is enabled by machines to arrange local wishes with global constraints (Vardouli & Buechley, 2014). The MIT House_n project is an example of a responsive project that interact with the user through artificial intellegence. This research proposes a system that enable users to generate their own design configuration within the project constraints all embedded in the intelligent computational structure of the house (Larson, Intille, McLeish, Beaudin, & Williams, 2004).

The user empowerment in architecture reflects through history in various approach and methodologies. From the evolvement of CIAM 9 to TEAM 10 and pre-computational utopic megastructure visions to todays' computationally mediated projects, there is a wide range of interpretations of use and involving the intended inhabitant. The concept of a physical or computational platform that creates ephemeral dwellings reflecting the ever-changing needs and desires of their users is a persistent pursuit of computational mediated user empowerment (Vardouli & Buechley, 2014). However, all these studies focus on introducing and empowering the user in the design context which is different than the user context that this study focuses on.

3.1.5 Learning from inhabited space

Beyond the practical and technical approaches to developing an ephemeral dwelling moderated by the residents, I want to focus on the use of computational tools to explore social aspect of space use. The dual nature of the designed artefact as the physical object and the intentional object in the mind have been explored by Kroes (2002) who distinguishes the two as the different contexts of human action. "Context of design" as

manipulated by the architect is based on the physical and relational properties of the design whereas the "context of use" has architecture manipulated and transformed by the users according to their needs and purposes. Hillier & Hanson (1984) point out that the problem of space is the lack of a "social theory that permits a systematic analysis of experiments that would enable us to learn from experience" (Hillier & Hanson, 1984, p.29). Learning from experience can only be practiced by exploring the user context which is a form of learning that has not been explored in the previously mentioned design contexts. This is necessary because the process of dwelling is all about experience and adaptation of the inhabitant. Residents making themselves home in mass housing is an agonizing process that takes a lot of negotiation between the given space and the user. I will adopt an anthropological perspective in the following part in order to investigate how residents cope with alienation in mass housing and identify the resident modifications in the user context from a dwelling perspective.

Figure 3.2 : Images illustrating the inhabited Climat de France with signs of adaptation and improvement of use of space from the 1960s (Archives PSB).

3.2 The Social Assets of Domestic Space

"A house: a shelter against heat, cold, rain, thieves and the inquisitive. A receptacle for light and sun. A certain number of cells appropriated to cooking, work, and personal life" (Le Corbusier, 1986, p.114).

The definition of a house in the scope of this thesis is far more complicated than Le Corbusier's house definition. How a house transforms into a home and the residents' role in this transformation is a subject that have been explored widely in material culture studies. The meaning of home, what makes a space home? How people make

themselves at home? Are substantial questions that exceed the scope of this dissertation, yet I will visit studies of material culture in order to consider the relationship between the people and the space they inhabit. In order to ground the residents' modifications with social sciences, I focus on an overall definition of home before moving on to mass housing and the estrangement of residents. Finally, I move to residents' modifications and consider their implementation as a coping mechanism against mass housing alienation.

3.2.1 When dwelling becomes home

Different disciplines deal with the issue of home, each defining and understanding it in a distinct way (Blunt & Dowling, 2001). In the scope of this study home will be explored beyond its physical structure, revealing relations and connections that makes a space home in order to understand the motivation that leads residents to modifications. Blunt & Dowlings explains that 'home is: a place/site, a set of feelings/cultural meanings, and the relations between the two.' (2001). Furthermore, Heidegger (1971) introduces the term dwelling as an existential dimension of human being. We dwell by making the places and things that structure and house our activities. Therefore, how home is defined and how places are made into home cannot be discussed independently from the boarder historical and social context (Mallett, 2004). The process of home making, is a major aspect in order to understand modifications. That is where the term 'accommodation' (Miller, 2001, 2002) fits in the context of this study since it refers to the process by which a home and its inhabitants transform each.

Harbraken (2000) defines dwelling as a part of the built environment defined by the act of settlement. By realising this act of settlement we all turn into players, agents who inhabit the environment, transforming it to our liking and making sure things stay as we choose, within the territory we claim (Habraken, 2000). He explores the act of transforming as a control act that we exercise simply by using a built form. Inhabitant's control over the place he/she occupies is essential and is the main problem with mass housing according to Habraken. "Mass housing reduces the dwelling to a consumer article and the dweller to consumer" he says, the inhabitant has no control over the process. "In order to regain control over our housing we must rediscover what has been lost through a long preoccupation with mass housing" he includes.

Contradictory to Habraken's definition, Heidegger's (1971) notion of dwelling does not only refer to an activity of material environment, but also to the existential dimension of human existence. "To be a human being means to be on earth as a mortal. It means to dwell." (Heidegger, 1971). In contrast, home does not exist but is made by its inhabitant. Habraken elaborates this: "a dwelling is only a dwelling… when people come to live in it." This points out the importance of relation between the inhabitant and the dwelling and the process they go through making a dwelling, a home.

The material culture of the home deals with the changing social relationship of its inhabitants, questioning the complexities, conflicts and compromises involved in creating a home (Daniels, 2001, p.205). Miller, defines the processes by which dwellings are personalised through concepts such as appropriation ad accommodation (Miller, 2001). In his article accommodating (2001), Miller points out the relation of the home and self-expression and introduces the time parameter to this paradigm. He claims that the relationship we develop with the home, 'these tensions of the short term and long term find meaning in different ways' (2001). In the extent of this dissertation, Climat de France contains resident interventions at multiple levels some exceeding the building limits. Accommodations in this context are no longer related to interior décor, they extend and transform into physical extensions. The scale of accommodations is an evidence of how time set the tension, in the case of the grand ensembles, the inhabitants has been occupying this space for three generations, almost 60 years now. These interventions may be identified as resistance acts relying on Hooks' argument that 'home-place' can be a site of resistance (Hooks, 1991). Susan Kent (1990) in her interdisciplinary cross-cultural study, emphasizes the importance of studying aspects of culture that influence the use of space for architects in order to create complemental designs. My attempt is to explore the definition of home and the aspects of culture that shape it in material culture studies in order to interpret the residents' modifications in relation to their use of space.

The importance of the dialect between the resident and the dwelling and their negotiation is undeniable. The process of making a house into a home is a complex process that involves the changing social relationship of its inhabitants, questioning the complexities, conflicts and compromises (Daniels, 2001, p.205). In the case of Algerian rural migrants (Figure 3.3), Bourdieu describes their experience in "modern city housing as improvised and paradoxically, constraining despite the improved space

standards, facilities and services" (as cited in Webster, 2011, p.16). The transition from rural one floor buildings to apartments transform their social life and daily routines.

> Bourdieu's findings suggested that the new form of housing disrupted the operation of the tribal family structure and the traditional relationship between work and living. He describes the city apartments as a system of demands inscribed in objective space and asking to be fulfilled, a universe strew with expectations and thereby generating needs and dispositions.(as cited in Webster, 2011, p.16).

Figure 3.3 : An Algerian rural house, gathering the family around the fireplace, the heart of the home where the food is cooked and the space is heated (Archives du Service Historique de la Défense, ALG 59/522 14).

The constraining and improvised experience in social housing is elucidated through concepts such as appropriation and accommodation to define the process of dwelling personalization (Miller, 2001). Miller (2001) introduce the term accommodating for double implications, first the process of adapting or adjusting to something and second the supply of accommodation. Therefore, the home and its resident accommodate to each other by adapting and transforming each other. In line with home accommodation, I review home transformations as residents' tools of contra-alienation and self-expression in the process of their adaptation to the given space.

3.2.2 Appropriation, modification and accommodation agains mass housing alienation

According to Habraken (1972), "modern man" does not house himself as he used to do but "is housed" by another authority. Architects design and construct mass houses for the universal man, adressing him as a consumer and the dwelling as a consumer article (Habraken, 1972). The occupant is expected to be a disciplined learner and accommodate himself to the space designed for him by the architect. Habraken opposes this idea and proposes that the occupant should be involved and educated on how to construct, maintain and look after the building, he should be given "a box of building blocks rather than a finished doll's house" (1972, p.13). He claims that this would be the way for the resident to gain the previously lost control over housing. The mean of self-expression is introduced by Habraken (1972) who emphasizes the inhabitants' desire of changing and personalizing what they are offered. He explains that a house before mass housing was a signifier of the dweller's "passion in life" and "it was his social expression, his way of establishing his ego." (1972, p.14).

Familiarization & self-expression

Familiarizing ourselves with mass housing can be identified as a matter of self-expression. Residents aim to distinguish themselves as a singular being from the masses that have been addressed with the same architectural solution. In his book "The Structure of the Ordinary", Habraken (2000) identifies mass housing occupants as players, agents transforming the environment to their liking while inhabiting it. The power of the architect is limited once the building is occupied, in post-occupation residents gain control over the building and it is their turn to display power. The power balance between the architect and the future users is related to the control they have over space. Use on the other hand is directly associated with exercising control by Habraken (2002). Residents' modifications are the users' tools to control the space they inhabit. The Algerian artist and architect Kader Attia (2010), interprets residents' transformations as signifiers of cultural appropriations that could broaden our understanding of hybrid space and contribute to grasping a wholistic existance.

Control to what extent? Rebellion & destruction

Climat de France like many other *Grand Ensembles* in Algiers, were initially implemented by the French protectorates to control indigenous people. Mass housing was used as a biopolitical tool of subjugation and control by the French (Utting &

Jacobs, 2018). This political agenda was wisely implemented in the project of Climat de France, the ideology was encoded to the spatial layout of the apartments and the settlement of the buildings on the site plan. Not only the alienation, but the oppression as well was experienced by the resident inhabiting the space. Although residents of Climat de France have been continuously appropriating the space they inhabited, at a certain point appropriation fail to satisfy their needs. At this point, residents' modifications expand from being act of self-expression into acts of resistances. The residents appropriated space through informal occupation, unintended use and transformed it in many cases to a ground of protest and revolution (Utting & Jacobs, 2018). Therefore, resistance not only took place but its appropriated space to make new spaces (Pile & Keith, 1997).

Figure 3.4 : A scene from the movie "Battle of Algiers".

Figure 3.5 : Image from the riot in 2011 by Abderrahmane Semmar (Url-5).

The image of the building is strongly associated with the Algerian revolution. Climat de France was the stage of the Algerian revolution in the movie Battle of Algiers (Figure 3.4). "The Algerians may have lived inside the buildings of Climat de France, but they rejected the design that its architecture had upon them" (O'Leary, 2016). The power struggle between the architecture of Climat de France and its residents have

always been a visible struggle. In 2011, the municipality entered the neighborhood of Climat de France with the Police force to demolish the informal settlements and extensions built all over the site (Figure 3.5). This intervention led to massive revolts of the residents of Climat de France against the Police and the demolishment engines. Many were injured during the brutal confrontations of the authorities and the residents that last for days.

3.2.3 The reflections of temporality in domestic spaces

While architects and authorities expect architecture to shape people, the situation is mostly the other way around. Susan Kent (1990), claims that the use of space effects architecture more strongly and consistently than architecture change people. Architects tend to complain about how users fail to carry out designed intentions (Gutman, 1976) and ignore how users transform the space they inhabit. However, this relationship between the user and space can guide us toward a more dynamic idea of architecture that embeds the use of space, rather than imposes the dogmatic existence of architecture. Brand (1994) points out the disconnect between the conception and the reality of buildings and states that "the idea is crystalline, the fact fluid" (Brand, 1994, p.2). In the search of fluidity and dynamicity, how can architects perceive, represent or explore a lived-in architecture is an important question this research explores. Latour and Yavena (Latour & Yaneva, 2008) claim that we need a reverse photographic bomb, as the one developed by Marey to capture multiple frames from a moving act, they explain that what architecture needs is an instrument that could transform the static view of a building into "the continuous flow that a building always is" (Latour & Yavena, 2008, p.2). The tool they propose might be interpreted as an ethnographic snapshot generator, that documents and combines the becoming of architecture through time (Buchli, 2013). The becoming of a home is significant in terms of open-endedness and temporal uncertainty with all the processes of iteration and extension through time and space (Buchli, 2013). The cartesian architectural representations fall short in representing the continuous flow of possibilities of inhabited spaces.

The answer to the temporality is widely explored in social sciences, the work of the anthropologist Tim Ingold in particular investigates the temporality of landscape (Ingold, 2000). In order to understand the meaning that lay behind the landscape and

the dynamics that shape it, he emphasizes the importance of exploring temporality. He introduces two perspectives for looking around us, one is the building perspective and the other is the dwelling perspective. The building perspective reflects the static idea of a building and the perception of traditional architects, the main idea behind it is that the world is made first and then inhabited. On the other hand, the dwelling perspective embeds temporality and promotes the understanding of making the world while inhabiting it. Ingold (1993), entitles the concept of taskscape to represent the patterns of dwelling activities from a dwelling perspective. I relate Ingold's perspectives (1993) to Kroes's approach (2002) by associating the context of design with the building perspective and the user context with the dwelling perspective. The importance of the dwelling perspective once again occurs in the understanding of built forms and inhabited spaces in order to untangle the engagement of daily life. It is in the ordinary course of life where the perception and cognition of the people's involvement with the environment is embedded (Bourdieu, 1977). Therefore, I propose to adopt a dwelling perspective in the design process instead of expecting to achieve better translation between the design and user's need and activities.

3.3 Apartments from *Climat De France* and Their Residents

On field research a couple of residents invited me to visit their apartments. From the small number of apartments, I introduce three apartments that set an example on the use of space and resident adaptations. The following apartments are from different block types that I have mentioned previously, one from the upper floor of a typical block with an entrance from the street, the other is from a block with entrance from the courtyard and finally an apartment from a corner block.

3.3.1 One room apartment from block type 01

This apartment is inhabited by a young family of four. The father of the family used to live in this apartment when he was a kid, he was the youngest of the twelve siblings living in this apartment with their parents. He was born, raised and married in this apartment. When the other family members moved out, he was left to live in the apartment with his nuclear family. He is a clandestine taxi driver with a son of three years old and a baby girl.

Figure 3.6 : The plan of the apartment (left) and images from the renovated interior (right). The living room (4, top left), bathroom (3, bottom middle), kitchen (5, bottom right).

They renovated the apartment recently according to their taste; the kitchen and the bathroom were renovated. The opening between the kitchen and the living room was widened in order to open space for the kitchen table. Ceramic tiles on the floor and the walls were applied, the bathroom door was changed into a PVC door with a colorful glass. The exterior door was changed as well by a security steel door and its surrounding cladded in ceramics, reflecting the interior renovation to the exterior. The waffle slab in the entrance and the living room was masked by a suspended ceiling. Smooth finishes that can be cleaned easily were favored by the family. Bright colors such as orange were used in the kitchen and the bedroom while cold colors such as blue and grey were preferred in the living room, entrance and the bathroom.

Since this apartment is located on the upper floor, there have been severe rainwater leakages from the flat roof that serves as a common terrace. The father of the family claimed that after renovating the insulation on the rooftop they built walls on both sides of the terrace in order to seclude it from the adjacent blocks' residents. He included that people were building extensions everywhere and they built these walls to control the invasion of their rooftop.

3.3.2 One room apartment from block type 02

This is an illegally occupied apartment; the residents have been squatting here since 2014. This apartment is located in one of the two blocks that have been evacuated after

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a damaging gas explosion in 2010. Assia is an adult woman living with her two brothers, one of them is married and the other is single. This is originally a one-room apartment with a mini kitchenette and a bathroom located on the lower levels of one of the blocks with entrance from the courtyard. The backside of these apartments is reserved to provide isolation and not accessed in the original design. Assia and her brother extended their apartment to this void space in order to triple its size (Figure 2.23).

Figure 3.7 : The original (left) and modified (right) plans of the apartment.

Figure 3.8 : Images from the expanded apartment, single brother's bedroom (1, top left), Assia's bedroom (1, top right), living room (4, bottom left), bathroom (3, bottom middle) and entrance (2, bottom right).

The layout of the apartment is massively changed, Assia and her brother made a large bedroom for themselves from the unused space that was consecrated for isolation. Her brother even added an external door to his room that provides him independent access

to his room. The other void they occupied was transformed into a kitchen connected to the main hall facing the living room, that is the only room with natural ventilation (Figure 2.24). Window type 03 highlighted in Figure 2.18 is the only source of natural light and air. Assia and her brothers did not only expand their apartment but they connected it with their married brother's apartment on the adjacent block (Figure 2.15).

3.3.3 A three room-apartment from block type 04

This last apartment is inhabited by three related families. This is a three-bedroom apartment in a corner type block accessed from the street level. The apartment layout is larger than regular apartments in Climat de France but each room is occupied by a brother and its nuclear family. The mother of the three brothers also co-inhabit the apartment while she sleeps in the living room, other members of each family share a bedroom (Figure 2.25).

Figure 3.9 : The plan of the apartment (left) and images from the renovated interior (right). The living room (4, top left), bathroom (3, bottom left), entrance (2, bottom middle) and kitchen (5, bottom right).

Whereas the intentions in Climat de France were to develop optimum housing with maximum hygiene and minimum cost in the example apartments shown here the mismatch of intended lifestyles and how people actually live in these apartments is

observable. It is clear that residents do not follow the expected lifestyle dictated to them by the architects and their designs. Culture is an essential aspect of lifestyle and a factor in residents' modifications

4. THE RESIDENTS' MODIFICATIONS IN CLIMAT DE FRANCE

Climat de France from the perspective of its residents is beyond our understanding. Only if it could be experienced with the same intensity that they experience it. The residents' experiences and feelings toward the building is complicated and multilayered. I have conducted two visits to the site, one in August 2017 and the second in April 2018. The process of collecting data has been challenging and dispersed. My first visit was mostly reserved to local archives and municipalities in the search of quantitative data on the neighborhood and visual illustrations of the project. After the first field visit, I conducted research in archives of *Service Historique de l'Armée de Terre, Chateau de Vincennes*, Paris, France, and the Association "Les Pierres Sauvage de Belcastel" in January 2018. In April 2018, I went back to Algiers to investigate the site and conduct more interviews with residents. Residents were not comfortable with conducting interviews with an outsider and a researcher, most assumed that I was a journalist and were concerned about their future and the future of their dwellings. Due to the residents' privacy concerns, their reluctance towards interviews and opening their houses, I shifted my focus on the material that was already out. I documented the formal and visible aspect of the resident modifications from the façades. I focused on the public aspect of the residents' modification. In the following part, I will explain the details of this data collection and how I interpret the visual data into architectural drawings in order to process them. I also introduce the use of shape grammars for analyzing residents' modifications.

4.1 Data Gathering

The visual material that establish the basis for our methodology is collected through audio-visual media, archive documents, observations, and unstructured interviews. Archived documents are available at the association "Les Pierres Sauvage de Belcastel" (PSB) which was created in 1996 for the work of the architect Fernand Pouillon. The association is in charge of the archives and all kind of documentation of and on the architect. The construction of Climat de France was realized during the

years of the independence war between 1954-1957. Therefore, the documentation of the building saw major ruptures. No significant drawings of the building are available, only photographs from during and after the construction are available at the PSB.

Climat de France has been an appealing site for many photographers and movie makers since its construction. Numerous photographers raised consciousness about resident modifications in 1950's social housing in Algiers and Fernand Pouillon's architecture in particular. One significant photographer is Stephane Couturier who dedicated many years to *Climat de France*, made an exhibition, a movie and published a book composed of the façades of the *200 Colonnes* and the resident modifications. He photographed all the façades of the courtyard, partially the façades to the streets around, and all kinds of resident interventions between 2010-2014. On the top left photograph in Figure 4.1, derived from the archives and taken shortly after residents settled in the building, we see one covered balcony. This demonstrates how early resident modification started. On the top middle photograph taken by Couturier in 2010 demonstrates the most inhabited period with many extensions on the rooftops and extensive façade modifications. It is apparent in Couturier's photograph that all the French balconies located on the mid-axis have been transformed, and all balconies on the top floor have been covered. On the top left photograph taken in 2017-8 from the same point view as the one by Couturier, indicates that most of the rooftop barracks have been removed and there is no sign left of them. The Algerian authorities in 2012 relocated people living in the barracks and cleaned out all kind of extension on the ground level and rooftops, the photograph in the low middle demonstrates the masonry work made by the municipality to cover the cavities created on the façade for the previous extensions. However, it is observed in the photograph taken in 2017 that people perforated the enclosed cavities and reuse them (Rezoug & Özkar, 2020). The temporality of the building is visible through those photographs taken at different times tastifying different uses and needs of the residents.

Another media taking acount of *Climat de France* is cinema. There are two important films. One is *Omar Gatlato,* a film by Merzak Allouache from 1977 depicting a young Algerian man living with his parents, siblings and divorced sister's children in a two-room apartment in the *200 Colonnes*. The personal struggle of Omar's daily life is portrayed in relation to the private and public spaces of the settlement. Besides the socio-economic hassle this young Algerian man experienced after the independence,

the spatial limitation of their home is expressed by Omar through a cynical home tour of the family apartment that he lives in with his mother, sisters, nephews and grandfather. At some point he stops introducing the rooms and refers to corners and how they are utilized by different members of the family. Such as the corner in his room, where his nephews sleep that he resembles a public urinal or the corner in the kitchen where his grandfather sleeps and licks the bottom of the pots every night. The other film is the well-known *La Bataille d'Alger* by the Italian director Gillo Pontecorvo. In this film, the blocks of *Climat de France* set the background to the battle scene between the French army and Algerian people during the battle of Algiers exposing the importance of the *Grand Ensembles* during the independence war.

Internet videos shot by residents during 2011, depicted the demonstrations held in *Climat de France*, *Diar El Mahçoul* and other popular neighborhoods of Algiers. Protests were against the authority that neglected their living conditions. They uploaded videos demonstrating their aggravating living conditions and ongoing protestations over their right of housing. A resident from Diar el Mahçoul, another grand ensemble designed by the French architect Fernand Pouillon in 1954, expresses the gravity of their living conditions: "... we sleep in the kitchen, in the stairs. Once it rains, there is overflow through all the walls. We are living in a disaster, we can't invite guests, we can't even get our dead out. We still did not gain independence…" (Url-2). The lack of space and the deteriorating conditions of the building are highly associated by the residents with repressing colonial policies leaving them feeling neglected and infuriated. A resident from Climat de France appeals to the authority in an interview on national television, justifying his informal adaptation by saying " it has been 13 years! We have been neglected. All I want is a room, a room I can live in…" (Url-3). There is a collective standing noticeable on the residents' language that have been carried on from the French invasion until today. They identify themselves as "we" and the authorities as "them". After these demonstrations, the municipality of Algiers decided to demolish the extensions and clean the surroundings of the building and the overpopulated families to new housing neighborhoods. However, this attempt ended up with demonstrations as well. The population of this neighborhood is against all top-down decisions and they use the architecture of the modifications they make as a tool of self-expression. The recognition of the architectural form as a tool of manifestation by the residents and their competences in exploring its potentiality is an important

factor to explore in social sciences. By formalizing the resident modifications, it is possible to investigate the social forces behind them and channel this potential towards a reuse strategy.

Figure 4.1 : Photographs taken at different times show the continuity and discontinuity of residents' modifications. The photographs in the top row capture how rooftop extensions have diminished in 2017-8; and the ones below capture how the ground floor extensions have been regenerated in 2017-8 after being demolished in 2012.

4.2 Façade as a Manifest

The *200 Colonnes* offers in its highly modified monoblock a variety of modifications within a repetitive spatial organization. I use abstract two-dimensional drawings for translating the gathered data into visual grammars but anticipate in future work self-learning algorithms that are able to capture visuals of different levels of detail from documentary film and photography (Galison, 2014). The rule set captures the resident modification embedded with information on how they fit with the existing architecture,

the set of skills they use for the transformations and the impact they have on the existing building.

Looking at the façades instead of the plan, counteracts the modernist doctrine that "the plan is the generator" (Le Corbusier, 1986, p.45). The significance of the façades, differently than the modified interiors, is that the display of residents' expression of spatial needs and cultural appropriations outside is more daring. The modifications made by the residents inside their apartments are usually accepted or tolerated by the architects and the authorities, however once the appropriations become visible from the outside they are regarded as a threat to social order. In most European countries it is strictly forbidden to modify social housing. The case of *Climat de France* and many other modernist mass housings dispersed in the Global South constitute rich case studies of residents' rampant and creative modifications. Therefore, the façades of the *200 Colonnes* block in Climat de France is the ground for this analysis in which the façade is the generator of use. I acknowledge that "... the exterior is the result of an interior" (Le Corbusier, 1986, p.5). This is a stronger claim for Climat de France as residents modify the exterior based on activities in the interior. I associate the transformations and adaptations in the façades with the interior use and its inadequacy. The visual rules of residents modifications are proposed to create meaning from the user context. Shape grammars are usually used to generate new designs however, in this study I focus on developing user patterns from the user context of *Climat de France*.

The context of use for this particular Modernist housing project is explored within a formal interpretation of transformed spaces. The purpose is to efficiently represent them for exploration by scholars of socio-cultural histories and designers. The proposed formal analysis sets an objective ground for gathering data on the façade reflections of an inhabited colonial monument.

4.3 Classifications of Resident Modifications

In the light of the collected data and produced drawings, a set of dwelling activities observed in Climat de France is introduced. I investigate the dwelling activities reflected on each transformation to achieve a set of rules from the context of use. Ingold (1993) distinguishes the building perspective as seeing "the worlds made before lived in", walls, columns and slabs are architectural elements that are built before

moving in. However, the modifications made by the residents are all implemented while living in the building on a daily basis. Therefore, I attempt to adopt a dwelling perspective that "sees in every form the concrete realization of an intellectual solution to a design problem" (Ingold, 2000, p.186). I introduce a set of dwelling activities that residents of Climat de France have approached with visible modifications from the façades (see Figure 4.2).
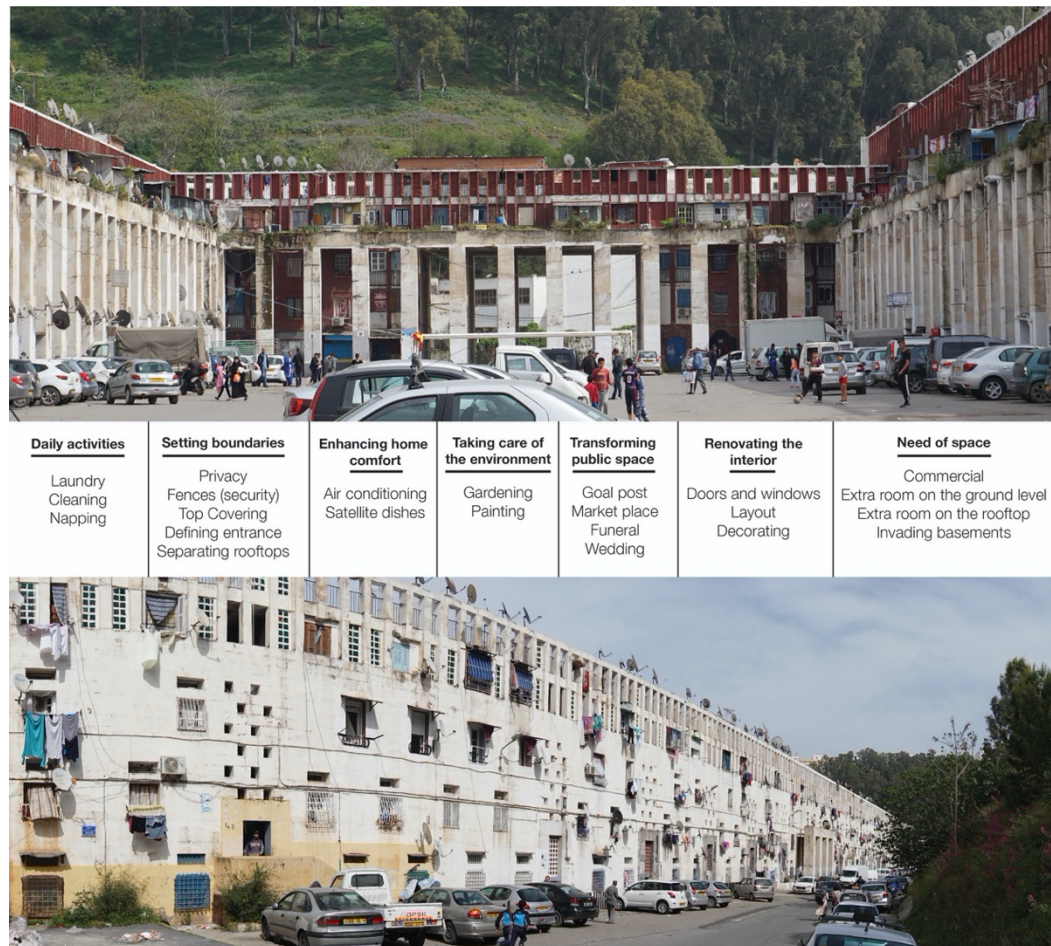
Figure 4.2 : Photographs from the interior (top) and exterior (bottom) South-West façade of the *200 Colonnes* depicting the resident modifications and related dwelling activities.

We analyzed the resident modifications on the South-West façade of the *200 Colonnes* (See the bottom image in Figure 4.2) that led us to a pattern of dwelling activities which we categorize as (1) daily activities of laundry, cleaning and napping, (2) setting boundaries such as privacy, fences for security, defining the entrance and separating the rooftops, (3) enhancing home comfort such as installing an air conditioning, satellite dish, (4) taking care of the environment: gardening, painting, (5) renovating the interior: door and windows, layout and decoration, (6) addressing the need of

space: commercial use, building an extra room on the rooftop or the ground level and invading the basement, and finally (7) public space transformations such as installing or drawing goal post, setting up the market place and setting up tent for funeral and weddings. We specifically introduced all different levels of dwelling activities from the most permanent to the most temporary to emphasize the temporality of the building, either the activities' impact is one afternoon or years they contribute to the context of use. Each modification reflects locality and an answer a design problem.

4.4 Data Processing

In identifying the residents' modifications on the façade of the 200 *Colonnes*, visual comparison tools detect the changes in the documented façade by comparing the original image (a) to the modified image (b) in Figure 4.3. This kind of visual comparison tools basically compares every pixel from each image and highlights the differences in color (Highlighted in blue in Figure 4.3). In the Figure 4.3, there is an example run in online image comparison website. The output (c) is highlighted and illustrates every single difference between the two images. There are two main problem using this visual comparison tool, the first one is the amount of detail it highlights. Since the images are compared pixel based every single difference is highlighted which leads us to the second problem which is the of lack of abstraction. In order to identify and categorize residents' modifications I need a certain level of abstraction that focus on the modifications made by the residents only is needed, leaving the differences related to the sun direction and the shades it creates, the bird nest on the window niche and the cables installed by the municipality out. With this kind of comparison tools, it is impossible to differentiate and identify different modifications and the output is a one-color highlighted graphic.

In search of an optimized categorization, I developed two-dimensional drawings of the building as documented in April 2018 (see Figure 4.4). I focused only on residents' modifications in this façade drawings and eleminate other transformations related to building decaying, municipal care and infrastructural extensions. These façade drawings provided me the abstraction level required to analyze and categorize every transformation realized by the residents.

Residents' modifications are identified as the altered architectural components in comparison to the original design. Visually, the before and after conditions of the

façade elements are captured and compared. Two-dimensional abstraction of façade elements provide an objective ground for residents' modifications, each element is represented by a shape and its transformation by a visual rule, therefore it is possible to track transformations regardless their size or impact. This is important because whether the activities physically impact the façade for one afternoon or a year to come, each has a place in the user context. As much as being an answer to a design problem, each modification reflects local resources (i.e. materiality), capacities (i.e. skills, finances), visions and desires. The representation in the grammar captures the visual outcomes of this user context on the site. Another advantage of visual abstraction is the opportunity to define a range of steps to achieve the intenden modification. Differently than pixel comparing tools, visual grammars provide intervals of change. These intevals reflect the process of home making that consists of small acts of design.

(a)   (b)   (c)
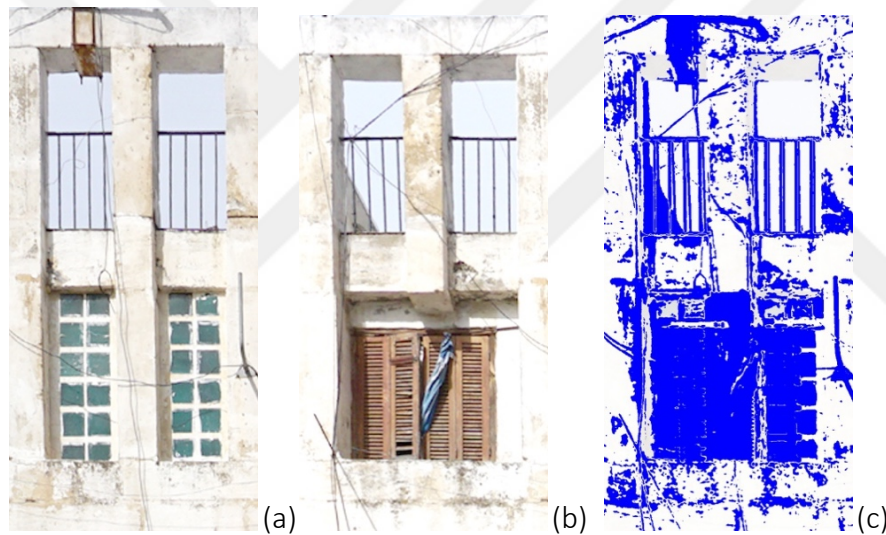
Figure 4.3 : The result from an online visual comparison tool. I compared visual (a) to visual (b), and the outcome of the image comparison is (c) (Url-6).

4.5 Inferring Visual Rules of the User Context

Within the collected visual data, dwelling activities and other contextual information are taken into consideration. I aim to use a methodology that looks beyond formal properties of the building and residents' modifications therefore information on the context, dwelling activities and user competences should be included in the model of lived-in Climat de France. Many relationship and social information are deducted into the formal transformation. Although the modification is represented formally it is enhanced with textual labels that hold information on the context and the resident that
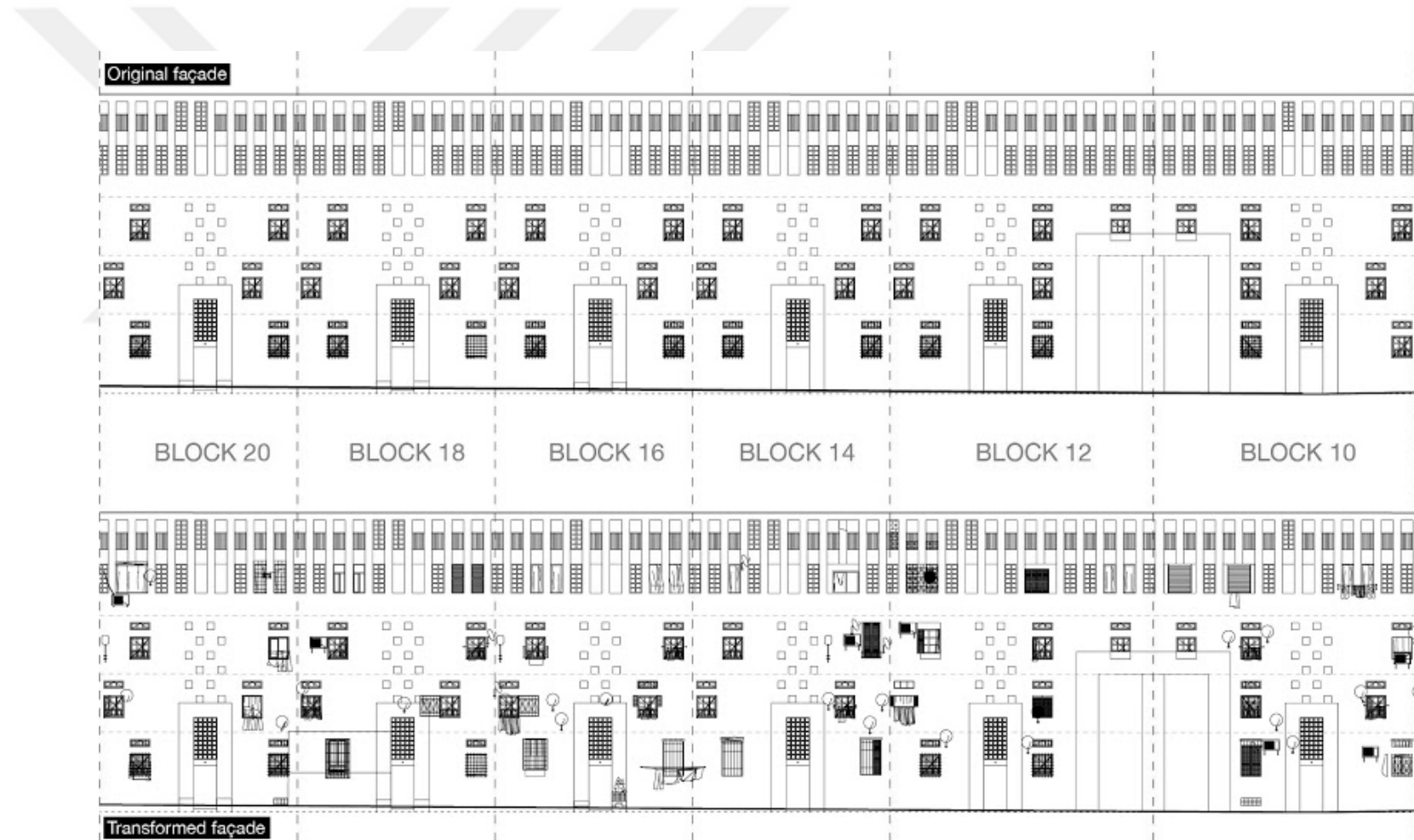
Figure 4.4 : Partial drawings of the South-West façade of the *200 Colonnes* as projected by the architect (on the top) and with resident modifications (on the bottom) drawn by the authors.
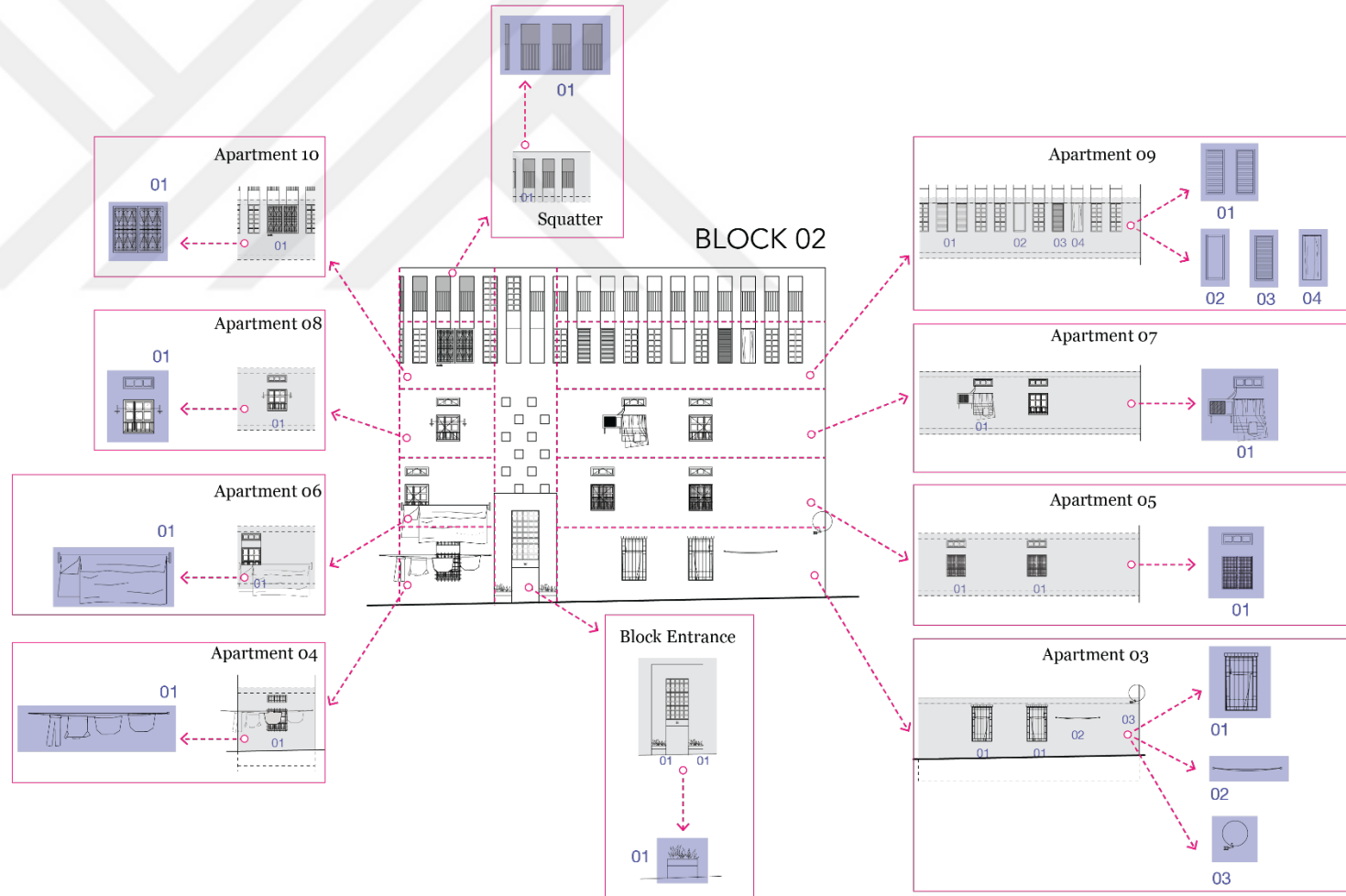
Figure 4.5 : How Block 02 is divided into apartments and each modification in each apartment is numbered.

made it. In this alignment, I use shape grammars to transform the visual data of residents' modifications into analytical data.

The application of shape grammars to analyze existing architectural design is commonly used in architecture. Transformation grammars as well are widely explored in order to integrate user information, contemporary requirements and adapt existing designs (Knight, 2015). Differently, I seek input from how the past and current users have transformed the design. This is a recognition of the temporality of the building, i.e. how it changes over time once it is lived in, and an early step of a larger agenda for methods primarily for studying existing architecture and potentially for future reuse or rehabilitation of heritage.

I discuss these grammars in relation to the duality of design and use contexts as I explained previously in reference to Kroes (2002). The grammar of residents' modification is an attempt to freeze a moment of temporality of daily life in Climat de France and try to learn as much as possible from the used space through those appropriations. I aim to collect information on the residents and their use of space from the visible appropriations on the façades. Therefore, I propose a grammar of the user context differently than the transformation grammars that are pertinent to the design context.

Knight (2015) distinguishes four distinct computational strategies used in shape grammars for transforming original designs. In the first strategy she identifies the grammars that are developed by analyzing existing designs to explore the vaster design possibilities of the same style including the original designs such as the Palladio Grammar (Stiny & Mitchell, 1978). She distinguishes rule transformations to create new designs in different style from existing designs as a second strategy. The experiment Duarte conducted by breaking the original shape grammar rules based on Siza's design in order to create new rules that would fit the customer's brief in Malagueira House (Duarte, 2001) is an example of rule transformations. On the third strategy she identifies the transformations that does not act on the rules but on the design directly. The grammar that generates the vernacular Bosnian Hayat Houses (Colakoglu, 2005) is not transformed but new transformation rules are applied on the original designs to develop new designs that fit contemporary domestic needs. The last strategy identified by Knight (2015) omits the analysis grammar of the original design and focuses on the transformation rules that can be applied to the original designs to

achieve compatible designs as in the case of the traditional Lisbon apartments Rabo-del-Bacalhau that has been transformed to incorporate information, communication, and automation technologies (Eloy & Duarte, 2011). Although these transformation grammars include input from future users they integrate this information in computationally generating new compatible designs. This approach is appropriate to enrich the design context rather than contribute to understanding the use context despite the input from the user-to-be because it focuses on generating new designs.

Despite the fact that shape grammars are commonly used to analyze mostly 2D shapes and generate design configurations, recent studies are increasingly addressing both the spatial and formal considerations.

There are examples that combine shape grammars with the techniques of space syntax (Eloy, 2014; Heitor, Duarte, & Pinto, 2004; Lee, Ostwald, & Gu, 2017) and others studies that highlight what factors into shape include the user (Eloy, Dias, & Vermaas, 2018; Piedade Ferreira, de Mello, & Duarte, 2011; Vardouli, 2015) and maker (Gürsoy & Özkar, 2015; Knight, 2018; Muslimin, 2017).

Along these lines, I explore shape grammars as a critical analysis tool rather than a design tool and investigate the implicit knowledge of space making in the inhabited Climat de France by way of a lived-in grammar.

5. THE LIVED-IN GRAMMAR

Residents' modifications are testimonies of space use and spatial adequacy. They are scapes of daily life tasks, taskscapes identified by Ingold (1993). Looking at resident modifications could provide critical reflections on the use of space and alternative expansions in understanding designed space for architects. Climat de France is a substantial case that involves iconic design and extensive resident modifications. In the light of the collected visual data, I produce two-dimensional drawings as abstract representations of the modified facades. Visual computation is adopted to systematize the gathered data information in broader extents and future automation.

I try to show different taskscapes emerging on the façades with no temporality, nor impact distinction. The aim is to capture the building with all its temporality including a half-hour taskcape like napping, a day-long taskscape as laundry hanging and long-standing satellite dishes. These are all signifiers of the daily life of residents and parts of the lived-in Climat de France. This is mainly how I infer the visual rules of different taskscapes attached on the façades of the *200 Colonnes* I identify every modification and associate it with its originating taskscape. I group taskscapes according to their dwelling activities. For instance, "air conditioning" is a taskscape from "enhancing the home comfort" dwelling activities. Another taskscape from the same dwelling activity is "satellite dishes". There are different rules for each taskscape and each is illustrated and named separately.

The numbering logic of the rule name Rn.m is that the first number *n* refers to a particular taskscape whereas the second *m* stands for a unique modification. Reverse modifications are represented with the prime symbol, e.g. Rn.m'. Visual rules capture the before and after conditions of the façade elements, respectively, on the left and right sides of the arrow. For each visual rule, text labels present the visual modifications with information on the dwelling activity, the taskscape, the tools and skills required, cost competences, and the impact on the building.

The taskscapes recognized on the façade of the *200 Colonnes* create a set of rules of residents' modifications on that particular façade. The computation of these rules on

each apartment and each block of the South-West façade generates a dataset of residents' modifications. This dataset is necessary in order to identify the overall tendencies, similarities and differences in residents' modifications and their impact on the building.

5.1 The Visual Rules of Resident Modifications

I identify residents' modifications as attempts of familiarization, accommodation and self-expression in the inhabited space. Architects are the originators of the "building perspective", they shape their design according to functional and formal necessities. The architect's design and intentions are realized once the construction is realized. A much-criticized aspect of architecture is its crystallized perception of its originators, the architects. There is a "kink between the world and the architect's idea of it" as Brand (1994, p.2) points out and I relate that to the singularity of the architect's point of view identified by Ingold (1993) as the "building perspective". Dwelling perspective is the complementary binary of building perspective as proposed by Ingold (1993). The dwelling perspective promotes the concept of making the world while inhabiting it, instead of the static idea of building the world first and then inhabiting it (Ingold, 1993). In order to understand the inhabited space, it is essential to adopt a dwelling perspective that investigates how space and its inhabitants add up on each other.

With reference to Ingold's use of the term (2000), I map the "taskscape" of the South-West façade of the *200 Colonnes* and the different dwelling activities. Each of these activities is a sign of the daily use with the notion of temporality and longevity of the building. For the *200 Colonnes* façade, the common and observable taskscapes are categorized under seven types of dwelling activities as previously listed in section 4.3: (1) daily routine activities, (2) answering to the need of more or specialized spaces, (3) renovating the interior for a more desired version, (4) setting spatial boundaries, (5) enhancing home comfort with technical amenities, (6) upkeeping the immediate environment, and (7) transforming the public space through or for communal activities (See Figure 4.2).

The courtyard of Climat de France has the same size as Le Palais Royal de Paris which was the source of inspiration for its design. Bringing monumentality to the daily life of the poorest people of Algiers was a public mission carried by Pouillon in this

design. A critical perspective is that the royal courtyard with its central axis, its pool and the garden surrounding it on each side is outlined by double rows of 500 lime and chestnut trees, while the courtyard of the *200 Colonnes* is a vacant space, seemingly out of scale, and left to the imagination and resources of the residents. Referred to as the marketplace by its locals, the courtyard often simultaneously hosts multiple activities. It is the marketplace, the parking lot, the funeral and wedding gathering area, and a football field for neighborhood tournaments. The modifications of this urban space mirror the social needs and habits of Climat de France community and closely linked to how the façade is used at the ground level. However, due to the lack of definitive visual and descriptive informationThis study does not include the inferring of rules related to its taskscapes.

5.2 Inferring the Rules

Considering the orthographic two-dimensional drawings, I developed to represent the spatial counterparts of the dwelling activities on the façade, I infer each rule by comparing the existing situation to the original design. I associate each modification to a dwelling activity and a taskscape eventually. Each transformation originates from a need or an action of daily life, there are some residents' modification which might be classified as radical and can hardly be associated with daily life such as building an extra room on the rooftop however I take that as a cry for help for confined space issues and introduce a need of space entitled dwelling activities. As the modifications on the façade are identified, I generate a rule for each action in association with the related dwelling activities and well-recognized features such as the window frame, the window opening, the laundry rack, etc.The rules are in primitive form and not yet ready (technically specified) for computing on an interpreter. I use visual labels to classify elements and parts of shapes. Further text labels are used to enhance shapes with semantic content, such as skills, cost and impact labels.

Four different levels of skills are included in the label:

(1) no skills for daily activities such as laundry hanging,

(2) small skills to use small gadgets as a hammer or a paintbrush,

(3) constructional skills for window and door renovation or masonry and finally

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(4) professional skills that are requires the assistance of specified professionals such as air conditioning and satellite dish installation.
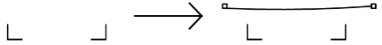
Figure 5.1 : A resident's modification rule with rule number, dwelling activity it relates to, the taskscape it represents, explanation and skill, cost and impact label information.

Six different cost estimations are designated:

(1) no cost,

(2) low cost,

(3) mid-to-low cost,

(4) mid-level cost,

(5) mid-to-high cost, and

(6) high cost.

Despite the lack of concrete evidence on the cost of the modifications, this study assumes a crude classification based on the material choice and craftsmanship. For the label that designates the level of impact each modification causes on the building, there are four degrees:

(1) damaged, the modifications labeled damaged are the ones that have destroyed the building's structure and are irreversible

(2) high impact, the modifications labeled high impact are those with severe visual transformation but can be removed and have no permanent damage on the building.

(3) low impact and

(4) no damage

In some cases, only one modification rule is applied and in others there are many. Each rule reproduces a transformation but not all transformations are accomplished by a singular rule. In some cases, rules add up to create the transformation of an opening, these rules may belong to the same dwelling activity as "renovating the interior" or to different dwelling activities such as "making the laundry" and "enhancing home comfort" but they come together to indicate the whole transformation of an opening. All the rules applied on the same opening are grouped into rule sets and number differnt rule sets that belong to the same apartment. After decomposing each block into its apartments, I also identify rule sets of each apartment. For instance, in Apartment 3 (see figure 5.8) the resident's modifications are grouped into three rule sets. Rule set 01 is duplicated because they have been through the exact same modification process which results in the use of the same rules with the same sequence. There are also rule set 02 and 03 that are applied to the same apartment and have no particular relation so they are identified and calculated separately.

There are some resident modifications that cannot be achieved by one rule. They are decomposed into modification rules that have variable alternatives. For instance, it is not possible to change window case or window size before removing the existing window case first. Therefore, there are two different types of rules, dependent rules and independent rules. Dependent rules are the one that needs to be followed by other rules to complete the modification while independent rules can be implemented and useful just by themselves. It is clear that dependent rules are more related to the construction process and requires a longer time and effort to be realized while the independent rules are ephemeral modifications that can be applied easier.

What follows is the step by step inferring of the modification rules based on the dwelling activities and related taskscapes identified on the South-West façade.

5.2.1 Rules of daily activities

Daily activities considered here are common routines that reflect on the façade of Climat de France. They include waking up, cooking, having a meal, showering, doing homework, going to work or school. It is not possible at the extent of this study to track the change of the interior during the day in regard to the daily activities, but it is possible to track those that reflect to the façade. In this regard, three taskcapes with daily routines are identified: laundry, cleaning, and napping. The rules related to these

daily routines are introduced and enhanced with textual labels on skills, cost and impact on the building (See Figure 5.2).
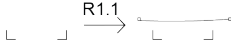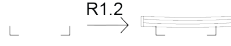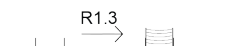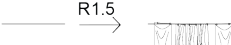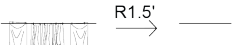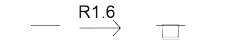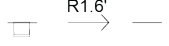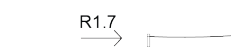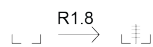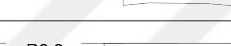
Dwelling Activities	Taskscapes	Rules	
Daily Activities	Laundry (1)	R1.1	R1.2
		R1.3	R1.4
		R1.5	R1.5'
		R1.6	R1.6'
		R1.7	R1.8
		R1.9	
	Cleaning (2)	R2.1	R2.1'
		R2.2	R2.2'

Figure 5.2 : Rules of Daily Activities.

5.2.2 Rules of setting boundaries

Clearly marked boundaries are essential for dwelling and belonging. Boundaries may become vague or get crossed in mass housing settlements. The residents of Climat de France have a very strong urge of privacy and need of setting boundaries between the outside and inside. The boundaries between the apartment and the outside are very strict due to religious and cultural principles. The inside should never be visible from the outside. This sensibility results in the use of double curtains for most cases, one from the inside and another from the outside. Fences for security purposes and nets for protection against mosquitos and other insects are commonly used to set boundaries against unwelcome guests. Accordingly, privacy, fences, top covering, side/front covering, defining the entrance and separating rooftops are identified as taskscapes and the possible sets of rules introduced (see Figure 5.3).
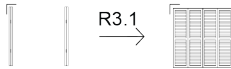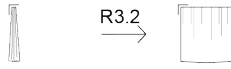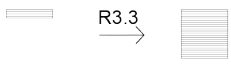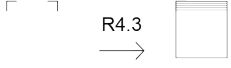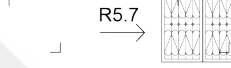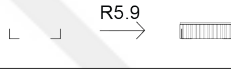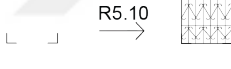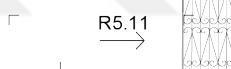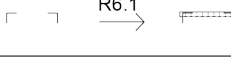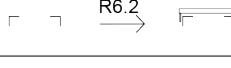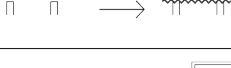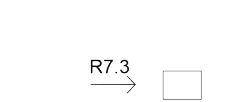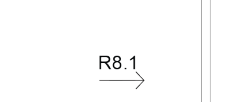
Dwelling Activities	Taskscapes	Rules			
Setting Boundaries	Napping (3)	R3.1		R3.2	
		R3.3			
	Privacy (4)	R4.1		R4.2	
	Fences (5)	R4.3		R5.1	
		R5.2		R5.3	
		R5.4		R5.5	
		R5.6		R5.7	
		R5.8		R5.9	
		R5.10		R5.11	
	Awning (6)	R6.1		R6.2	
		R6.3			
	Defining Entrance (7)	R7.1		R7.2	
		R7.3			
	Seperating Rooftops (8)	R8.1			

Figure 5.3 : Rules of setting boundaries.

5.2.3 Rules of enhancing home comfort

Home technology evolved tremendously since the late 50s since Climat de France was first built. TV, internet and air conditioning are available in most apartments but there is no infrastructure supporting them. Due to local regulations and lack of infrastructure cables, satellite dishes and air conditioning units are taskscapes visible for each apartment from the exterior. I categorize these under enhancing home comfort and introduce visual rules for each (See Figure 5.4).
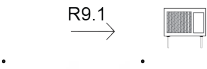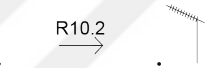
Dwelling Activities	Taskscapes	Rules	
Enhancing Home Comfort	Air Conditioning (9)	R9.1	
	Satelite Dish (10)	R10.1	R10.2

Figure 5.4 : Rules of enhacing the home comfort.

5.2.4 Rules of Taking Care of the Environment

Regarding the limited resources of the residents of Climat de France, the maintenance of the settlement is based on voluntariness. Residents from the same block collectively conduct environment beautification activities such as painting the ground level of exterior walls (in rare cases they can afford to paint the upper levels), gardening, installing fountains and other decorative elements. Under these activities, rules for the taskscapes of gardening and painting are proposed (See Figure 5.5).
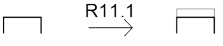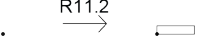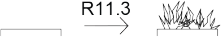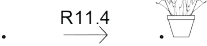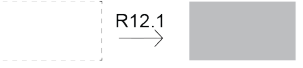
Dwelling Activities	Taskscapes	Rules	
Taking care of the Environment	Gardening (11)	R11.1	R11.2
		R11.3	R11.4
	Painting (12)	R12.1	

Figure 5.5 : Rules of taking care of the environment.
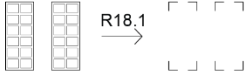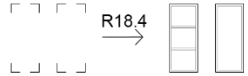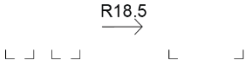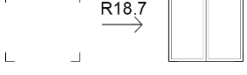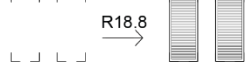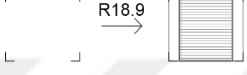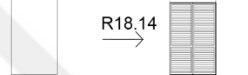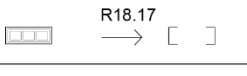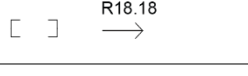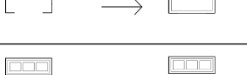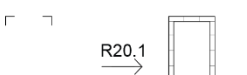
Dwelling Activities	Taskscapes	Rules	
Renovating the Interior	Doors & Windows (18)	R18.1	R18.2
		R18.3	R18.4
		R18.5	R18.6
		R18.7	R18.8
		R18.9	R18.10
		R18.11	R18.12
		R18.13	R18.14
		R18.15	R18.16
		R18.17	R18.18
		R18.19	R18.20
		R18.21	R18.22
		R18.23	R18.24
		R18.25	
	Exterior Decoration (20)	R20.1	

Figure 5.6 : Renovating the Interior.

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5.2.5 Rules of renovating the interior

Interior renovation is a type of modification that have been difficulties to document and analyze. The modifications that are only visible on the façade as pointed out in thşs research. These are the window and door modifications as reflections of renovations that change the interior. The modifications and additions of openings on the façades are analyzed and related with the existing plans. Although layout modification rules at the plan level are introduced, only the ones with impact on the putside are investigated (See Figure 5.7).

5.2.6 Rules of need for space

Similar to what was discussed in 5.2.5, the modifications that address a need for space differ from the others. Again, I focus on the spatial rules that are effective on the façade and are visible from the outside of the building. Three different space appropriations related to the need for space are investigated: the transformation of domestic spaces to commercial ones, the construction of additional rooms and studios on the ground floor and rooftops, and the basement invasions (See Figure 5.6).
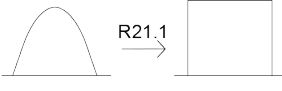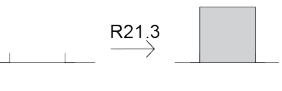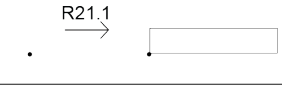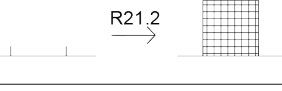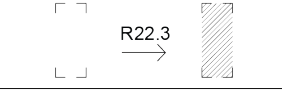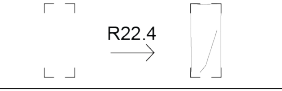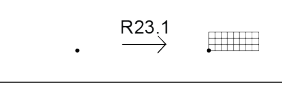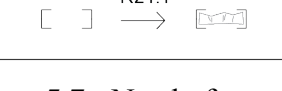
Figure 5.7 : Need of space.

5.3 The Rules Sequence of Block Modifications

After inferring the rules of residents' modifications on the South-West façade, I identify the use of each rule on the façade. To do so, I initiated by evaluating each apartment of each block as illustrated in the block's anatomy. There are twenty-four blocks on the west- façade of the *200 Colonnes* with eight apartments visible from this façade. The entrance of these blocks is on this façade as well, so I identified the entrance and start numbering apartments from 03 (see figure 5.8) since the two apartments on the lower floor are not visible from this façade due to the slope and are only visible from the inner façade looking to the courtyard.

For each block I created a datasheet with all residents' modifications, which apartment they belong to, the rule set and rule name with their textual labels and explanations. After creating a sheet for each block of the twenty-four blocks, I combined the sheets in order to achieve a complete dataset of the residents' modifications of this specific façade. The aim is to create a translation of residents' modifications that are identified visually into analytical material that can be compared, evaluated and analyzed. The datasheet of residents' modifications regularizes the taskscapes and make them comparable in terms of competence, impact on the building, and tendencies of the residents. In the following section, I evaluate this datasheet in regard to taskscapes and competences, in terms of skills and impact on the building. But evaluating only the datasheet would be neglecting the visual aspect of these modifications, therefore I assess a visual analysis of the lived-in rules as well. The dependent rules provide ground for visual analysis and comparison of the computational diversity and similarity the residents went for.

5.4 Analysis of The Generated Data

Although the phrase "lived-in" carries the notion of the past, the focus of this study is on the temporality and continuity of transforming space while inhabiting it. The temporality of Climat de France and its residents is emphasized throughout this dissertation, the data belongs to one day on site. Hence it is ephemeral and would not be the same on the following days, months and years. The proposed methodology is an investigation of minor theory that pursues "relationship of constant becoming and change" (Katz, 1996, p.491). The discrepancy between the crystallized idea of

architecture and inhabited space can be overcome only by adopting a critical approach to major architectural idea. The resident, not the architect, the colonized, not the colonizer, the daily activities, not the monumentality and the minor, not the major, are the keys to an open, evolving and pluriverse architecture. The visual computation enables how visual information transforms to a structured data of residents' modifications. This data is an abstraction of an "embodied, situated and messy, non-linear production of knowledge" (Katz, 1996, p.498) which needs to be evaluated with prudence.

The initial motivation in this research is to create a lived-in shape grammar that formalizes the temporality and transformations of the inhabited Climat de France from a dwelling perspective. Shape grammars are adapted as a tool for analyzing, classifying, extending and exploring the existing architectural forms and residents' modifications. I analyze the 24 blocks of the South-West façade of the *200 Colonnes* using shape grammar and combine a dataset of residents' modifications. I compare and analyze the residents' modifications in reference to:

- The applied rules, which are the most and less commonly used rules and why is explored.

- The labels; skills, cost and impact on the building of the applied rules are distinguished.

- The shapes of the applied rules, the formal features of the rules are compared and evaluated.

These analyses lead to predicted results such as the fact that the most commonly used rules have been applied to address the climatic conditions of the site and that visual features of modifications follow patterns in accordance with existing building features and less predictable outcome about patterns about the skill level that points towards a collective know-how of making between the residents living in proximity of two blocks.

	Visual Rules	R18.11	R18.12	R20.1	R6.1	R5.1	R4.1	R3.2
Modification 1	Dwelling Activities	Renovating the Interior Doors and Windows	Renovating the Int. Doors and Windows	Renovating the Int. Decorating	Setting Boundaries Awning	Setting Boundaries Fences	Setting Boundaries Privacy	Daily Activities Napping
	Taskscapes							
	Skills	Constructional	Constructional	Constructional	Constructional	Constructional	Small Tools	No Tools
	Cost	Mid-high Cost	Mid-high Cost	Mid-Cost	Mid-Cost	Mid-Cost	Low Cost	No Cost
	Impact	Low impact	Damaged	Low Impact	Low Impact	Low Impact	Low Impact	No Impact

Modification 2	Visual Rules	R1.7		**Modification 3**	Visual Rules	R10.1
	Dwelling Activities	Daily Activities			Dwelling Activities	Enhancing Home Comfort
	Taskscapes	Laundry			Taskscapes	Satelite dish
	Skills	Small Tools			Skills	Professional Skills
	Cost	Low Cost, DIY			Cost	High Cost
	Impact	Low impact			Impact	Low impact

Figure 5.8 : Rule sequences for Apartment 3 in Block 02 are shown. Rules depict the dwelling activity and taskscape it belongs to and the labels for skills, cost and impact.

5.4.1 Evaluation of the applied rules

In the 24 blocks of the South-West façade of the *200 Colonnes* there is a total of 780 applied modification rules. In order to understand the dwelling activity tendencies of the residents I start the analysis with an assessment of the rule sets. It is not surprising that 29% of the modifications are related to daily activity, 25% to enhancing home comfort, 21% to setting boundaries and 17% of renovating interiors. The remaining 8% is a sum of activities for need of space and taking care of the environment. This result indicates that the most commonly applied dwelling activities are the daily ones. One is to enhance home comfort and the other is to set boundaries. This reflects the elemental needs in relation to the cultural and physical environment. Daily activities and enhancing home comfort are the most commonly practiced dwelling activities in any kind of inhabited house. What makes them visible and deplorable in Climat de France is the lack of space in the apartments and the tight plan layout which forces the residents to extend out of the window. Setting boundaries is a strong cultural appropriation that can be identified almost anywhere in Algiers, due to the warm climate and privacy sensibility residents develop variant solutions to the problem.

Only 17% of the transformations are related to renovations of interiors opposing the general impression that building façade is very congested and altered by transformations. These types of modifications are among causes for the most irreversible damage to the building. One of the most damaging taskscape manifestation is window renovation which is made by enlarging existing window openings and destructing the original stone façade. However, most modifications are reversible and for temporary taskscapes of daily dwelling activities.

The remaining 8% of the transformations is a sum of need of space and taking care of the environment dwelling activities. This result points out to two conclusions, the first one is related to the need of space which is one of the most destructive modifications and reinforces the previous conclusion about renovating interiors, the second is about taking care of the environment which is a collective act of transforming the common spaces and the low percentage of this modification points out the lack of communal spirit of the neighborhood.

In figure 5.9, the interrelation with different apartment types, dwelling activities and taskscapes is shown in the flow in between. There is a predominant number of one-

bedroom apartments, they are 165 in the 24 blocks of the South-West façade. There are 18 two-bedroom and 6 three-bedroom apartments. The heavy tendency on daily activities, enhancing home comfort, renovating interior and setting boundaries as dwelling activities and their association with apartment types and taskscapes is illustrated. The most and less commonly identified modification rule and general tendency toward climate control identified in the flow (figure 5.9) are elaborated.

5.4.1.1 The most commonly applied rule: satellite dishes

The most frequently identified rule is R10.1 for satellite dishes that have been applied 104 times. It is essential to understand that these are not all the satellite dishes attached to the building, their number is much more. I documented only the satellite dishes that I could identify to the apartment they belong. The rooftop level is full with satellite dishes that could not be related to their associated apartments. Therefore, 104 is the number of satellite dishes that are associated to their owners. The fact that some residents have two different satellites pointing to different directions reflects the duality of the Algerian society which associates as Arab but still is dominated by the francophone culture. The satellite orientation in Algiers is either Nile-Sat the Egyptian communication satellites or Hotbird Satellites streaming French channels. The preference of Nile-Sat or Hotbird is an indicator of the cultural and social tendency (European or Arabic influences) of the family. The more religious and conservative families prefer Nile-Sat that streams in Arabic, while others under European influence prefer Hotbird that streams French and European channels.

5.4.1.2 The tendency of applied rule: environmental control against climatic conditions

The second most frequently identified rule is R4.1 for outdoor curtains which have been applied 77 times. The visual privacy of the residents is a cultural appropriation that reflect the seclusion of private domestic spaces and the woman in particular from the public space. However, curtains are not only cultural appropriations but they are practical solutions to aeration and sun prevention without unveiling the interiors.

Regarding the tendency of the identified rules there is a clear correlation towards improving the climatic conditions of the mild Mediterranean climate of Algeria with a range of temperature between 21 to 42 °C degrees in summer and 10 to 12 °C in the winter. R3.1 Closed shutter, R3.3 Closed rolling binds, R4.1 use of curtains, R6.1 and
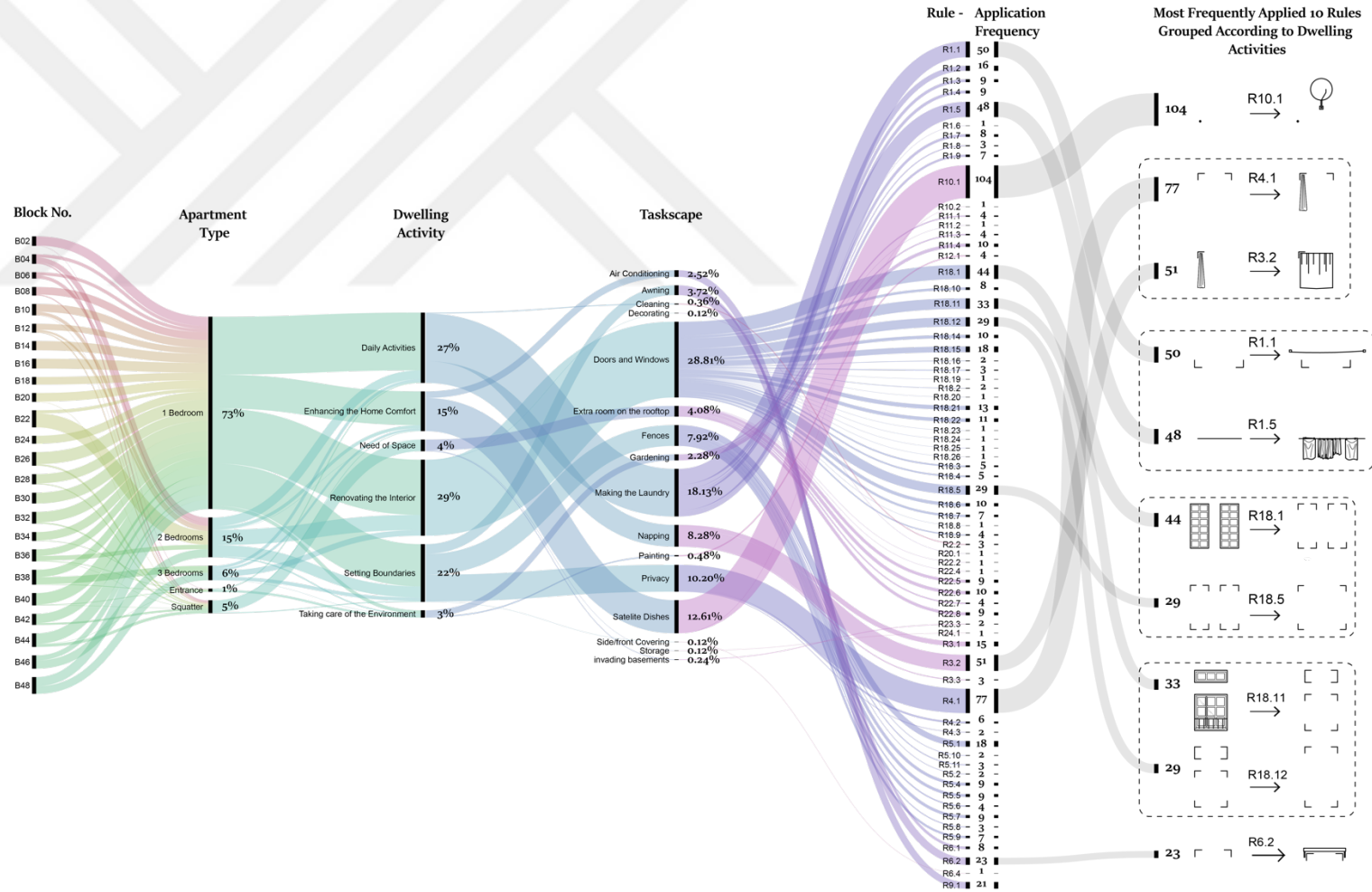
Figure 5.9 : The 24 adjacent block numbers on the left and the application frequency of each rule on the right, intertwining related apartment types, dwelling activities and taskscapes.

R6.2 awnings and R9.1 air conditioner are all the identified modifications related to climate control. It is possible to point out that there is a clear comfort inadequacy in the interior of these South facing apartments that pushed the residents to implement different solutions to control the sun and improve the interior temperature. The flat façade creates a penetrable surface by direct sun during long hours of the day which have been modified with awning, shutter, rolling blinds and curtains. Wandering the impact of different levels of the building on the modifications I evaluate the distribution of climate control related residents' modifications in different floors. On Figure 5.10, it is clearly visible that most modifications were made on the upper floor 3, followed by the entrance floor and the 2nd floor and the least modifications are made on the 1st floor. The upper floor is the one the most exposed to sunlight during the day and rooftop heat during the night, therefore it is expected to have a higher number of modifications related to climate control. On the other hand, the equality of the 2nd floor and the entrance floor points out the correspondence between climate control and enhanced privacy. The excessive use of awnings on the ground floor is a sun control modification as well a protection from their upper neighbors that would clean their rugs without noticing their drying clean laundry. The sun protective modifications on the ground floor are neighbor proof at the same time, they enhance the privacy which is at the eye level of the pedestrian and protect their windows from their careless neighbors.

On the ground floor awnings are either fixed to the building with cement or with metal profiles. However, on the 3rd and second floor most of the awnings are fixed with metal profiles. The execution of this modification differs on the ground floor based on logistics and execution affordances. Awning implementation with cement is easily applied with the help of a leader on the ground floor and the structural strength of this application is not as critical as the upper floors. The site plan and the arrangement of the blocks also has an impact on climate control related modifications. The diversity and number of modifications applied from block 48 to 22 increases regarding the rest of the blocks that are facing other buildings in the site plan (Figure 5.10). This outcome indicates the relationship between site plan arrangement and interior comfort and sun control.

5.4.1.3 The less commonly applied rule: taking care of the environment

As anticipated, taking care of the environment which is a collective activity is the less identified dwelling activity in the South-West façade of the *200 Colonnes*. Collective initiatives and organizational decision making are crucial aspects of a community making. The residents' modifications highlight the extant individuality of the residents and their inability of acting collectively to beautify their neighborhood.

5.4.2 Evaluation of the labels

The rules of residents' modifications are enhanced with labels on the cost and skill competences and their impact on the existing building. The same flow as the one used to identify rule application frequency is generated to illustrate the labels of the identified dwelling activities and the blocks they belong to. On the following flow it is visible that most of residents' modifications have low impact on the building. The diversity of cost and skill competences demonstrates the variety of tools and methods applied to realize the modifications.

5.4.2.1 Impact on the building

Low impact reflects the residents' modifications that can be dismantled and leave low impact on the building. The textual label on the impact of the modification on the building demonstrated that 85 % of the modifications have low or no impact. This means that 85% of the modifications can be removed without leaving damage on the existing structure. This is an important outcome that shows that most residents' modifications are ephemeral despite their dominant visuality.

5.4.2.2 Communing and knowledge sharing

In order to study the residents' competences, I compared the skills label on the South-West façade of the *200 Colonnes*. The charts (Figure 5.12) illustrate the percentage of skills used on each block that provide a graphic pattern of used skills. Before moving to individual blocks, the overall textual labels on tools and skills required to build the residents' modifications on the subject façade demonstrate that 40% of the modifications requires no tool or small tools, 45 % of the modifications necessitates constructional skills and 15% requires professional skills.

What I mean by skills are the skill labels that were previously defined in four categories, constructional skills, professional skills, use of small tool and use of no tool. The constructional skills may belong to the resident who built the modification himself or to a craftsman hired by the resident to build that modification. Professional skills are achieved by professionals only and are hard to be made by the residents themselves. The use of small tool requires small skills easily achieved by the residents such as pounding nails with a hammer, drilling holes with a drill, or painting the wall with a brush. These are small tools that can be used and shared by the residents for household chores. The use of no tool, requires basic skills such as hanging, tying a knot and similar manual actions. Therefore, the similarities in skill patterns between different blocks points out to a common knowledge between their residents, such as referring or preferring the same craftsman or learning a method applied by the neighbor and trying to make it themselves or sharing small tools. The label for tools and skills is an indicator of the resident's competence in the skills of making and accessible craftsmanship. Residents' modification can be an individual activity as well as a collective one and even an outsourced one in some cases. I trace different patterns of similar skill sets used in proximal blocks (Figure 5.12) and see these patterns as indicators of communing among a small group and of shared knowledge in the larger neighborhood.

There is a remarkable "connectivity and equivalence" (Turnbull 2003, 20) between neighboring and closely located blocks with similar skill use pointing to a local knowledge exchange. We identify four different communing patterns from the label analysis (See Figure 5.11). Each displays a different set of skills and demonstrate the spatiality of shared local knowledge and to what extent "sites, people and activities" are connected (Turnbull 2003, 19). Pattern 01 identified among the blocks 46, 42 and 02 illustrates the use of similar skill labels required to apply the modifications: 60 to 63% of constructional skills, 9 to 7% of professional skills, 10 to 6% of no tool and 20 to 26% of small tool requirements were detected for each block. Pattern 02, among the blocks 14, 12 and 10 illustrates 50 to 52% constructional skills, 20 to 22% professional skills, 11 to 14% no tool and 14 to 18% small tool requirement similarity. Pattern 03 among block 20 and 16 illustrates 29 to 32% constructional skills, 22 to 20% professional skills, 11 to 14 no tool and 14 to 18% small tool requirement similarity. Finally, pattern 04 among the blocks 30 and 28 illustrates 12% of constructional skills,
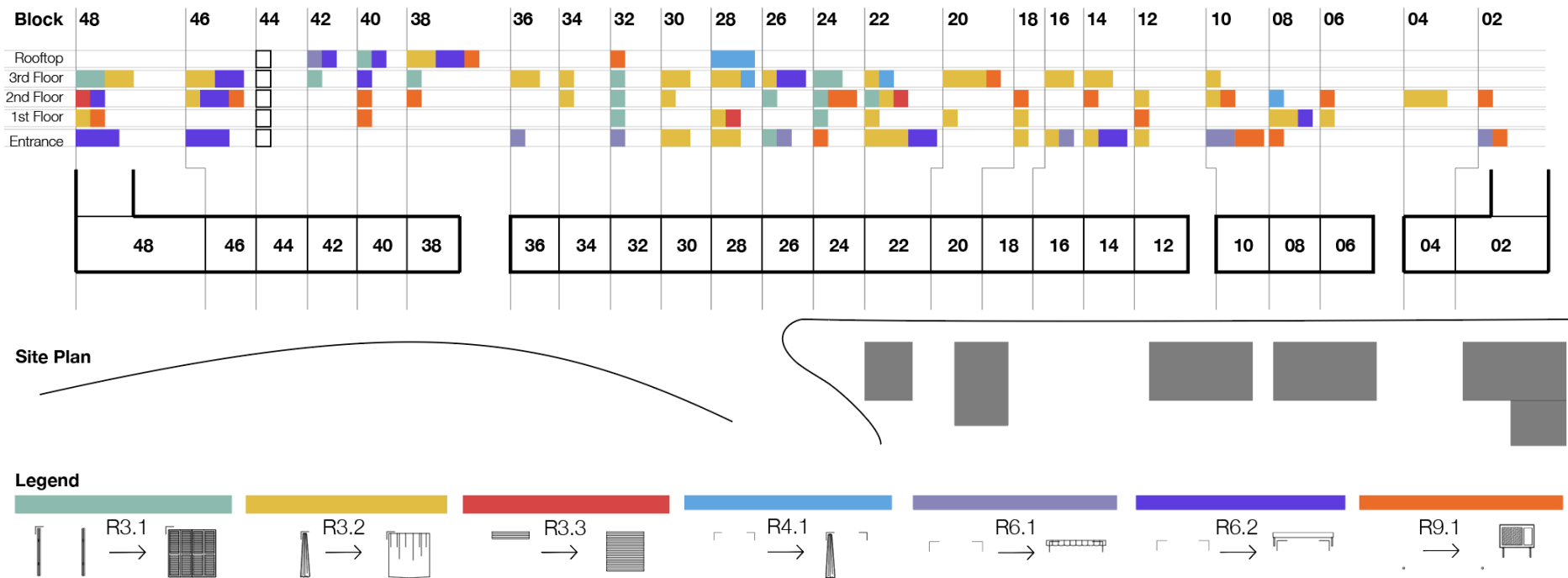
Figure 5.10 : The distribution of different rules related to climate control on each floor of each block in the South-West façade.
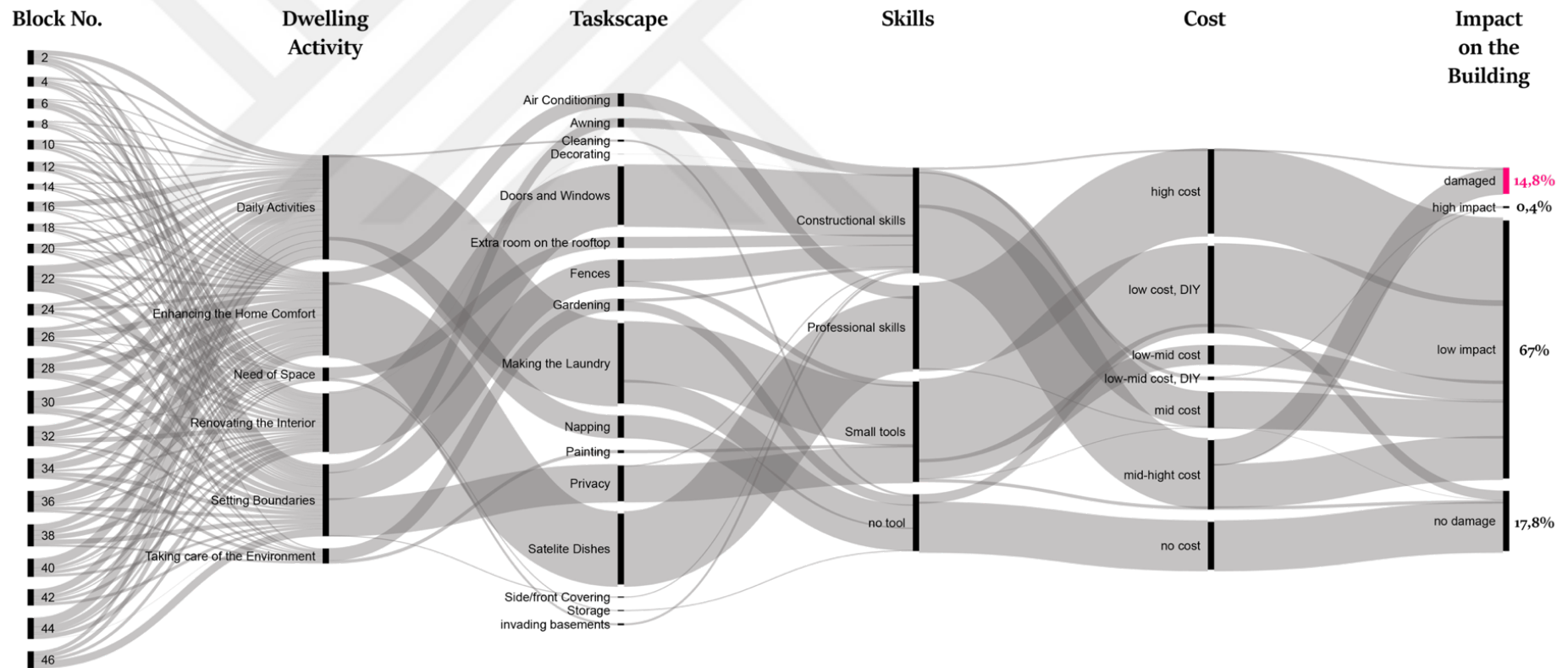
Figure 5.11 : The overall impact of residents' modifications on the building. 67% of the residents' modifications have low and 17,8% have no impact while 0,4% have high impact and 14,8% of the modifications damage the building in irreversible ways.

25 to 23% of professional skills, 30 to 25% of no tool and 38 to 35% small tool requirement similarity. These patterns indicate two important aspects: one is skill similarities and the second one is its relation with block proximities. Patterns 2 and 4 cover adjacent blocks, pattern 3 is detected on the neighboring blocks 20 and 16, while pattern 1 includes neighboring blocks 46 and 42 beside block 02 that is located on the opposite corner. Block 02, has no adjacency or proximity to the aforementioned blocks, but possibly relates to the other blocks with the pattern through cultural, social, economic correspondence. These patterns introduce a spatial definition to shared knowledge and communing in Climat de France. This outcome of shared knowledge and communing between residents shows to what extent skills and information are transmitted organically. It is important to understand the communing potentials of the site for residents' collective or individual engagement in the future.

Although the findings above are resulting mostly from a quantitative assessment of the grammar, it is crucial, as seen in the case of window modifications or the communing, that there are also visual, spatial and material counterparts to the information which directly connect it to the context of design.

5.4.3 Evaluation of the shapes

5.4.3.1 The alteration of dependent rules

As mentioned before, renovating the interior has the highest impact on the existing structure. The rules R18.1 and R18.11 represent the act of removing the existing window frames of two different window types, type 01 and 02. The rules R18.5 and R18.12 for enlarging the openings are the consequent rules in the window modification rule sets. R18.1 is used on 44 out of 62 windows of the façade: 71% of window type 2 have their window frame removed to be renovated. On the other hand, R18.11 is the rule for removing window frame from the window type 1. It has been applied 33 times out of the total number of 209 windows: only 16% of this window type has the window frame removed.

66% of window type 02 where the window frame is removed, sees the application of the rule R18.5 which enlarges the window opening by removing the vertical partition in between (see figure 5.13). Moreover, 88% of window type 01 where the window frame is removed has the window size enlarged by demolishing the horizontal partition in between. This reveals that residents modifying their window frame on window type

02 had less intention to enlarge it while a large amount of people modifying their window type 01, resize the window opening by demolishing the horizontal element. Whether the architectural element is horizontal or vertical creates an inherent difference in residents' choice to remove or keep it. The materiality of the building as well as dwelling activities is found to be a factor in residents' appropriations.
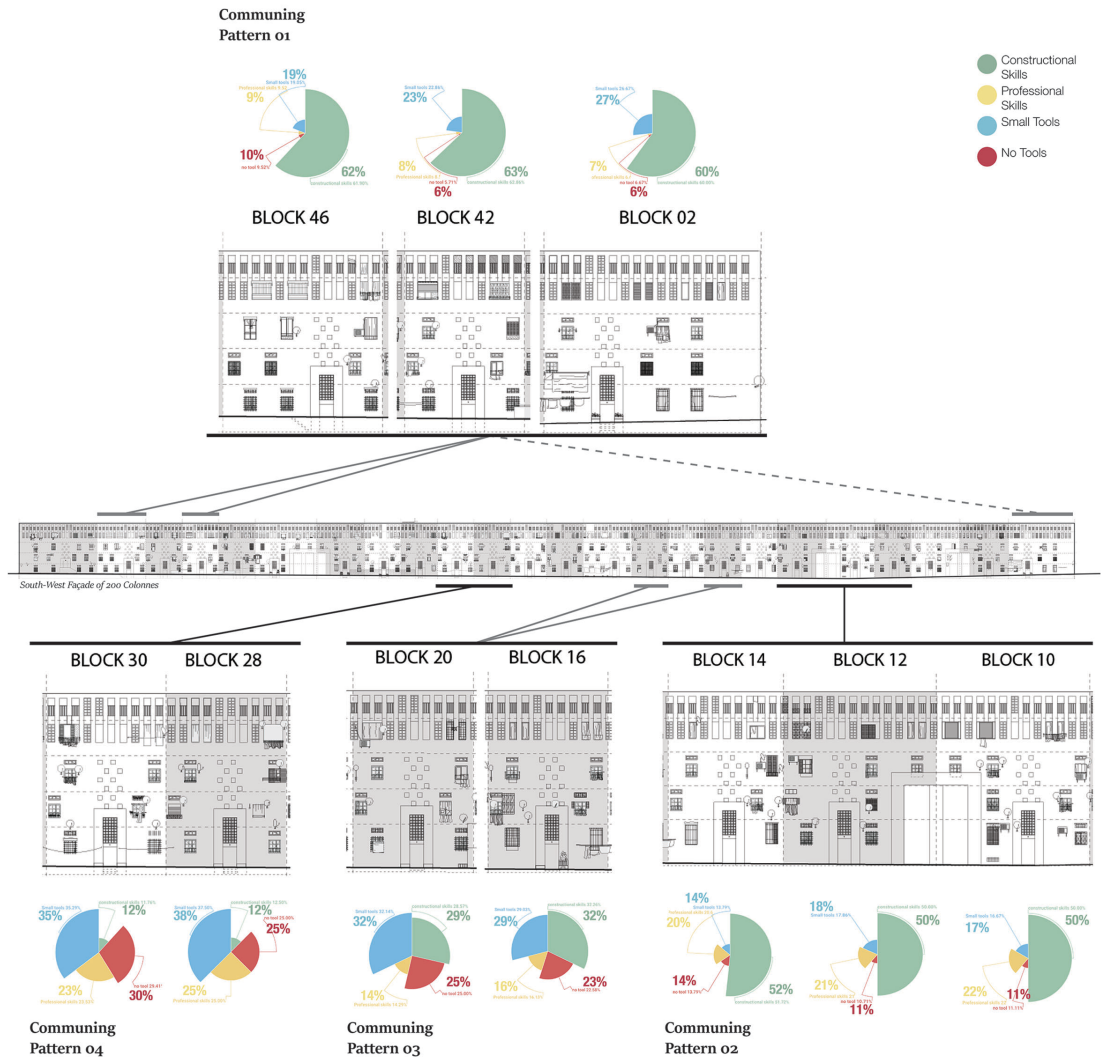
Figure 5.12 : Block communing in terms of skills and shared knowledge.
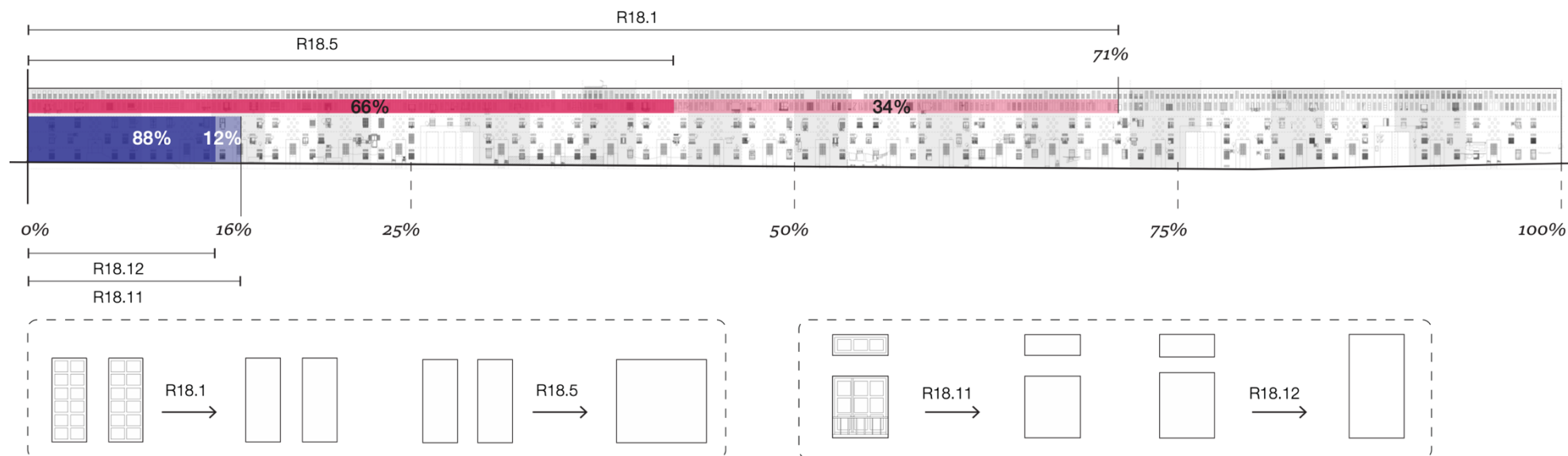
Figure 5.13 : The façade is illustrated as a metric to show the frequency of types of window transformations. Top, window type 2, and bottom, type 1.

6. CONCLUSION: THE FORMAL METHOD OF USER CONTEXT

The intensity of residents' modifications in *Climat de France* during my field visits were not as intense as the images and movies I reviewed, yet the identified modifications reflect the continous home making of inhabited space. A design's success can be evaluated and experienced once the building is occupied and meets its users. whether *Climat de France* is a success as an open system or a failure as a closed masterpiece is still debatable. Against its basic modular structure it holds many interpretations realized by the residents. Used space has been instinctively associated with the user and design studies explored many strategies to gather information from the user context in order to involve the user to the design process. The first approach appropriated by the modernist pioneers identified the needs of the user in order to translate them to the design as function. Further explorations lead to involving the users in the design process in order to achieve participatory design solutions. However, in this dissertation it is discussed that these methodologies contribute to the design context. The design context as introduced by Kroes (2002) is the process in which the crystalized architectural ideas get shaped. Although collaborative design processes include the future in the decision making and collect data on their tendencies, it still contributes to the design process. Therefore, I draw attention to the context of use, in which users come face to face with the designed artefact (architecture) and start physically to experience it and leave space for it in the design context.

Due to their social incompatibility and spatial inadequacy, projects like Climat de France with grand stature are on the verge of demolition. In the age of Anthropocene, the evaluation and adaptation of the existing building stock especially grand modernism projects with important architectural value is fundamental. However, the method to deploy for rehabilitating these projects can take into consideration the anthropological and social factors and manifestations of inhabitants' lifestyle from a user context. To endorse the user context, residents' manifestations in Climat de France provides a strong case with an array of appropriation and adaptation evolving through decades reflecting different economic, political states of the country. The additional values contributed by the residents to Climat de France reflect the embodied

experience and the deficiencies of the existing architecture. It is clear that not all residents' modifications have direct contribution on future rehabilitations but they hold implications on inhabitation potential.

Chapter 3, has discussed how architecture needs to learn from user experience, and liberate from unrealistic expectations of perfect occupancy. Particularly the user context is related to the experience of space and the adaptations performed during this process. An architect cannot predict the use of its design but can only witness its transformation through time. Inhabited architecture is a reserve of encoded information disregarded by design context oriented architects. Consequently, this study proposes a systematic formal methodology to conduct archeological excavation of daily activities engraved on the façades of *Climat de France* to decode the user context.

The user context provides ground for exploring social and cultural aspects of dwelling that can not be predicted during the design process. Contributions of the user context on scholars, architects and design culture hold infinite possibilities. This field of use that has been estranged from architects and dominated by social scientists that explore and evaluate it in many aspects. Architects confine themselves to read and appreciate the studies conducted in social sciences with minimum engagement. Architectural research methods are dispersed between formal mathematical methods on one side and cultural discursive methods on the other (Groat and Wrang, 2013). However, methods that combine the two are limited. Shape grammars are examples of formal mathematical methods which analyze shapes and generate design configurations derived from the previously analyzed styles. While architectural research methods, are cultural and discursive based on rhetorical power and theoretical clarity. In the middle of these two, Graot & Wrang (2013) situate what they call mathematical cultural methods which are analytical tools and models that investigate the cultural and social aspect of space using numerical factors or rule-based constructs such as Space Syntax. The "Social Logic of Space" (Hillier & Hanson, 1984) is one of the exceptional theories that investigate the relationship of society and space from a formal aspect. Their study, "establishes a descriptive theory of how spatial patterns can, and does, in itself carry social information and content" (Hillier & Hanson, 1984, p.xi). Space Syntax theory focuses on order as a result of a social process and investigates spatial form in that aspect. Whereas than space syntax is grounded in space, shape grammars

are grounded in seeing. Therefore they are combined in many studies to achieve spatial and formal applicability (Eloy, 2014; Heitor et al., 2004; Lee et al., 2017).

Formal methods set a familiar ground to architects to explore cultural and social aspects of space. In this dissertation the adapted two-dimensional orthogonal drawings generate conventional architectural representations of the dwelling activities. The sequences of the residents' modifications illustrate the step by step modification of the original design into its modified version. Each step formally represents the transformation of the existing architectural elements with textual information on the residents' competences and motives. The abstracted shapes of the modifications are enhanced with textual labels that contain information from the user context.

In the pursuit of formal representations of the user context, I translate the user context to the visual language that is mastered by architects. Residents' modifications depicted on the façades are identified and categorized according to their related dwelling activities. The term dwelling activity is acquired from the "dwelling perspective" elaborated by Inglod (1993), as a testimony to the lives and work of generations that have dwelled in a particular landscape. According to Ingold (1993), dwelling activities constitute taskscapes of the dwellers that imprint the landscape's temporality. Residents' modifications in *Climat de France* are both permanent and temporary acts recongnized at a frozen moment. An array of dwelling activities that reflect the daily social, economic, political state of the neighborhood at a specific moment.

The temporality of residents' modifications and their motivations are discussed here regarding important milestones of Algerian political history, showing that residents' modifications are strong social signifiers beyond their offensive distorting nature. Furthermore, the user context can contribute to a wider, more open and democratic understanding of architecture. Future explorations of the proposed methodology can be adapted to other colonial examples in the Global South.

6.1 A Summary: Residents Modifications in *Climat De France*

Climat de France and many other grand ensemble constructed with similar motives, have been attesting to many seasons, years and regimes while hosting the same residents for decades. Residents' modifications in these projects are not only related to daily life routines but they are political and social statements against the ongoing

system. They instrumentalize appropriations as an essential protest tool. Although residents' modifications are multilayered and diverse, in this research I focus on the dwelling activities only. The dwelling activities that are groups of taskscapes applied on the monumental *200 Colonnes* façades.

Taskcape and dwelling activities are terms developed by the anthropologist Ingold (1993) to explore the 'dwelling perspective' that he refers to as a way of looking at the inhabited world in progress, not a world made first and then inhabited. He refers to the latter as a 'building perspective' (1993) which associates in many levels with the design context that is discussed in this dissertation.

This study focuses on the dwelling activities of the South-West façade of the *200 Colonnes*. This is the only façade of the monument with block entrances. The other outer façades do not have block entrances. They are entered from the inner façades of the courtyard. The reason to focus on this particular façade is not only because of its typological features but also because it is the only façade of the *200 Colonnes* visible from outside the site and the main bouvard that make it the exposed feature façade of the monument. This connection to the outside makes the South-West façade more accessible and safer to work with and document while other façades are part of the unsettling enclosed habitat that is hard to permeate.

2010 and the following couple of years were turbulent times for Climat de France and its residents. The authorities decided to clean the overpopulated neighborhood by relocating people to other newly established settlements and demolishing their squatters. This top down decision led to violent protests and unsettling conflicts. In 2017, the Climat de France I visited was different from the pictures and videos I have examined on the internet and the newspapers. The decluttered settlement with few squatters and many resident modifications was less than I expected. Therefore, the resident modifications I documented are mainly related to daily activities. The taskscapes I identified on the South-West façade were the followings: hang out laundry that reflected the taskscape of making laundry, hanging sheets or blankets indicating an ongoing cleaning activity, closed shutters or curtains on napping time, or for privacy, fences for extra security, separated rooftop which was designed as a common area for Algerian woman to socialize, enhanced home comfort with air conditioner and satellite dishes, well maintained environment with plants and vegetation on the sides of block entrances or pot plants on the window fronts, colorful

painting on the exterior façades, doors and windows renovations, decorative features extending outside the window and door frames, addressing the need of space by building extra room on the rooftop or the ground level, signs of invaded basements such as small windows or aeration openings. There were also public space related taskscapes that were identified independently from the South-West Façade such as installation of goal posts for football games, setting up the market place and setting up tents for ceremonies such as weddings and funerals. I assemble the observed taskscapes under seven dwelling activities namely: daily activities, setting boundaries, enhancing home comfort, taking care of the environment, public space transformations, interior renovations and extra space demands.

The diversity of dwelling activities is related to many aspects but especially to the physical and spatial features of the façade it invades. As Miller (2001) explains the process of changing our home to suit ourselves is as well the process of adapting ourselves to our accommodation. The façade attributes not only host residents' modifications but orient them to be in a certain way. This is visible on the different façades of the 200 Colonnes that each one incorporates different potentials for accommodating. For instance, the North-East façade that is entered from the courtyard level is penetrated by its residents to gain an alternative access from the street level. Residents unsatisfied with the courtyard entrance created their own access from the street level through their own modifications (Figure 6.1).
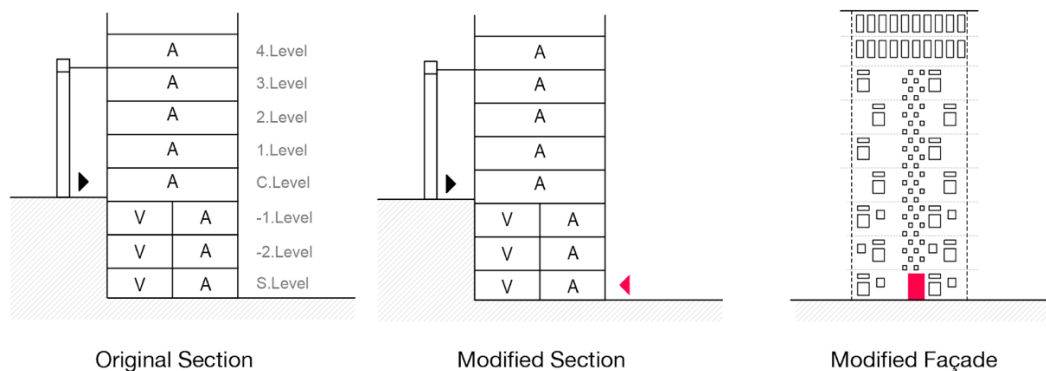
Figure 6.1 : The North-East façade blocks penetrated from the street level in order to provide a second access other than the one from the courtyard.

Another common resident modification on the North-East façade is the enlarging of the existing windows in order to achieve a larger opening. The apartments located under the courtyard level, differently than the upper floors have one way aeration/ no cross ventilation which is insufficient in the hot mediterranean climate. As a solution

the architect introduced a two window system to these particular apartments. However the designed openings fall short to ventilate these apartments. As an improved solution residents merge the two windows in order to achieve a larger opening.
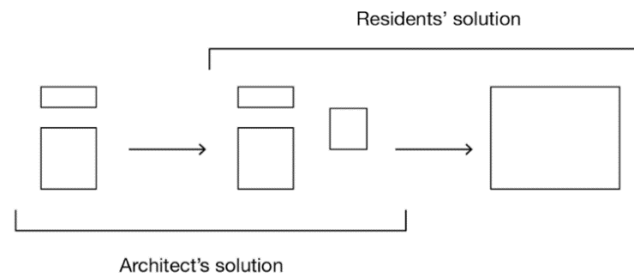
Figure 6.2 : The architects' design for one façade aerated apartments, transformed by the residents in order to improve the earation of their apartment.

These two examples from the North-East façade illustrate two different taskscapes that are not observed on the South-West façade that is the focal façade of this dissertation. These are important examples on how design attributes nest different opportunities for resident modifications. The reciprocal accommodating of the home and the dweller is identifiable through the different façades of the same building that hold different characteristics.

6.1.1 Temporality of user context and residents' modifications

During my site visits in 2017 and 2018, the settlement has been evacuated from overpopulated squatters and many narcotic operations were conducted to clean the neighborhood from the massive drug cartel. This made *Climat de France* a relatively calm popular neighborhood during my visit in contrast to 2010 when the neighborhood was hitting the headlines due to overpopulation and squatters that were built on every empty spot. Ingold (2000), claims that temporality can be understood "by way of dwelling perspective" (p.154) that I associate with this dissertation. However, the dwelling activities I documented are mostly daily life related and far from being political signifiers. Although I focus on one temporality over many others, I suggest that the computational nature of the formal methods holds the potential of investigating multiple temporalities with further explorations and full automation.

Due to the limited documentation, I would like to discuss different temporalities of *Climat de France* and in some cases *Diar el Mahçoul* - designed by the same architect and constructed during the same period- to exemplify the variety and diversity of

dwelling activities in different temporalities. I would like to start with the most recent 2010 manifestations, move on to the black decade during the civil war initiated in 1992 and finalize with the independence war in 1954-1962 just after these grand ensembles were implemented.

Figure 6.3 : Climat de France during my visit in August 2017.

The 8th of August, 2017 was an ordinary hot summer day in Climat de France (Figure 6.3). The courtyard was filled with parked cars, kids playing under the shades, men chatting while sipping their coffee, women shopping from the stores and the mobile grocery truck set in the middle of the courtyard. This image (Figure 6.3) was very different from what I expected Climat de France would be. Based on the images and information I gathered from the newspapers, Youtube (Url-2 and Url-3) videos and different online sources I was expexting a more crowded, unsettling neighborhood. Most of the documents I have studied before my visit were related to 2010 manifestations. There have been violent manifestations held by the residents on their degrading housing conditions and the extensive squattering transforming the settlement. Figure 6.4, shows the barricades built by the demonstrators on the rooftops of *Diar el Mahçoul* by the residents resisting against the local forces. *Diar el Mahçoul* is another grand ensemble designed by Pouillon and constructed a couple of years before *Climat de France*. The housing manifestations of 2010 took place in all the *Grand Ensembles* of Algiers, protesting the inadequate, neglected housing conditions that have been the same since they were built as *evolutif* apartments. Residents were furious about the deteriorating buildings they inhabited and the lack of space that was neglected in these overpopulated neighborhoods. The manifestations were not only for/against housing conditions but the living conditions and employment of the young generations that compose 70% of the Algerian population are other social issues that intensify them. The streets and rooftops were filled with barricades built from found

materials created new taskscapes and dwelling activities of resistance evoked from riot and anger of the residents against the social injustice they have been through. This kind of dwelling activities were not detected during my visit because the local authorities relocated many of the overpopulated families to new houses and made some ameliorations to the existing buildings after the manifestations.

Figure 6.4 : 2010 manifestations from *Diar el Mahçoul* by Farouk Batiche.

Another period in which Climat de France was hitting the headlines was the black decade. The black decade is the intense period of civil war between the Algerian government and political groups during the years of 1991 and 2002 (Url-8). Popular neighborhoods such as Climat de France were highly associated with the Islamic Party (FIS) since its residents were fanatic supporters. FIS gained the elections in 1990 but was confined by the military coup. Armed groups on behalf of FIS emerged in 1994 and extreme violence and brutality was applied to civilians all over the country for years. Climat de France and other settlements were nesting and supporting these armed rebellious groups (Fontaine, 1992). The taskscapes of that period would consist of religious slogans painted on the streets, bullet marks from recent conflicts, political manifestos glued on the walls, etc (Figure 6.5). The tense political atmosphere was very visible in the city and the grand ensembles in particular. The prayers were conducted in public spaces by crowded groups and political developments were

celebrated or manifested afterwards. There was no place for women in the public space in that particular period, politicized groups threatened and repressed important intellectual female figures. The political atmosphere was reflected on the people, neighborhoods and public spaces. The taskscapes of the neighborhood were direct signifiers of the dominating political tendency of the residents and their fears.
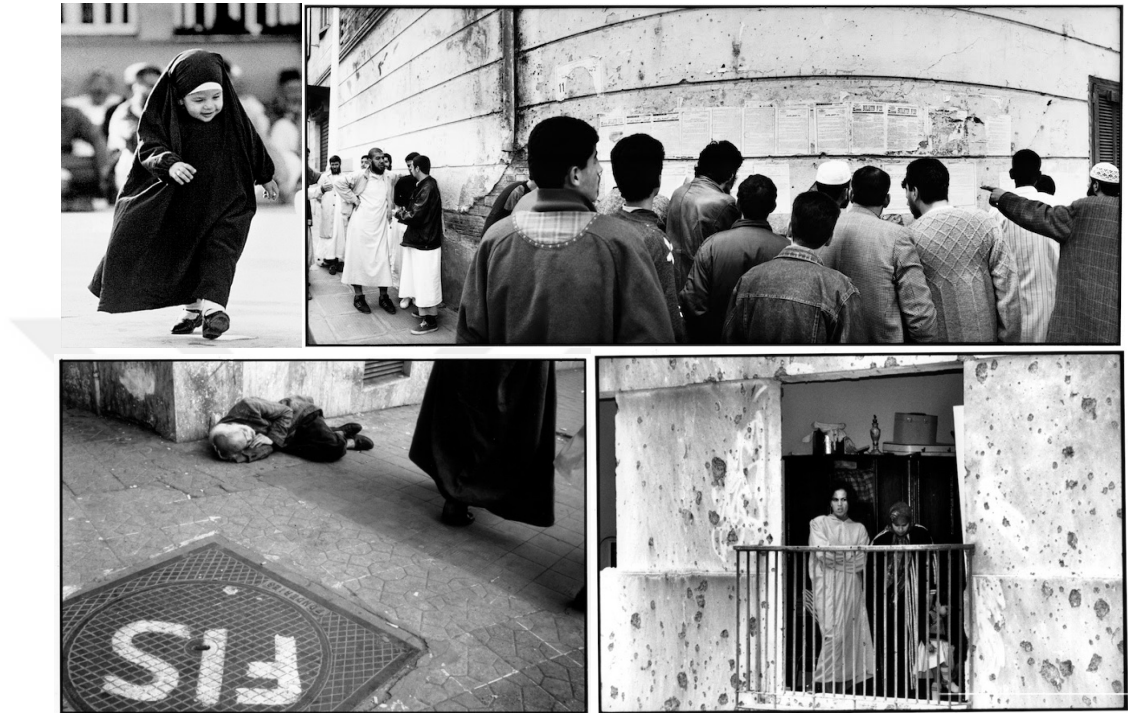
Figure 6.5 : Images from the black decade from the exhibition "Guerre sans images" by Michael von Graffenried, 1998.

The third and last period to mention is the independence war, which has already been introduced at the beginning of this dissertation. *Climat de France* held great importance in the colonial rule and independence war because it was created to sustain the first and adapted for the later. The grand ensembles played an important role in colonial discourse. Policies for urban housing were developed by the French administration in face of "the growing armed resistance to colonialism" (Çelik, 1997, p.113). "The housing problem was understood not only as a 'human' problem, but more significantly as a 'dangerously political' issue" (Çelik, 1997, p.117). The housing battle from 1954 until 1957 was executed as an opressive weapons against the Algerian population. Mayor Chevallier aimed to gain the heart of Algerian people and prevent their support to the resistance by providing them modern houses. Yet, once the indepence riots accelerated the athmosphere changed in *Climat de France*, as Çelik (1997) explains "the war of independence transformed the social atmosphere of the

settlement, turning the public squares and gardens into proper battlegrounds and army stations" (p.149). Further, Algerian population adapted to the Europeanized modern life of the Grand Ensembles as a stratigic maneuver to mislead colonial rule and get organized within themlselves without attracting attention. Of course, there is no concrete evidence on how the space was accommodated by the resistance at that period but it is recognized that the grand ensembles were the support system of the Algerian resistance during the independence war. Political slogans were painted on the walls of *Diar el Mahçoul* (Figure 6.6). Indepence Images from 1962, day of the Algerian revolution, expose the celebrations of the residents of *Diar el Mahçoul* and *Climat de France* (Figure 6.6). The taskscapes of that atmosphere would definitely express the political tension and transform the whole neighborhoods into battle ground.

Figure 6.6 : Images of the Algerian Revolution by Nicolas Tikhomiroff, 1960.

6.1.2 Duality of architecture: design and user contexts

The dual nature of architecture can be deducted to intentions and realities. Intentions of the modern architect was to create global solutions that would be applied universally, the need of people was defined by universal functions and impersonalisation was a result of the quest of holistic aesthetic understanding in the design context. On the other hand, realities reflects the political pluralism of user context, how the inhabitant deal with given system and develop fast and effective solutions to deal with the existing circumstances. The oppressive nature of the universal values that neglect culture and its spatial organisation compels resistance as a counter act. As Pile and Keith (1997) explain "Resistance seeks to occupy, deploy and create alternative spatialities from those defined through oppression and exploitation" (p.2). According to them (Pile & Keith, 1997), space is not only where

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the resistance takes place but also it is articulated and appropriated by resistance to achieve new spaces. The design problem of housing is not a well defined problem that can be addressed with perfect solutions. Therefore, the more enforcing the design is the more oppressive it gets. The universality of modern architecture struggles once applied in different cultures, the disconnection between design and use context leads to inavitable conflicts and the more the gap between the two increases the more brutal its impact gets.

Understanding aspects of culture and studying their impact on the use of space may lead to designing more compatible buildings. The user context in that respect is a resource that should be taken seriously by architects. Kent (1999), in her extensive cross-cultural study emphasizes the importance of sociopolitical variables that affect the use and organisation of space and how they are interconnected. Kent (1999), advocates that "the built environment may be seen as "suggestive" in that architecture can suggest new behavior" (p.2) instead of determining the users' behaviour. However, this suggestive character may not be enough to interrelate the design and user context, an open-ended undestanding should be integrated to the design context as well. Jenks & Silver (2013), the authors of the book Adhocism, suggest that giving people a saying in design is the only solution. They explain that architects representing people's need can never be a complete representation and that people should have a saying in shaping their own space and taking care of it (Jenks & Silver, 2013).

An open-ended architecture is certainly not an "architecture of consumption" (Baudrillard as cited in Proto, 2006, p.4) that replaced the social architecture dominant in the modernist era. That would be abondoning the design context and leaving it to the user/consumer context that is already practiced in the existing housing market that would be a subject of another study. It is not the architect's responsibility to "bow to the demands of the user", however, it is important that architects "accept the potential domination and repressive structures that spatial formation might produce" (Hill, 1998). After all, an open-ended architecture would be a practice that recognizes the user context and presents future potentials for it. Setting up a dialogue between the design and user context would eliminate the conflicts and power balance between the two. The ultimate way of restoring the bound between this duality for architects is to gain a wider understanding of the use of space.

6.1.3 Learning from inhabited spaces

"Inhabited space transcends geometric space" (Bachelard, 2014, p.82).

Learning from inhabited spaces is a subject neglected by architects and mostly a subject of cultural and social studies. However, it is essential to explore inhabited spaces similarly to the way we explore archeological settlements in order to understand how people used to live in the past. Learning from vernacular and historical settlements is widely explored by archeologist, architects and architectural historians, the participatory paradigm, know-how, use of local material, energy conservation, climate adaptation and sense of place are subjects of curiosity. Architects are ambitious to learn from the past and adapt it to the future for a more sustainable environment. However, it not possible to say that architects show the same enthusiasm to inhabited spaces. Yet, there is a lot to learn from inhabited spaces on space making, how meaning is produced whithin the given structure, the competences of the residents and the physical incompetences of the design. The building model in traditional vernacular settlements, is modified and adjusted through time until it satisfies most of the cultural and physical requirements (Rapoport, 1969). The residents' modifications can be explored and integrated to the design until it achieves the required expectations of both the designer and the user. The design process and the meaning of basic needs should evolved within the inhabited space in order to satisfy the basic nature of dwelling.

6.2 What Does This Methodology Tell Us?

The proposed methodology is an attempt to explore inhabited spaces and document residents' modifications in order to understand the use of space and the motivation behind residents' modifications. By documenting the resident' modifications on the façade, I explore each transformation and relate it to the dwelling activity it reflects. Dwelling activities documented on the façade are temporary appearances of the use of space frozen at a specific moment. The computational nature of the proposed methodology, promote the repetitive potential of this exploration in different time intervals that could provide a vast set of data on the use of space. This kind of anthropological investigations are conducted by field studies, interviews and visual documentation, what this methodology adds up to this is the amount of data that can be generated and evaluated once the method is fully automatized. The porposed methodology speaks to both formal methods and discoursive social science.

6.2.1 The grammar

The advantages of the visual character of the developed analysis can be classified under two aspects: one is related to its use and universality and the second on the formal properties of the existing building and their direct relation with the modifications. First, the visuality of the proposed methodology, creates a familiar environment that can be easily explored and understood by architects that are conventionally drawing oriented rather than social or statistical data oriented. The two dimensional drawings of the façades and the residents' modifications are formal translations of the residents' modifications, due to the textual labels they are enhanced with social and cultural information. Therefore, they create a bridge through a familiar language between the architect and the sociocultural signifiers of inhabited spaces. Second, the formal nature of this study illustrates a direct relation between the design and the residents' modifications. Through visual rules it is possible to read how the design orient or induce residents to transform space the way they do. The concept of "accommodating each other" (Miller, 2001 p.115) is evident through visual transformation rules. The extents of the existing structure are evaluated in order to understand the limits of residents' modifications.

6.2.2 The generated data

In the analysis of the South-West façadee, every modification have been taken into consideration, even the one with short temporal character from curtains hanging out of the window to extensions built on the rooftop. The rules encode the modifications of the existing façade during use and document different dwelling activities. Dwelling activities contain socio-cultural information of the residents and their relation to the building. The findings, holds information on an array of dwelling activities by the residents of Climat de France. These dwelling activities reflect, social, cultural and spatial adaptations related to the building's imcompetence and possibilities. In the analysis of the generated data, the dwelling activity tendencies, their overall impact on the building, how they are shaped according to building features, the impact of climatic conditions and the communing and knowledge sharing between the residents are discussed. The categorization and consideration of each dwelling activity regardless its size, temporality or impact provide objectivity to this research. Therefore, with the proposed methodology there is no chance to miss or overread residents' modifications

as it might be the case with traditional survey methods. Each transformation is evaluated and interrelated in order to investigate potential patterns and relationships.

6.2.3 The patterns and relationships

The proposed analysis provides the documentation of modifications to different filters of significance which residents and field researchers may overlook. The patterns recognized with the proposed method have the potential to establish a visuospatial ground to orient and guide the researchers in their interviews and surveys. The relationships detected with this methodology may guide the researcher and highlight what to focus on.

Within the revealed patterns, there is an inevitable adaptation of an iconic architecture into micro-systems sensitive to climate, culture and daily life. This kind of adaptations is expected and easy to detect with naked eye. However, neighboring relationship, the know-how and sharing of tools and knowledge are some of the unexpected social relations that become visible through the detected patterns in this analysis. It may be argued that patterns and relationships identified with the proposed methodolgy illustrates predictable information on the settlement, yet the strength of this method is to identify and show patterns that are not visible to bare eyes, it explores the architectural space beyond its physical structure revealing relations and connections.

In conclusion, the developed visual rules of the proposed methodology are inferred from 1) user data outside of a laboratory setup, 2) user data that is interpreted through visual documents, 3) abstraction that allows for subjective interpretation of the data by any stakeholder, e.g. user and, or a designer.

6.3 Future Work and Explorations

This dissertation focuses on the context of Algiers and the project of *Climat de France* in particular. Nevertheless, the proposed methodology is adaptable to other grand ensembles in Algiers and Algeria in general. There are other grand ensembles constructed during the same period with similar intentions. Algeria is not the only country with colonial architectural heritage. Its next door neighbor Morocco has been explored as an experimental land by French and Italian modernist architects as well. Many countries in the Africa, Latin America and Asia have been evaluated as laboratories for exploring the modern experiment with hybrid and critical meaning

(Magalhães, 2017). Many of this modern heritage is still in use and adapted to local cultures and need by their residents. The case of Nid d'Abaille housing in Casablanca, Morocco, The Pedregulho mass housing complex in Rio de Janeiro, Brazil and Universal Building in Lobito, Angola are only some of many modern heritage examples that are decaying around the Global South. The proposed methodology can be adapted to any of the existing settlements that have been implemented by foreign architects and adapted by local residents. A further exploration may be achived by applying the developed methodology in different contexts and investigate their differences and similarities.

User empowerment in processese of renovation and rehabilitation of the existing building stock is another aspect that could be further considered regarding the user context. The 2019 Mies Van Der Rohe Award winner, the Grand Parc Bordeaux project (https://miesarch.com/work/3889), is a housing renovation that realized the transformation of fully occupied dwellings. Residents of mass housing complex are not any more excluded and isolated from the architectural and constructional processes. In the colonial context of modern mass housing as in Algiers and the Global South, residents' modifications are rich signifiers of the users' response to oppressive modern and other ways of living (Cohen, 2006). The rules of homemaking practiced so far in Climat de France are reference points for future use. While the set and level of skills used draw a framework for the economic and material limitations, the impact of modifications on the original building inform and draws limits for minimum permanent destruction. Looking at residents' modifications in colonial architecture with visual computational tools is a democratic attempt to untangle the "dense network of semantic exchange" (Cohen, 2006, p.352) this inhabited architecture embeds. User empowerment through inclusive data collection and data design as well as accessible and interpretable representations have great potential for future scenarios of sustainable rehabilitation and reuse in derelict masterpieces of colonial modernism.

As a future direction to the development of the proposed methodology, digital automation of visual data interpretation may be possible and may better utilize the computational potential of representing the user context this way. Machine learning algorithms can enable faster detection of transformations in larger data sets to compare user needs and competences in future rehabilitations. Other future work is necessary to combine existing methodologies such as interviews and surveys with the proposed

methodology in order to achieve more efficient results. The proposed methodology holds potentials that can be further developed in terms of technical/computational aspects as well as discoursive sciences.

REFERENCES

Allouache, M. (Director). (1977). *Omar Gatlato* [Motion picture]. Office National pour le Commerce et l'Industie Cinematographique.

Attia, K. (2010). "Signs of Reappropriation". In *Colonial Modern: Aesthetics of the Past Rebellions for the Future.* London: Black Dog Publishing.

Bacova, A., Duarte, P., Iranmanesh, A., Joklova, V., Madrazo, L., & Malovany, M. (2011). *OIKODOMOS Housing Concepts. Lifelong Learning Programme* (Vol. 1). https://doi.org/10.1016/B978-1-4832-8421-7.50012-0

Baudrillard, J., & Proto, F. (2006). *Mass Identity Architecture: Architectural Writings of Jean Baudrillard*. London: Thames & Hudson.

Blunt, A., Dowling, R. (2006). *Home.* London and New York: Routledge.

Bourdieu, P. (1977). *Outline of a Theory of Practice*. Cambridge: Cambridge University Press. https://doi.org/10.1590/S0103-20702013000100001

Bousquet-Lefevre, L. (1939). *La Femme Kabyle*. Paris

Brand, S. (1994). *How Buildings Learn*. Viking Press.

Broadbent, G. (1975). *Design in Architecture*. London, New York, Sydney, Toronto: John Wiley & Sons.

Buchli, V. (2013). *An Anthropology of Architecture*. London and New York: Bloomsbury.

Cohen, J. L. (2006). Architectural history and the colonial question: Casablanca, Algiers and beyond. *Architectural History*, *49*(2006), 349–368. https://doi.org/10.1017/S0066622X00002811

Colakoglu, B. (2005). Design by grammar: An interpretation and generation of vernacular hayat houses in contemporary context. *Environment and Planning B: Planning and Design*, *32*(1), 141–149. https://doi.org/10.1068/b3096

Colin, S. J. W. (1993). Master of the Resistance. *The Architectural Review*, *194*(1157), 74–79.

Crane, S. (2017). Housing as Battleground: Targeting the City in the Battles of Algiers. *City and Society*, *29*(1), 187–212. https://doi.org/10.1111/ciso.12118

Cross, N. (2001). Design cognition: results from protocol and other empirical studies of design activity. In *Design knowing and learning: Cognition in design education* (pp. 79–103). Elsevier Science. https://doi.org/10.1016/B978-008043868-9/50005-X

Cross, N. (2006). *Designerly Ways of Knowing*. London: Springer. https://doi.org/10.1016/B978-0-12-397164-7.00024-0

Çelik, Z. (1997). *Urban Forms and Colonial Confrontations: Algiers Under French*

Rule. Berkeley: University of California Press.

Dainese, E. (2019). From the charter of athens to the 'habitat': CIAM 9 and the African grids. *Journal of Architecture*, *24*(3), 301–324. https://doi.org/10.1080/13602365.2019.1606025

Daniels, I. M. (2001). "The "untidy" Japanese house". In Miller, D. (ed.) *Home Possessions: Material Culture behind Closed Doors*. Oxford: Berg, pp. 201-229.

Descloitres, R., Réverdy, J.C. (1961). *L'Algérie des bidonvilles.* Paris.

Duarte, J. P. (2001). *Customizing mass housing : a discursive grammar for Siza's Malagueira houses*. Massachusetts Institute of Technology. https://doi.org/10.1016/j.autcon.2004.07.013

Duarte, J. P. (2005). Towards the mass customization of housing: The grammar Siza's houses at Malagueira. *Environment and Planning B: Planning and Design*, *32*(3), 347–380. https://doi.org/10.1068/b31124

Eloy, S. (2014). 'Rabo-de-bacalhau' Building Type Morphology : Data to a Transformation Grammar-based Methodology for Housing Rehabilitation. *Arq.Urb*, *11*, 31–47.

Eloy, S., Dias, M. Â., & Vermaas, P. E. (2018). User-centered shape grammars for housing transformations : towards post-handover grammars. In *22th Conference of the Iberoamerican Society of Digital Graphics* (pp. 1–9). Retrieved from https://repositorio.iscte-iul.pt/bitstream/10071/16596/1/SIGraDi paper EloyDiasVermaas.pdf.

Eloy, S., & Duarte, J. P. (2011). A Transformation Grammar for Housing Rehabilitation. *Nexus Network Journal*, *13*(1), 49–71. https://doi.org/10.1007/s00004-011-0052-x

Fontaine, J. (1992). Quartiers défavorisés et vote islamiste à Alger. *Revue Du Monde Musulman et de La Méditerranée, 65*(1), 141–164. https://doi.org/10.3406/remmm.1992.1561

Frampton, K. (1973). The Evolution of Housing Concepts: 1870-1970. *The Museum of Modern Art*, *3*(7), 1–10.

Galison, P. (2014). Visual STS. In *Visualization in the Age of Computerization* (pp. 197–225). New York, London: Routledge. https://doi.org/10.4324/9780203066973

Gaudry, M. (1928). *La Femme chaouia de l'Aurés*.

Goichon, A. M. (1927). *La Vie féminine au Mzab*.

Groat, L., & Wang, D. (2013). *Architectural Research Methods* (2nd Editio). New Jersey: Wiley. https://doi.org/10.1093/ecco-jcc/jjy097

Gropius, W. (1965). *The New Architecture and the Bauhaus*. Cambridge, Massachusetts: MIT Press.

Gürsoy, B., & Özkar, M. (2015). Visualizing making: Shapes, materials, and actions. *Design Studies*, 1–22. https://doi.org/10.1016/j.destud.2015.08.007

Habraken, J. N. (1972). Supports: an alternative to mass housing. In *Architectural Press* (pp. 4–20). London.

Heidegger, M. (1971). The thing. In *Poetry, Language, Thought* (pp. 163–184). New York: Harper and Row. https://doi.org/10.1007/BF01255223

Heitor, T., Duarte, J., & Pinto, R. (2004). Combing Grammars and Space Syntax: Formulating, Generating and Evaluating Designs. *International Journal of Architectural Computing*, *2*(4), 492–515. https://doi.org/10.1260/1478077042906221

Hill, J. (1998). *Occupying Architecture*. London and New York: Routledge. https://doi.org/10.1017/CBO9781107415324.004

Hillier, B., & Hanson, J. (1984). *The social logic of space*. New York: Cambridge University Press.

Hooks, B. (19991). *Yearning: Race, Gender and Cultural Politics*. London: Turnaround.

Ingold, T. (1993). The temporality of the landscape. *World Archaeology*, *25*(2), 152–174. https://doi.org/10.1080/00438243.1993.9980235

Ingold, T. (2000). *Perception of the environment: Essays on liveihood, dwelling, and skill*. London and New York: Routledge.

Jencks, C., & Silver, N. (2013). *Adhocism: The Case for Improvisation*. Cambridge, London: The MIT Press.

Kent, S. (1990). *Domestic Architecture and the Use of Space*. New York, Melbourne: Cambridge University Press.

Knight, T. (2015). Regarding Rules: From Rimini to Rio. *Joelho*, (January 2015), 13–27. https://doi.org/10.14195/1647-8681

Knight, T. (2018). Craft, Performance, and Grammars. In *Computational Studies on Cultural Variation and Heredity* (pp. 205–224). Singapore: Springer.

Kroes, P. (2002). Design methodology and the nature of technical artefacts. *Design Studies*, *23*(3), 287–302.

Larson, K., Intille, S., McLeish, T. J., Beaudin, J., & Williams, R. E. (2004). Open Source Building: Reinventing Places of Living. *BT Technology Journal*, *22*(4), 187–200. https://doi.org/10.1023/B:BTTJ.0000047598.66712.e0

Latour, B., & Yaneva, A. (2008). "Give me a Gun and I Will Make All Buildings Move": An Ant's view of Architecture. *Explorations in Architecture: Teaching, Design, Research*, 80–89.

Le Corbusier. (1986). *Towards a New Architecture* (13th editi). New York: Dover Publications. https://doi.org/10.1016/B978-0-85139-652-1.50006-8

Lee, J. H., Ostwald, M. J., & Gu, N. (2017). A Combined Plan Graph and Massing Grammar Approach to Frank Lloyd Wright's Prairie Architecture. *Nexus Network Journal*, *19*(2), 279–299. https://doi.org/10.1007/s00004-017-0333-0

Magalhães, A. (2017). Modern Movement Migrations: Architecture in Angola and Mozambique (1948-1975). *Athens Journal of Architecture*, *4*(1), 31–52. https://doi.org/10.30958/aja.4-1-2

Mallett, S. (2004). Understanding Home: A Critical Review of the Literature. *The Sociological Review, 52*(1), 62-89.

Masqueray, E. (1886). *La Formation des cités chez les populations sédentaires de l'Algérie*.

Merzelkad, R. (2014). Fernand Pouillon dans La Ville D'Alger: l'habitat integredu grand ensemble "Climat de France". *Revue Du Ministere De*

L'ecologie, Du Development Durable Du Logement, Des Legalite Du Territoire Et De La Ruralite, no.14.

Miller, D. (2001). Accommodating. In *Contemporary art and the home* (pp. 115–130).

Mota, N. (2014). *An Archaeology of the Ordinary: Rethinking the architecture of dwelling from CIAM to Siza*. Delft: Delf University of Technology.

Muslimin, R. (2017). Toraja Glyphs: An Ethnocomputation Study of Passura Indigenous Icons. *Journal of Asian Architecture and Building Engineering*, *44*(January), 39–44. https://doi.org/10.3130/jaabe.16.39

Negroponte, N. (1975). Intelligent Environment. In *Soft architecture machines* (pp. 125–155). Cambridge: MIT Press. Retrieved from http://www.uni-due.de/~bj0063/doc/Negroponte.pdf

O'Leary, A. (2016). The Battle of Algiers at Fifty: End of Empire Cinema anf the First Banlieye Film. *Film Quarterly*, *70*(2), 17–29.

Pelletier, J. (1955). Un aspect de l'habitat à Alger: les bidonvilles. *Revue de Géographie de Lyon*, *30*(3), 279–288. https://doi.org/10.3406/geoca.1955.1923

Piedade Ferreira, M., de Mello, D. C., & Duarte, J. P. (2011). The Grammar of Movement: A Step Towards a Corporeal Architecture. *Nexus Network Journal*, *13*(1), 131–149. https://doi.org/10.1007/s00004-011-0058-4

Pile, S., Keith, M. (1997). *Geographies of Resistance*. Psychology Press.

Pontecorvo, G. (Director). (1966). *La battaglia di Algeri* [Motion picture]. Casbah Film & Igor Film.

Rapoport, A. (1969). *House Form and Culture*. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Ratti, C., & Claudel, M. (2015). *OSArc Open Source Architecture*. London: Thames & Hudson.

Rezoug, A. & Özkar, M. (2020). "Visual Rules for Socio-Spatial Analysis: Inferring a Grammar of Use in an Inhabited Climat de France". *Dearq* n.o 27 (2020), 50-61. DOI: https://doi.org/10.18389/dearq27.2020.04

Riviére, T. (1938). "L'Habitation chez Ouled Abderrahman Chaouia de l'Aurés." *Africa* 11(3), 294-311.

Sadler, S. (2005). *Archigram: Architecture without Architecture*. Cambridge, London: MIT Press.

Stiny, G., & Mitchell, W. J. (1978). The Palladian grammar. *Environment and Planning B: Planning and Design*, *5*(1), 5–18. https://doi.org/10.1068/b050005

Strauven, F. (2007). Aldo van Eyck Shaping the New Reality From the In-between to the Aesthetics of Number. *CCA MelLon Lectures*, *12*(May), 1–20.

Teige, K. (2002). *The Minimum Dwelling*. The MIT Press. https://doi.org/10.1007/s13398-014-0173-7.2

Url-1 < *https://www.youtube.com/watch?v=mKezmJJStLM*>, accessed 10.05.2018.

Url-2<http://www.lemonde.fr/international/portfolio/2012/05/21/climat-de-france-la-plus-grande-cite-d-alger_1704557_3210.html#GGjy0DRBBdTUsLPr.99 >, accessed

01.06.2017.

Url-3 *<https://www.(.com/watch?v=NBwfeCo73YI >*, accessed 10.05.2018.

Url-4 *<http://www.team10online.org/team10/eyck/index.html >*, accessed 10.06.2019.

Url-5 *<https://berthoalain.com/2011/03/23/logement-emeute-a-oued-koreich-alger-23-mars-2011/ >*, accessed 10.06.2019.

Url-6 *<https://online-image-comparison.com/ >*, accessed 10.06.2019.

Url-7 *<http://www.team10online.org/team10/eyck/index.html>*, accessed 10.06.2019.

Url-8 *<https://en.m.wikipedia.org/wiki/Algerian_Civil_War >*, accessed 10.04.2020.

Url-9 *<https://miesarch.com/work/3889 >*, accessed 10.06.2019.

Utting, B., & Jacobs, D. (2018). An Architecture Without Contempt. *Cartha*, 12–15. Retrieved from https://www.carthamagazine.com/wp-content/uploads/2018/09/CARTHA-APPROPRIATION-03-UTTING_JACOBS.pdf

Vardouli, T. (2015). Making use: Attitudes to human-artifact engagements. *Design Studies*, *41*, 137–161. https://doi.org/10.1016/j.destud.2015.08.002

Vardouli, T., & Buechley, L. (2014). Open Source Architecture: An Exploration of Source Code and Access in Architectural Design. *Leonardo*, *47*(1), 51–55. https://doi.org/10.1162/LEON

Webster, H. (2011). *Bourdieu for Architects. Thinkers for architects.* London and New York: Routledge.

APPENDICES

APPENDIX A: Visual rules.

APPENDIX B: Block transformations.

APPENDIX C: Datasets.

Table A.1 : The visual rules of residents' modifications.
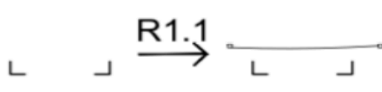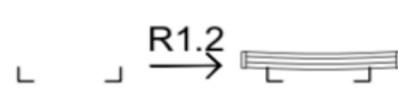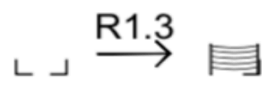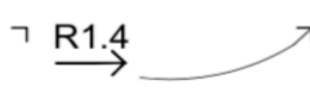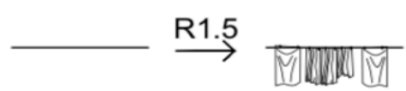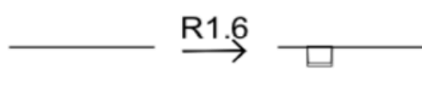
Dwelling Activity	Daily Activities	**Skills**	small tools	**Dwelling Activity**	Daily Activities	**Skills**	small tools
Taskscape	Making the Laundry	**Cost**	low cost, DIY	**Taskscape**	Making the Laundry	**Cost**	low-mid cost
Explanation	Adding metal profiles to the wall and connecting them with wire to create a drying rack	**Impact**	low impact	**Explanation**	Buying a laundry rack and fixing it to the window. Consists of two hanging lines located on the top of each other	**Impact**	low impact

Dwelling Activity	Daily Activities	**Skills**	small tools	**Dwelling Activity**	Daily Activities	**Skills**	small tools
Taskscape	Making the Laundry	**Cost**	low-mid cost	**Taskscape**	Making the Laundry	**Cost**	low cost, DIY
Explanation	Buying a laundry rack and fixing it to the window. Installed with a 45 degrees angle.	**Impact**	low impact	**Explanation**	Connecting two points with the help of nails and rope to create a hanging rope.	**Impact**	low impact

Dwelling Activity	Daily Activities	**Skills**	no tool	**Dwelling Activity**	Daily Activities	**Skills**	no tool
Taskscape	Making the Laundry	**Cost**	no cost	**Taskscape**	Making the Laundry	**Cost**	no cost
Explanation	Drying rack full with laundry.	**Impact**	no damage	**Explanation**	Drying rack with a couple of pieces hanged.	**Impact**	no damage

	R1.5'				R1.6'		
Dwelling Activity	Daily Activities	**Skills**	no tool	**Dwelling Activity**	Daily Activities	**Skills**	no tool
Taskscape	Making the Laundry	**Cost**	no cost	**Taskscape**	Making the Laundry	**Cost**	no cost
Explanation	Removing the laundry from the drying rack.	**Impact**	no damage	**Explanation**	Removing the laundry from the drying rack.	**Impact**	no damage
	R1.7				R1.8		
Dwelling Activity	Daily Activities	**Skills**	small tools	**Dwelling Activity**	Daily Activities	**Skills**	small tools
Taskscape	Making the Laundry	**Cost**	low cost, DIY	**Taskscape**	Making the Laundry	**Cost**	low cost, DIY
Explanation	On the ground floor adding laundry rope on the wall, either connected to the window of the owner or on the ground floor wall.	**Impact**	low impact	**Explanation**	Adding metal profiles perpandicular to the window frame.	**Impact**	low impact
	R1.9				R2.1		
Dwelling Activity	Daily Activities	**Skills**	no tool	**Dwelling Activity**	Daily Activities	**Skills**	no tool
Taskscape	Making the Laundry	**Cost**	no cost	**Taskscape**	Cleaning	**Cost**	no cost
Explanation	Using rope or wire between the existing metal security bars.	**Impact**	no damage	**Explanation**	Airing carpet and blankets on the drying rack.	**Impact**	no damage
	R2.1'				R2.2		
Dwelling Activity	Daily Activities	**Skills**	no tool	**Dwelling Activity**	Daily Activities	**Skills**	no tool
Taskscape	Cleaning	**Cost**	no cost	**Taskscape**	Cleaning	**Cost**	no cost
Explanation	Removing the carpets and blankets from the drying rack.	**Impact**	no damage	**Explanation**	Airing carpet and blankets on the balustrades in front of the block.	**Impact**	no damage
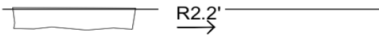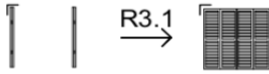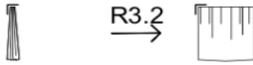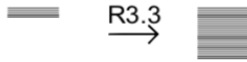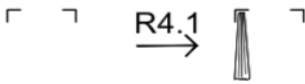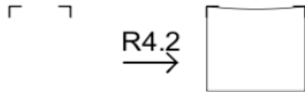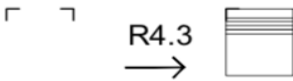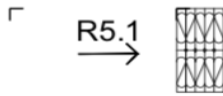
Dwelling Activity	Daily Activities	Skills	no tool	Dwelling Activity	Daily Activities	Skills	no tool
Taskscape	Cleaning	Cost	no cost	Taskscape	Napping	Cost	no cost
Explanation	Removing carpet and blankets from the balustrades in front of the block.	Impact	no damage	Explanation	Closing the window shutters.	Impact	no damage

Dwelling Activity	Daily Activities	Skills	no tool	Dwelling Activity	Daily Activities	Skills	no tool
Taskscape	Napping	Cost	no cost	Taskscape	Napping	Cost	no cost
Explanation	Closing the exterior curtains.	Impact	no damage	Explanation	Closing the blinds.	Impact	no damage

Dwelling Activity	Setting Boundaries	Skills	small tools	Dwelling Activity	Setting Boundaries	Skills	small tools
Taskscape	Privacy	Cost	low cost, DIY	Taskscape	Privacy	Cost	low cost, DIY
Explanation	Adding exterior curtains to the windows and doors. Fixing the curtain rods on the window frame or case and hanging the curtains.	Impact	low impact	Explanation	Hanging outdoor curtains between two narrow windows located on the top floors and rooftops.	Impact	low impact

Dwelling Activity	Setting Boundaries	Skills	Constructional skills	Dwelling Activity	Setting Boundaries	Skills	Constructional skills
Taskscape	Privacy	Cost	mid cost	Taskscape	Setting Boundaries	Cost	mid cost
Explanation	Adding rolling blinds to the existing window frame.	Impact	low impact	Explanation	Flat decorated window security metal bars.	Impact	low impact
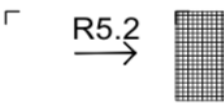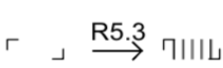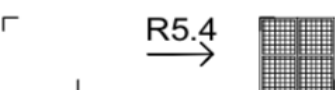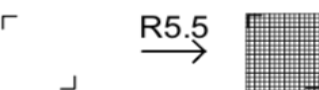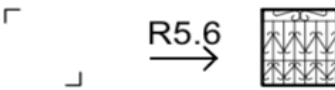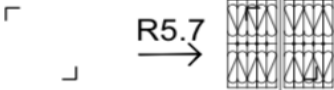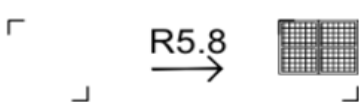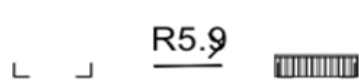
Table A.1 (continued) : The visual rules of residents' modifications.

Dwelling Activity	Setting Boundaries	**Skills**	Small tools	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Fences	**Cost**	mid cost	**Taskscape**	Fences	**Cost**	mid cost
Explanation	Fixed screen window	**Impact**	low impact	**Explanation**	Security bars	**Impact**	low impact
Dwelling Activity	Setting Boundaries	**Skills**	Constructional skills	**Dwelling Activity**	Setting Boundaries	**Skills**	Small tools
Taskscape	Fences	**Cost**	mid cost	**Taskscape**	Fences	**Cost**	low cost, DIY
Explanation	Metal mesh casement window frame for burglar and insect prevention.	**Impact**	low impact	**Explanation**	Mosquito net connected to the existing window frame or security bars	**Impact**	low impact
Dwelling Activity	Setting Boundaries	**Skills**	Constructional skills	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Fences	**Cost**	mid cost	**Taskscape**	Fences	**Cost**	mid cost
Explanation	Decorated window security metal grill. With curved section.	**Impact**	low impact	**Explanation**	Decorated windowsash security metal grill.	**Impact**	low impact
Dwelling Activity	Setting Boundaries	**Skills**	Constructional skills	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Fences	**Cost**	mid cost	**Taskscape**	Fences	**Cost**	mid cost
Explanation	Metal mesh casement window frame for burglar and insect prevention.	**Impact**	low impact	**Explanation**	metal balustrade in front of the window.	**Impact**	low impact
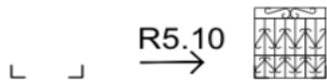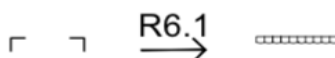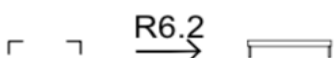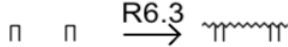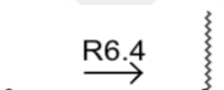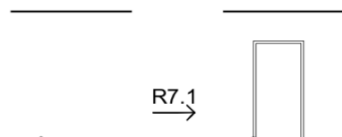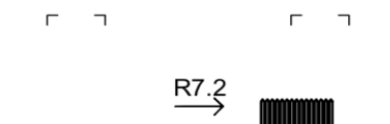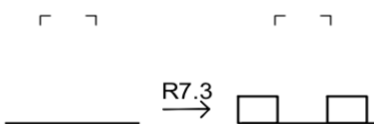
R5.10				**R6.1**			
Dwelling Activity	Setting Boundaries	**Skills**	Constructional skills	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Fences	**Cost**	mid cost	**Taskscape**	Awning	**Cost**	mid cost
Explanation	metal balustrade in front of balcony.	**Impact**	low impact	**Explanation**	Awning fixed to the wall with cement.	**Impact**	low impact
R6.2				**R6.3**			
Dwelling Activity	Setting Boundaries	**Skills**	Constructional skills	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Awning	**Cost**	mid cost	**Taskscape**	Top Covering	**Cost**	low-mid cost, DIY
Explanation	Awning fixed to the wall with metal L profiles.	**Impact**	low impact	**Explanation**	Top covering provided by installing a panel on the top of two walls.	**Impact**	high impact
R6.4				**R7.1**			
Dwelling Activity	Setting Boundaries	**Skills**	Constructional skills	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Side/front Covering	**Cost**	low-mid cost, DIY	**Taskscape**	Defining Entrance	**Cost**	high cost
Explanation	Side division provided by installing a vertical panel.	**Impact**	high impact	**Explanation**	Penetrating the ground floor walls to create additional entrance to the block or apartments.	**Impact**	damaged
R7.2				**R7.3**			
Dwelling Activity	Setting Boundaries	**Skills**	small tools	**Dwelling Activity**	Setting Boundaries	**Skills**	Constructional skills
Taskscape	Defining Entrance	**Cost**	mid cost, DIY	**Taskscape**	Defining Entrance	**Cost**	mid cost
Explanation	Putting fences around the entrance to set boundaries between the pulic and private space. Usually introduced in the newly added entrance doors.	**Impact**	no damage	**Explanation**	Constructing low walls around the entrance. Usually constructed around the newly added entrance doors.	**Impact**	no damage
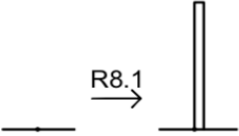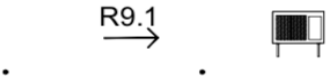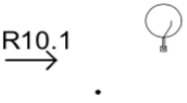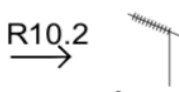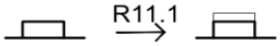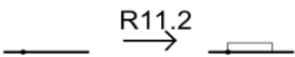
Dwelling Activity	Setting Boundaries	Skills	Constructional skills	Dwelling Activity	Enhancing the Home Comfort	Skills	Professional skills
Taskscape	Seperating rooftops	Cost	mid cost	Taskscape	Air Conditioning	Cost	high cost
Explanation	Adding a wall to define the boundaries of each block. This intervention was introduced after the rooftops were inhabited and populated. Block residents claimed control over their communal rooftop to prevent slum constructions without their consent.	Impact	low impact	Explanation	Adding air conditioner.	Impact	low impact

Dwelling Activity	Enhancing the Home Comfort	Skills	Professional skills	Dwelling Activity	Enhancing the Home Comfort	Skills	Professional skills
Taskscape	Satelite Dishes	Cost	high cost	Taskscape	Satelite Dishes	Cost	mid cost
Explanation	Adding satellite dish.	Impact	low impact	Explanation	Adding antenna.	Impact	low impact

Dwelling Activity	Taking care of the Environment	Skills	Constructional skills	Dwelling Activity	Taking care of the Environment	Skills	Constructional skills
Taskscape	Gardening	Cost	mid cost	Taskscape	Gardening	Cost	mid cost
Explanation	Building plant pot on the top of the existing structure in the entrance of the block.	Impact	low impact	Explanation	Building plant plot on the ground level in front of their apartments.	Impact	no damage
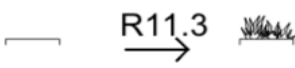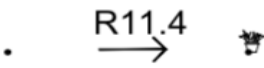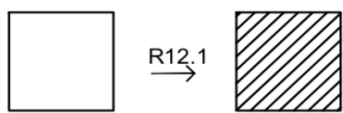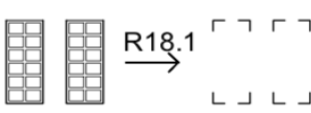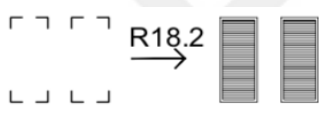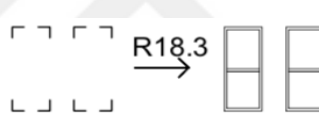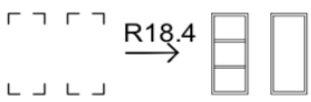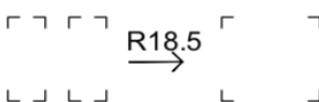
Dwelling Activity	Taking care of the Environment	Skills	no tool	Dwelling Activity	Taking care of the Environment	Skills	no tool
Taskscape	Gardening	Cost	low cost, DIY	Taskscape	Gardening	Cost	low cost, DIY
Explanation	Planting	Impact	no damage	Explanation	Plant pot on the window sill.	Impact	no damage

Dwelling Activity	Taking care of the Environment	Skills	small tools	Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Painting	Cost	mid-hight cost	Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Painting the exterior walls within their apartments' boundaries.	Impact	no damage	Explanation	Removing window Frame.	Impact	low impact

Dwelling Activity	Renovating the Interior	Skills	constructional skills	Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost	Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame A (PVC roller shutters)	Impact	low impact	Explanation	Putting a new window frame B (Wooden sash window)	Impact	low impact

Dwelling Activity	Renovating the Interior	Skills	constructional skills	Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost	Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame B (Wooden sash window)	Impact	low impact	Explanation	Enlarging the window opening by combining the existing two openings.	Impact	damaged

Table A.1 (continued) : The visual rules of residents' modifications.
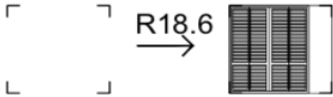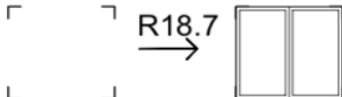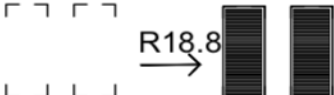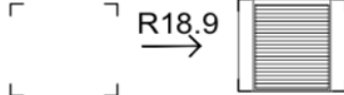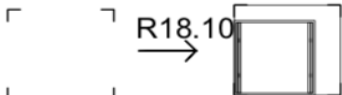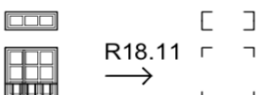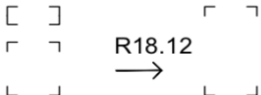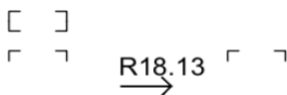
R18.6				R18.7			
Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Doors and Windows	**Cost**	mid-hight cost	**Taskscape**	Doors and Windows	**Cost**	mid-hight cost
Explanation	Putting a new window frame to the enlarged window opening A	**Impact**	damaged	**Explanation**	Putting a new window frame to the enlarged window opening B	**Impact**	damaged
R18.8				R18.9			
Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Doors and Windows	**Cost**	mid-hight cost	**Taskscape**	Doors and Windows	**Cost**	mid-hight cost
Explanation	Putting a new window frame D	**Impact**	low impact	**Explanation**	Putting a new window frame to the enlarged window opening C	**Impact**	damaged
R18.10				R18.11			
Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Doors and Windows	**Cost**	mid-hight cost	**Taskscape**	Doors and Windows	**Cost**	mid-hight cost
Explanation	Putting a new window frame to the enlarged window opening D	**Impact**	damaged	**Explanation**	Removing window Frame	**Impact**	low impact
R18.12				R18.13			
Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Doors and Windows	**Cost**	mid-hight cost	**Taskscape**	Doors and Windows	**Cost**	mid-hight cost
Explanation	Enlarging the window opening by connecting the top opening to the window opening	**Impact**	damaged	**Explanation**	Filling the top opening in the existing window	**Impact**	damaged
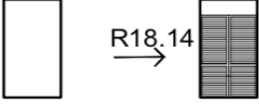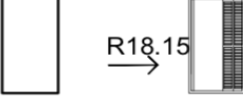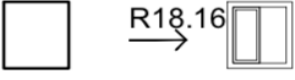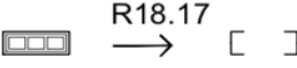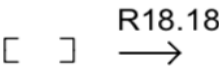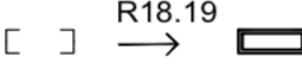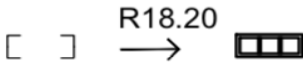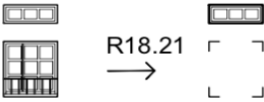
Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame to the enlarged window opening E	Impact	damaged

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame to the enlarged window opening F	Impact	damaged

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame to the resized window opening A	Impact	damaged

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Removing window frame	Impact	low impact

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Enclosing the window opening	Impact	damaged

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame A	Impact	low impact

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Putting a new window frame B	Impact	low impact

Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Doors and Windows	Cost	mid-hight cost
Explanation	Removing the lower window frame and leaving the upper frame as it is.	Impact	low impact

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Table A.1 (continued) : The visual rules of residents' modifications.

Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Doors and Windows	**Cost**	mid-hight cost	**Taskscape**	Doors and Windows	**Cost**	mid-hight cost
Explanation	Putting a new window frame to the existing window opening B	**Impact**	low impact	**Explanation**	Putting a new window frame to the existing window opening B	**Impact**	low impact

Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Doors and Windows	**Cost**	mid-hight cost	**Taskscape**	Doors and Windows	**Cost**	mid-hight cost
Explanation	Putting a new window frame to the enlarged window opening G	**Impact**	damaged	**Explanation**	Enlarging the window opening by connecting the top and bottom openings	**Impact**	damaged

Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Layout	**Cost**	mid-hight cost	**Taskscape**	Layout	**Cost**	mid-hight cost
Explanation	Enlarging an existing opening on a partition wall.	**Impact**	low impact	**Explanation**	Removing a partition wall	**Impact**	low impact

Dwelling Activity	Renovating the Interior	**Skills**	constructional skills	**Dwelling Activity**	Renovating the Interior	**Skills**	constructional skills
Taskscape	Layout	**Cost**	mid-hight cost	**Taskscape**	Layout	**Cost**	mid-hight cost
Explanation	Creating an opening on an existing partition wall.	**Impact**	low impact	**Explanation**	Adding a door to a partition wall	**Impact**	low impact

Table A.1 (continued) : The visual rules of residents' modifications.
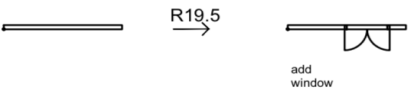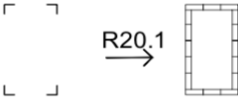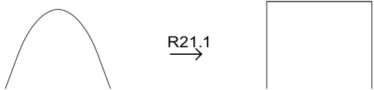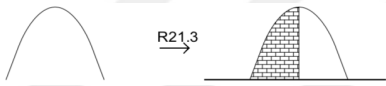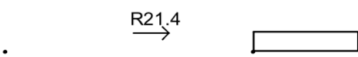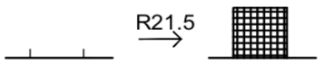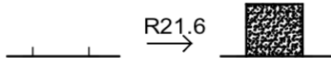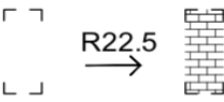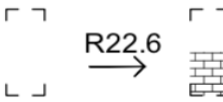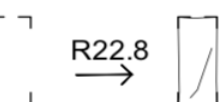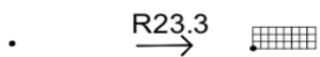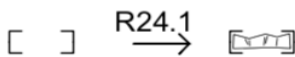
Dwelling Activity	Renovating the Interior	Skills	constructional skills	Dwelling Activity	Renovating the Interior	Skills	constructional skills
Taskscape	Layout	Cost	mid-hight cost	Taskscape	Decorating	Cost	mid cost
Explanation	Adding a window to a partition wall	Impact	low impact	Explanation	Decorating the window frame with ceramic tiles	Impact	low impact

Dwelling Activity	Need of Space	Skills	constructional skills	Dwelling Activity	Need of Space	Skills	constructional skills
Taskscape	Commercial	Cost	mid-hight cost	Taskscape	Commercial	Cost	high cost
Explanation	Rechaping the arch opening in the commercial spaces	Impact	high impact	Explanation	Reshaping the arch opening with rolling shutter.	Impact	high impact

Dwelling Activity	Need of Space	Skills	constructional skills	Dwelling Activity	Need of Space	Skills	small tools
Taskscape	Commercial	Cost	mid-hight cost	Taskscape	Commercial	Cost	mid-hight cost
Explanation	Enclosing half of the entrance arch in order to enlarge the commercial area.	Impact	high impact	Explanation	Hanging signboard or signage	Impact	low impact

Dwelling Activity	Need of Space	Skills	constructional skills	Dwelling Activity	Need of Space	Skills	small tools
Taskscape	Commercial	Cost	mid cost	Taskscape	Commercial	Cost	low cost, DIY
Explanation	Covering the front columns with ceramic tiles to emphasize the entrance of the shop	Impact	low impact	Explanation	Painting the front columns to indicate the entrance of the shop	Impact	no damage

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Dwelling Activity	Need of Space	**Skills**	constructional skills	**Dwelling Activity**	Need of Space	**Skills**	constructional skills
Taskscape	Extra room on the rooftop	**Cost**	mid-hight cost	**Taskscape**	Extra room on the rooftop	**Cost**	mid-hight cost
Explanation	Building a wall on the rooftop adjacent to the façade.	**Impact**	low impact	**Explanation**	Building a half length wall on the rooftop adjacent to the façade.	**Impact**	low impact

Dwelling Activity	Need of Space	**Skills**	constructional skills	**Dwelling Activity**	Need of Space	**Skills**	constructional skills
Taskscape	Extra room on the rooftop	**Cost**	low-mid cost, DIY	**Taskscape**	Extra room on the rooftop	**Cost**	low-mid cost, DIY
Explanation	Building a wall on the rooftop adjacent to the façade.	**Impact**	low impact	**Explanation**	Covering the rooftop opening with fabric	**Impact**	low impact

Dwelling Activity	Need of Space	**Skills**	constructional skills	**Dwelling Activity**	Need of Space	**Skills**	no tool
Taskscape	invading basements	**Cost**	high cost	**Taskscape**	Storage	**Cost**	no cost
Explanation	Penetrating the exterior wall to create an opening.	**Impact**	damaged	**Explanation**	Using upper window opening for storage	**Impact**	no damage
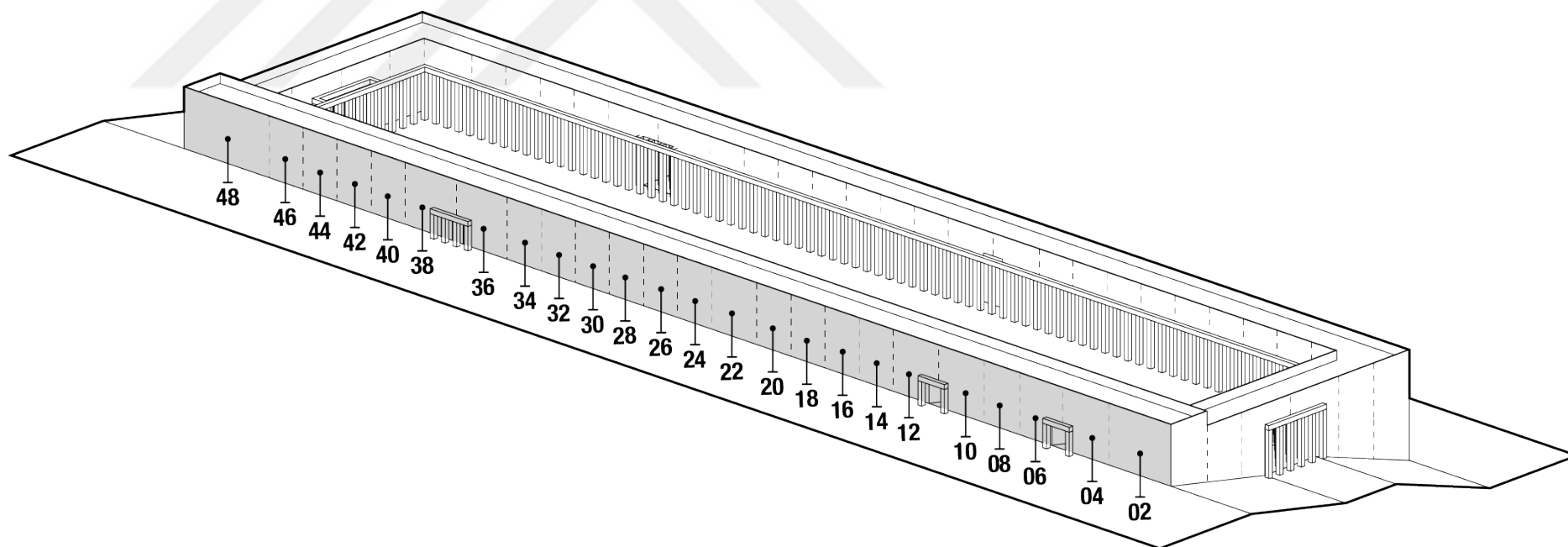
Figure B.1 : The South-West façade of the *200 Colonnes* highlighted in grey and block numbers marked on the bottom of each block.

Figure B.2 : Original (top) and modified (bottom) façade drawings of Block 02. Residents modifications are highlighted on the modified façade (bottom).

Table B.1 : The list of rules applied for resident modifications in Block 02.

					Competence labels		Label for impact on the existing building
Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
02	B02-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
02	B02-Apt. 10	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
02	B02-Apt. 10	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
02	B02-Apt. 10	R5.2	Setting Boundaries	Fences	Small tools	mid cost	low impact
02	B02-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 09	R18.2	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 09	R18.4	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
02	B02-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 09	R18.8	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
02	B02-Apt. 08	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
02	B02-Apt. 07	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
02	B02-Apt. 07	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
02	B02-Apt. 06	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
02	B02-Apt. 06	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
02	B02-Apt. 05	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
02	B02-Apt. 04	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
02	B02-Apt. 04	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
02	B02-Apt. 03	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
02	B02-Apt. 03	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
02	B02-Apt. 03	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
02	B02-Apt. 03	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
02	B02-Apt. 03	R20.1	Renovating the Interior	Decorating	constructional skills	mid cost	low impact
02	B02-Apt. 03	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
02	B02-Apt. 03	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
02	B02-Apt. 03	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
02	B02-Apt. 03	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
02	B02-Ent.	R11.1	Taking care of the Environment	Gardening	Constructional skills	mid cost	low impact

Squatter
Roof Top

Apartment 10 /09
3rd Level

Apartment 08 /07
2nd Level

Apartment 06 /05
1st Level

Apartment 04 /03
Entrance Level

Figure B.3 : Original (top) and modified (bottom) façade drawings of Block 04.
Residents modifications are highlighted on the modified façade (bottom).

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Table B.2 : The list of rules applied for resident modifications in Block 04.

| Block Number | Apartments | Rules | Dwelling Activity | Taskscape | Competence labels | | Label for impact on the existing building |
					Skills	Cost	Impact
04	B04-Squ. 02	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
04	B04-Squ. 02	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
04	B04-Squ. 01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
04	B04-Squ. 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
04	B04-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
04	B04-Apt. 10	R18.3	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
04	B04-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
04	B04-Apt. 10	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
04	B04-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
04	B04-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
04	B04-Apt. 10	R18.10	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
04	B04-Apt. 10	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
04	B04-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
04	B04-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
04	B04-Apt. 09	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged

Table B.2 (continued) : The list of rules applied for resident modifications in Block 04.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
04	B04-Apt. 09	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
04	B04-Apt. 09	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
04	B04-Apt. 09	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
04	B04-Apt. 08	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
04	B04-Apt. 08	R3.2	Daily Activities	Napping	no tool	no cost	no damage
04	B04-Apt. 08	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
04	B04-Apt. 08	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
04	B04-Apt. 08	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
04	B04-Apt. 08	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
04	B04-Apt. 08	R3.2	Daily Activities	Napping	no tool	no cost	no damage
04	B04-Apt. 07	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
04	B04-Apt. 07	R3.2	Daily Activities	Napping	no tool	no cost	no damage
04	B04-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
04	B04-Apt. 06	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
04	B04-Apt. 05	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact

Apartment 10 /09

Apartment 08 /07

Apartment 06 /05

Apartment 04 /03

Squatter
Roof Top

3rd Level

2nd Level

1st Level

Entrance Level

Figure B.4 : Original (top) and modified (bottom) façade drawings of Block 06.
Residents modifications are highlighted on the modified façade (bottom).

Table B.3 : The list of rules applied for resident modifications in Block 06.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
06	B06-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 10	R18.17	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 09	R18.4	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 09	R18.4	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
06	B06-Apt. 08	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
06	B06-Apt. 08	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
06	B06-Apt. 08	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
06	B06-Apt. 07	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 07	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
06	B06-Apt. 07	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
06	B06-Apt. 07	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
06	B06-Apt. 07	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

Table B.3 (continued) : The list of rules applied for resident modifications in Block 06.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
06	B06-Apt. 06	R5.8	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
06	B06-Apt. 05	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
06	B06-Apt. 05	R3.2	Daily Activities	Napping	no tool	no cost	no damage
06	B06-Apt. 04	R18.17	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
06	B06-Apt. 03	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
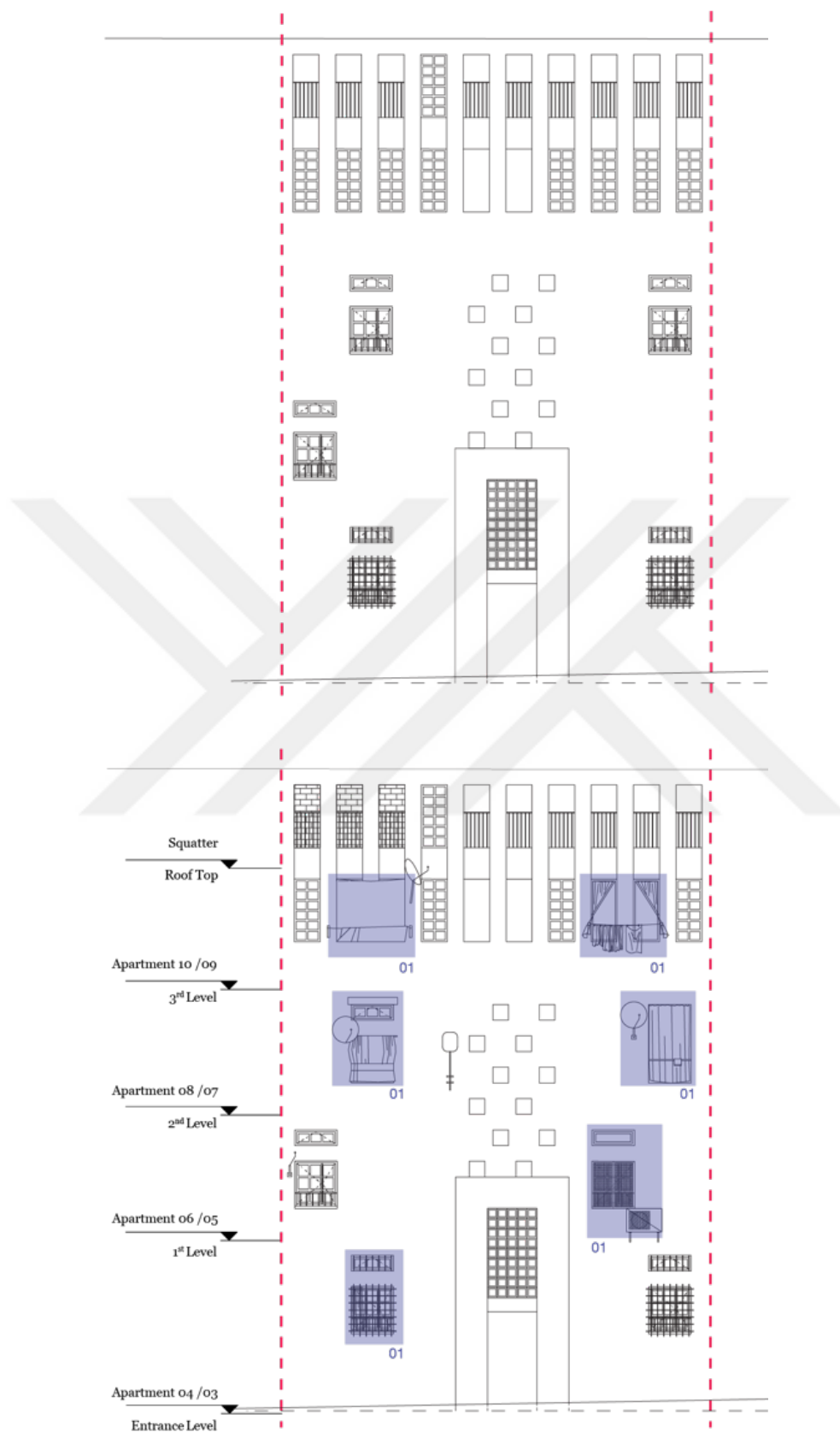
Figure B.5 : Original (top) and modified (bottom) façade drawings of Block 08. Residents modifications are highlighted on the modified façade (bottom).

Table B.4 : The list of rules applied for resident modifications in Block 08.

| Block Number | Apartments | Rules | Dwelling Activity | Taskscape | Competence labels | | Label for impact on the existing building |
					Skills	Cost	Impact
08	B08- Squ. 01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
08	B08- Squ. 01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
08	B08- Squ.1	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
08	B08-Apt. 10	R4.2	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
08	B08-Apt. 10	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
08	B08-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
08	B08-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
08	B08-Apt. 09	R18.17	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
08	B08-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
08	B08-Apt. 09	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
08	B08-Apt. 09	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
08	B08-Apt. 08	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
08	B08-Apt. 08	R3.2	Daily Activities	Napping	no tool	no cost	no damage
08	B08-Apt. 08	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
08	B08-Apt. 08	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
08	B08-Apt. 08	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
08	B08-Apt. 07	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
08	B08-Apt. 07	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
08	B08-Apt. 07	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged

Table B.4 (continued) : The list of rules applied for resident modifications in Block 08.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
08	B08-Apt. 07	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
08	B08-Apt. 07	R3.2	Daily Activities	Napping	no tool	no cost	no damage
08	B08-Apt. 07	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
08	B08-Apt. 07	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
08	B08-Apt. 05	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
08	B08-Apt. 05	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
08	B08-Apt. 05	R18.19	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
08	B08-Apt. 04	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
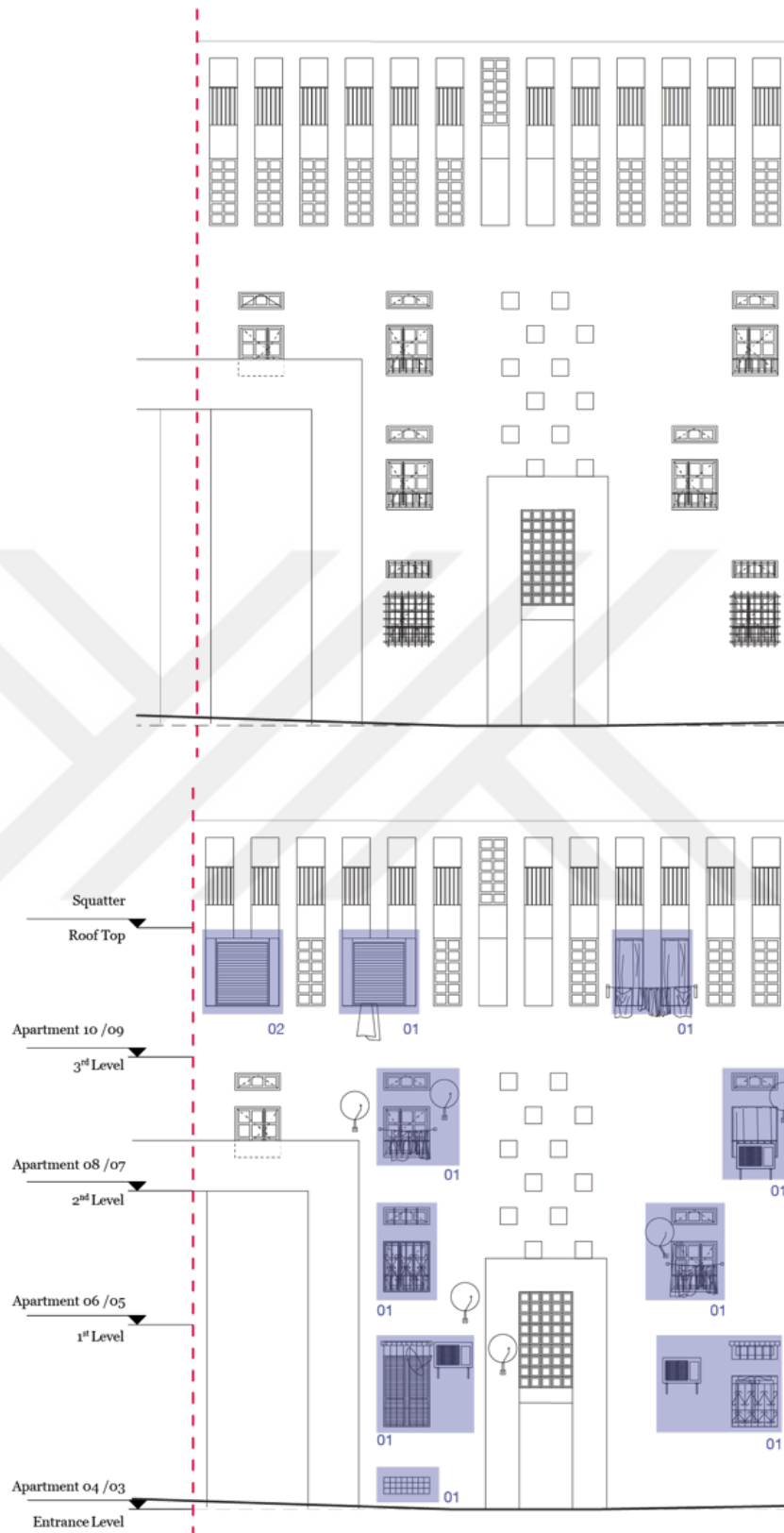
Figure B.6 : Original (top) and modified (bottom) façade drawings of Block 10. Residents modifications are highlighted on the modified façade (bottom).

Table B.5 : The list of rules applied for resident modifications in Block 10.

					Competence labels		Label for impact on the existing building
Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
10	B10-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
10	B10-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 10	R18.9	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
10	B10-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 10	R18.9	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
10	B10-Apt. 09	R3.2	Daily Activities	Napping	no tool	no cost	no damage
10	B10-Apt. 09	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
10	B10-Apt. 09	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
10	B10-Apt. 08	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
10	B10-Apt. 08	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
10	B10-Apt. 08	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
10	B10-Apt. 08	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
10	B10-Apt. 07	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
10	B10-Apt. 07	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
10	B10-Apt. 07	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
10	B10-Apt. 07	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
10	B10-Apt. 07	R3.2	Daily Activities	Napping	no tool	no cost	no damage

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
10	B10-Apt. 06	R5.6	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
10	B10-Apt. 05	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
10	B10-Apt. 05	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
10	B10-Apt. 05	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
10	B10-Apt. 04	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
10	B10-Apt. 04	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 04	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 04	R5.8	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
10	B10-Apt. 04	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
10	B10-Apt. 04	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
10	B10-Apt. 04	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
10	B10-Apt. 03	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
10	B10-Apt. 03	R18.16	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
10	B10-Apt. 03	R5.6	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
10	B10-Apt. 03	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
10	B10-Apt. 03	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
10	B10-B.Squ. 01	R23.3	Need of Space	invading basements	constructional skills	high cost	damaged
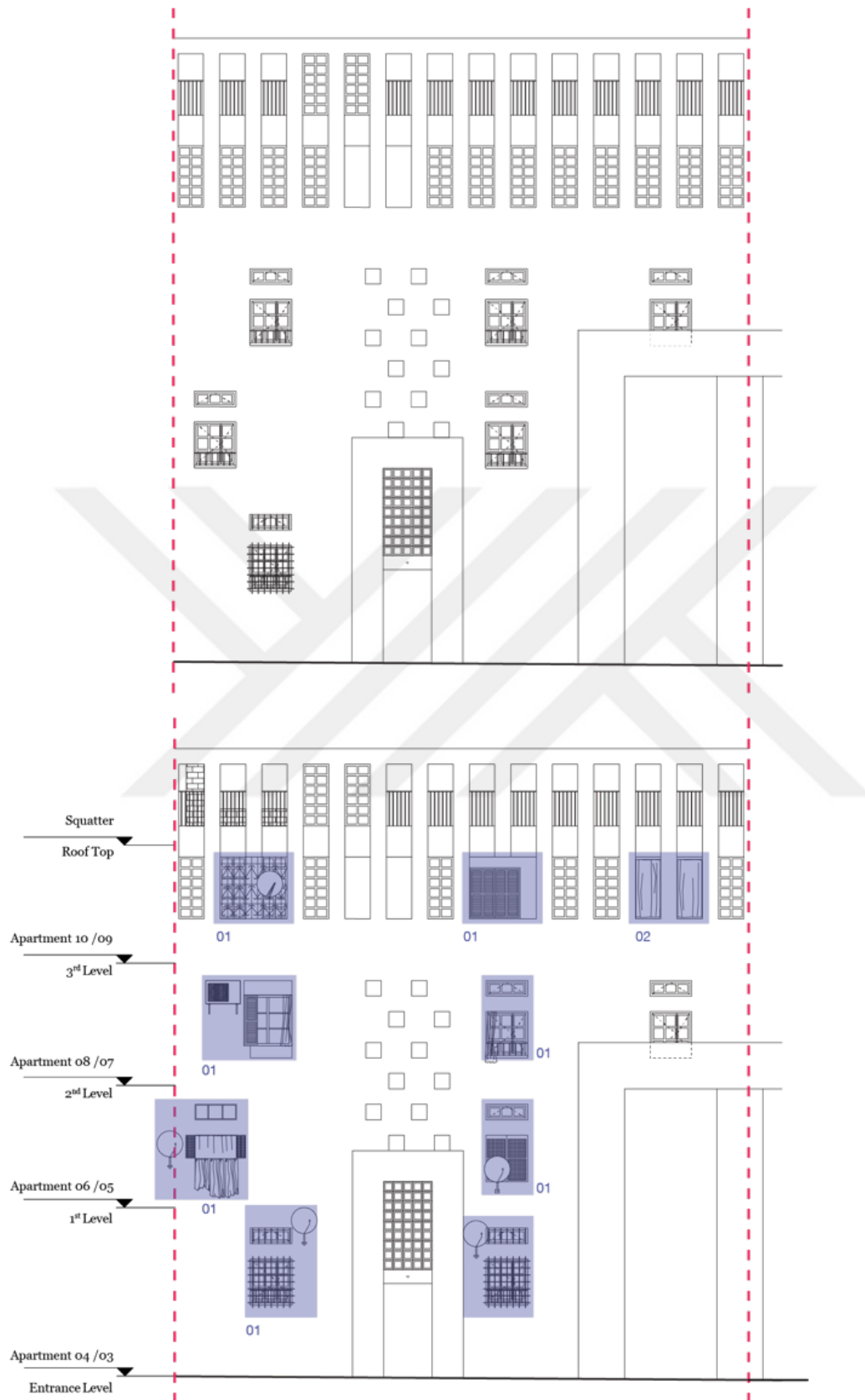
Figure B.7 : Original (top) and modified (bottom) façade drawings of Block 12. Residents modifications are highlighted on the modified façade (bottom).

Table B.6 : The list of rules applied for resident modifications in Block 12.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	**Cost**	**Impact**
12	B12-Squ.01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
12	B12-Squ.01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
12	B12-Squ.01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
12	B12-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
12	B12-Apt. 10	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
12	B12-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
12	B12-Apt. 09	R3.2	Daily Activities	Napping	no tool	no cost	no damage
12	B12-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
12	B12-Apt. 09	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
12	B12-Apt. 09	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
12	B12-Apt. 08	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
12	B12-Apt. 08	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
12	B12-Apt. 08	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
12	B12-Apt. 08	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
12	B12-Apt. 08	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
12	B12-Apt. 07	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
12	B12-Apt. 06	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
12	B12-Apt. 06	R18.20	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
12	B12-Apt. 06	R5.8	Setting Boundaries	Fences	Constructional skills	mid cost	low impact

Table B.6 (continued) : The list of rules applied for resident modifications in Block 12.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
12	B12-Apt. 06	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
12	B12-Apt. 06	R3.2	Daily Activities	Napping	no tool	no cost	no damage
12	B12-Apt. 06	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
12	B12-Apt. 06	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
12	B12-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
12	B12-Apt. 05	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
12	B12-Apt. 05	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
12	B12-Apt. 04	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
12	B12-Apt. 03	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
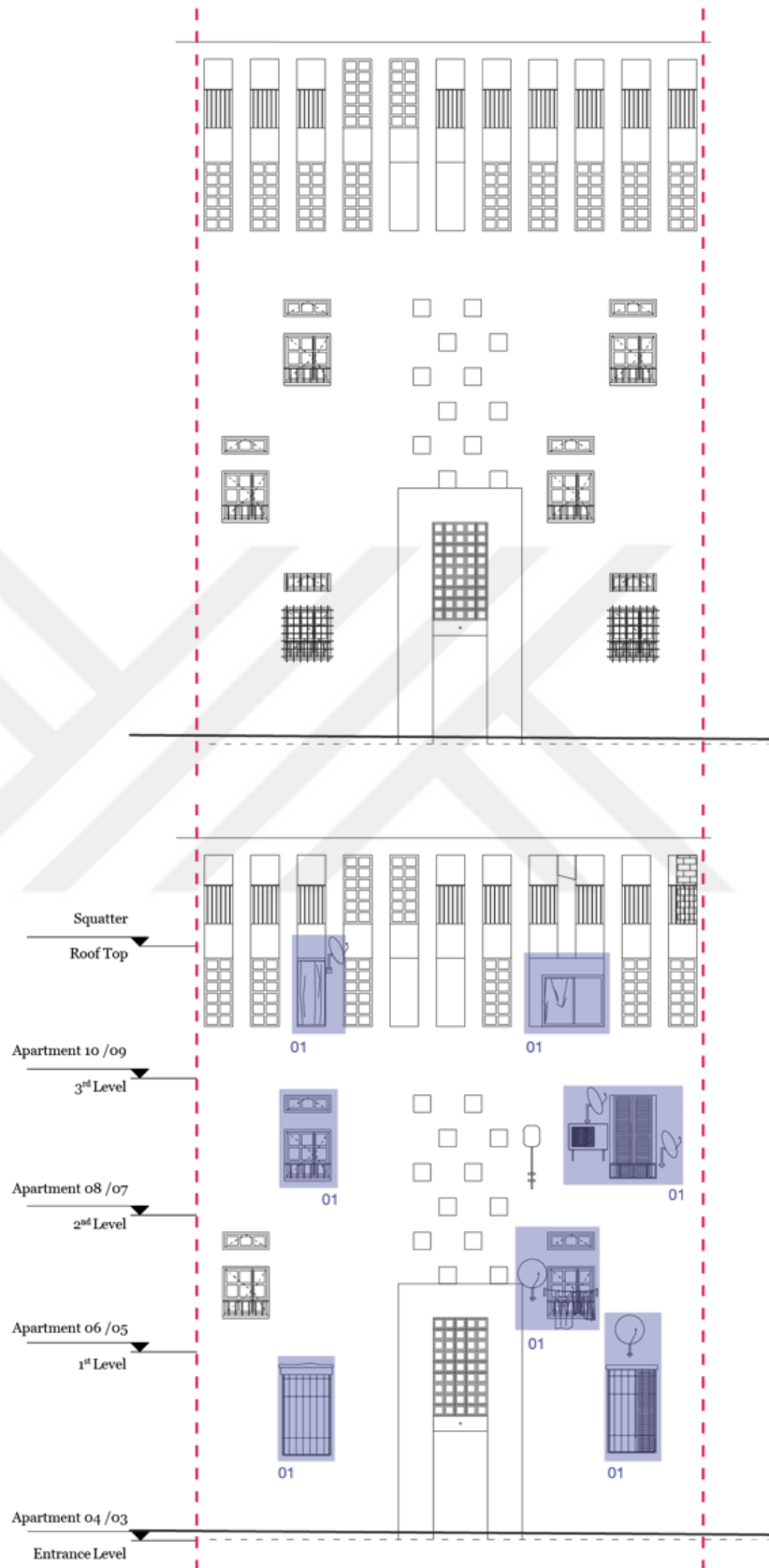
Figure B.8 : Original (top) and modified (bottom) façade drawings of Block 14. Residents modifications are highlighted on the modified façade (bottom).

Table B.7 : The list of rules applied for resident modifications in Block 14.

					Competence labels		Label for impact on the existing building
Block Number	**Apartments**	**Rules**	**Dwelling Activity**	**Taskscape**	**Skills**	**Cost**	**Impact**
14	B14-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
14	B14-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
14	B14-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
14	B14-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
14	B14-Apt. 09	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 09	R18.10	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
14	B14-Apt. 09	R3.2	Daily Activities	Napping	no tool	no cost	no damage
14	B14-Apt. 07	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
14	B14-Apt. 07	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 07	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 07	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
14	B14-Apt. 07	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
14	B14-Apt. 07	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
14	B14-Apt. 05	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
14	B14-Apt. 05	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
14	B14-Apt. 05	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
14	B14-Apt. 04	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact

Table B.7 (continued) : The list of rules applied for resident modifications in Block 14.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
14	B14-Apt. 04	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 04	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 04	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
14	B14-Apt. 04	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
14	B14-Apt. 04	R3.2	Daily Activities	Napping	no tool	no cost	no damage
14	B14-Apt. 03	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
14	B14-Apt. 03	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 03	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
14	B14-Apt. 03	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
14	B14-Apt. 03	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
14	B14-Apt. 03	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
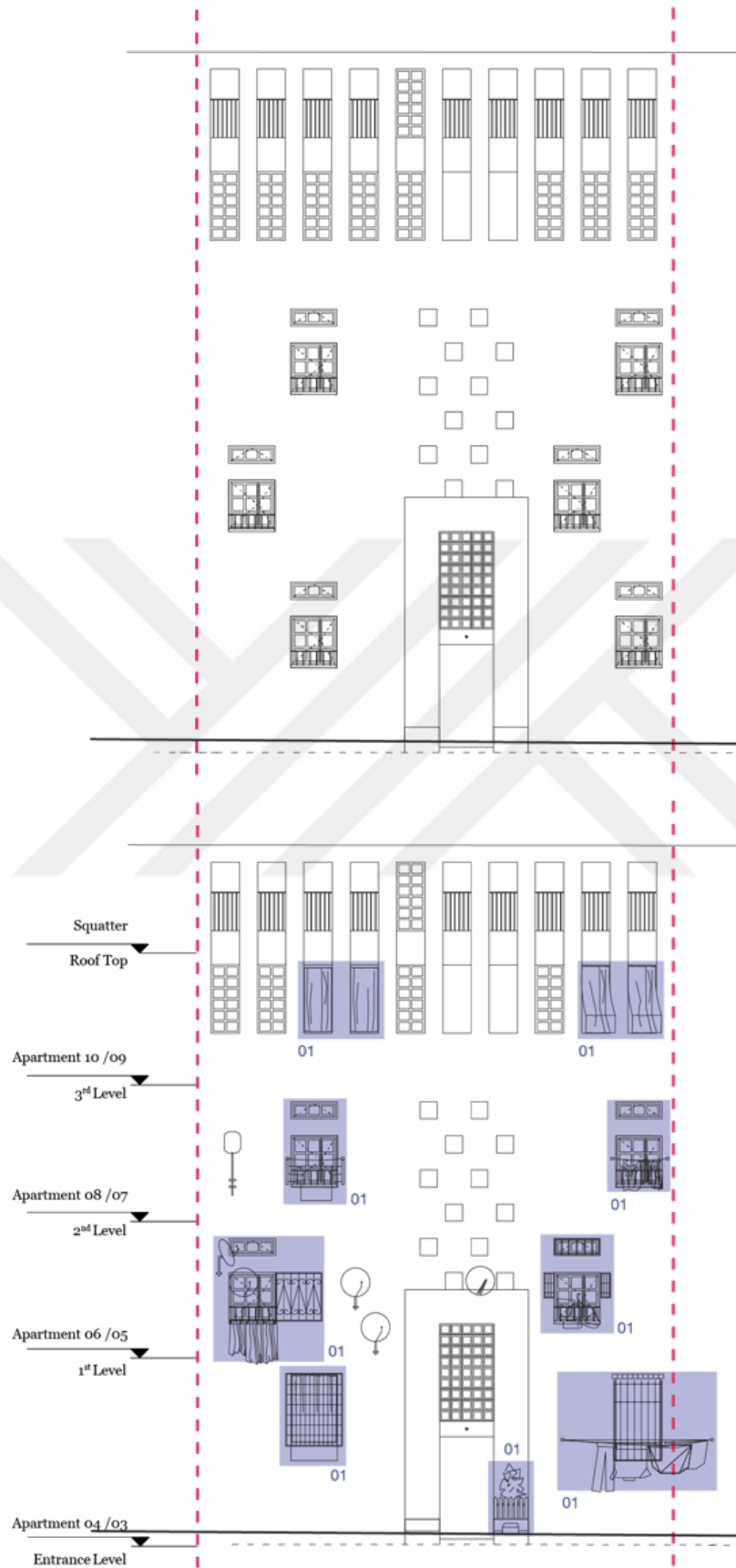
Figure B.9 : Original (top) and modified (bottom) façade drawings of Block 16.
Residents modifications are highlighted on the modified façade (bottom).

Table B.8 : The list of rules applied for resident modifications in Block 16.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
16	B16-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
16	B16-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
16	B16-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
16	B16-Apt. 09	R3.2	Daily Activities	Napping	no tool	no cost	no damage
16	B16-Apt. 09	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
16	B16-Apt. 08	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
16	B16-Apt. 07	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
16	B16-Apt. 07	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
16	B16-Apt. 06	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
16	B16-Apt. 06	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
16	B16-Apt. 06	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
16	B16-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
16	B16-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
16	B16-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
16	B16-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
16	B16-Apt. 05	R1.8	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
16	B16-Apt. 05	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
16	B16-Apt. 05	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
16	B16-Apt. 04	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact

Table B.8 (continued) : The list of rules applied for resident modifications in Block 16.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
16	B16-Apt. 04	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
16	B16-Apt. 04	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
16	B16-Apt. 04	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
16	B16-Apt. 04	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
16	B16-Apt. 04	R3.2	Daily Activities	Napping	no tool	no cost	no damage
16	B16-Apt. 03	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
16	B16-Apt. 03	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
16	B16-Apt. 03	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
16	B16-Apt. 03	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
16	B16-Apt. 03	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
16	B16-Apt. 03	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
16	B16-Apt. 03	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
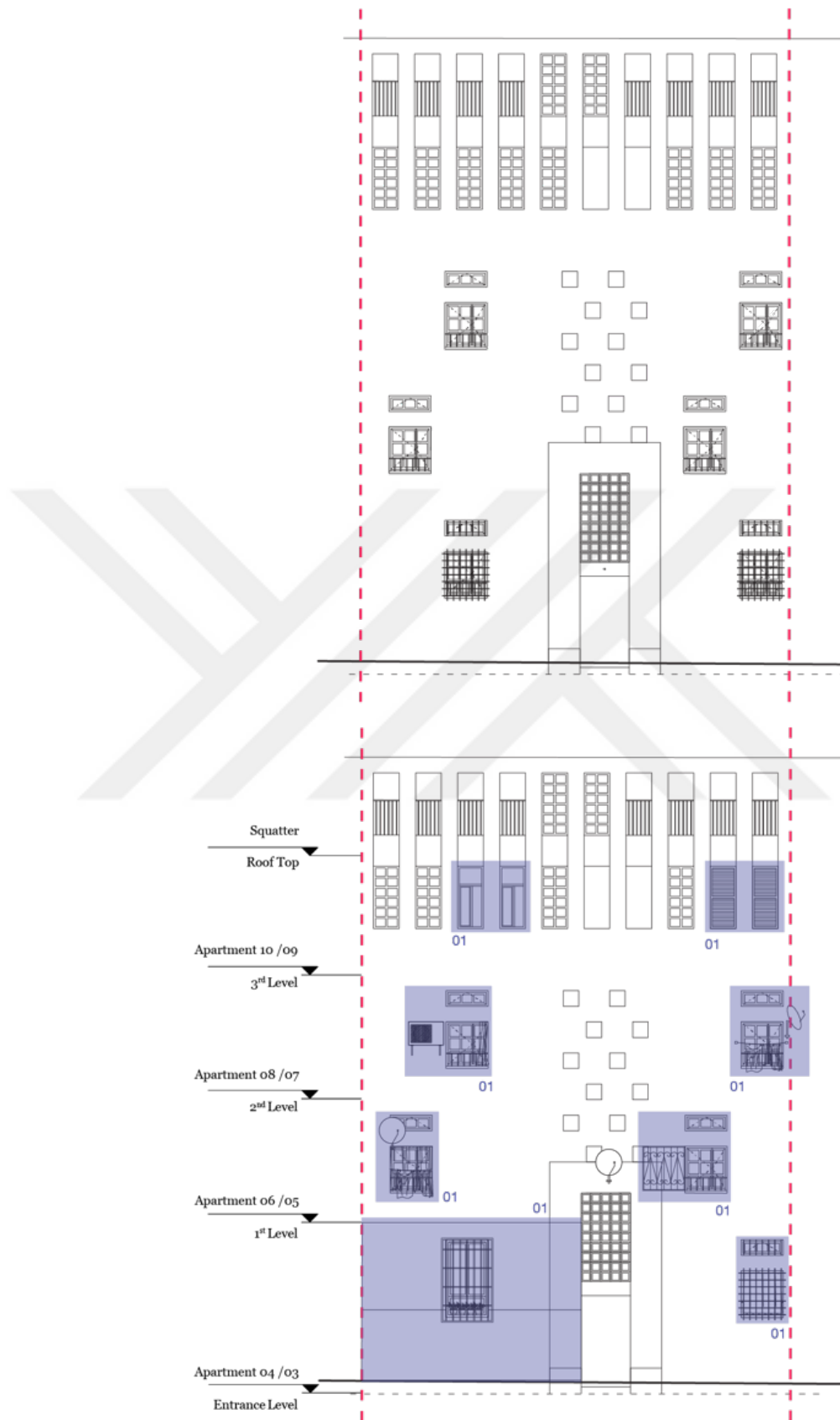
Figure B.10 : Original (top) and modified (bottom) façade drawings of Block 18. Residents modifications are highlighted on the modified façade (bottom).

Table B.9 : The list of rules applied for resident modifications in Block 18.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
18	B18-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
18	B18-Apt. 10	R18.3	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
18	B18-Apt. 09	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
18	B18-Apt. 09	R18.2	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
18	B18-Apt. 08	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
18	B18-Apt. 08	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
18	B18-Apt. 07	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
18	B18-Apt. 07	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
18	B18-Apt. 07	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
18	B18-Apt. 06	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
18	B18-Apt. 06	R3.2	Daily Activities	Napping	no tool	no cost	no damage
18	B18-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
18	B18-Apt. 06	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
18	B18-Apt. 06	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
18	B18-Apt. 05	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
18	B18-Apt. 05	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
18	B18-Apt. 04	R12.1	Taking care of the Environment	Painting	small tools	mid-high cost	no damage
18	B18-Apt. 04	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
18	B18-Apt. 04	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact

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Table B.9 (continued) : The list of rules applied for resident modifications in Block 18.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
18	B18-Apt. 04	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
18	B18-Apt. 04	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
18	B18-Apt. 04	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
18	B18-Apt. 03	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
18	B18-Apt. 03	R3.2	Daily Activities	Napping	no tool	no cost	no damage

Squatter
Roof Top

Apartment 10 /09
3rd Level

Apartment 08 /07
2nd Level

Apartment 06 /05
1st Level

Apartment 04 /03
Entrance Level

Figure B.11 : Original (top) and modified (bottom) façade drawings of Block 20. Residents modifications are highlighted on the modified façade (bottom).

Table B.10 : The list of rules applied for resident modifications in Block 20.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
20	B20-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
20	B20-Apt. 10	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
20	B20-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
20	B20-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
20	B20-Apt. 10	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
20	B20-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
20	B20-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
20	B20-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
20	B20-Apt. 09	R3.2	Daily Activities	Napping	no tool	no cost	no damage
20	B20-Apt. 09	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
20	B20-Apt. 09	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
20	B20-Apt. 09	R3.2	Daily Activities	Napping	no tool	no cost	no damage
20	B20-Apt. 09	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
20	B20-Apt. 09	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
20	B20-Apt. 07	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
20	B20-Apt. 07	R18.16	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
20	B20-Apt. 07	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
20	B20-Apt. 07	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
20	B20-Apt. 06	R5.2	Setting Boundaries	Fences	Small tools	mid cost	low impact
20	B20-Apt. 06	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

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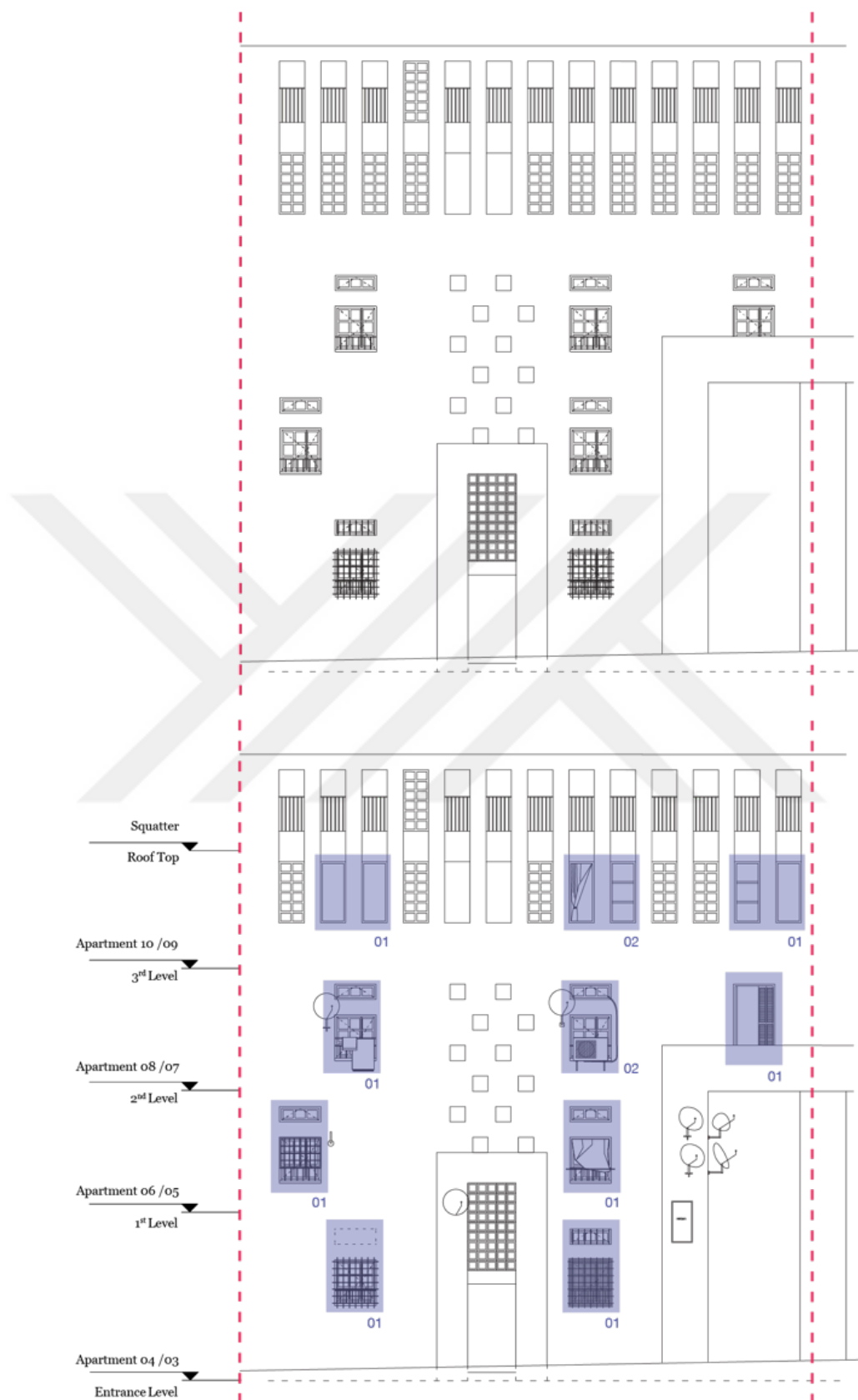| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
20	B20-Apt. 05	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
20	B20-Apt. 05	R3.2	Daily Activities	Napping	no tool	no cost	no damage
20	B20-Apt. 05	R1.8	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
20	B20-Apt. 05	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
20	B20-Apt. 04	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
20	B20-Apt. 04	R1.6	Daily Activities	Making the Laundry	no tool	no cost	no damage
20	B20-Apt. 03	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
20	B20-B.Squ 01	R23.3	Need of Space	invading basements	constructional skills	high cost	damaged

Figure B.12 : Original (top) and modified (bottom) façade drawings of Block 22. Residents modifications are highlighted on the modified façade (bottom).

Table B.11 : The list of rules applied for resident modifications in Block 22.

					Competence labels		Label for impact on the existing building
Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
22	B22-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 10	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
22	B22-Apt. 10	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
22	B22-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 10	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 10	R4.2	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 10	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
22	B22-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 9	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 8	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 8	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 8	R3.3	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 8	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
22	B22-Apt. 8	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 8	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged

Table B.11 (continued) : The list of rules applied for resident modifications in Block 22.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
22	B22-Apt. 8	R3.1	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 8	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
22	B22-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
22	B22-Apt. 7	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 7	R3.2	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
22	B22-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
22	B22-Apt. 6	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 6	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 6	R3.2	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 6	R24.1	Need of Space	Storage	no tool	no cost	no damage
22	B22-Apt. 6	R1.8	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
22	B22-Apt. 5	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 4	R6.4	Setting Boundaries	Side/front Covering	Constructional skills	low-mid cost, DIY	high impact
22	B22-Apt. 4	R11.2	Taking care of the Environment	Gardening	Constructional skills	mid cost	no damage
22	B22-Apt. 4	R11.3	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
22	B22-Apt. 4	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 4	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 4	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 4	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
22	B22-Apt. 4	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact

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| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
22	B22-Apt. 4	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 4	R3.2	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 4	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
22	B22-Apt. 4	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 4	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
22	B22-Apt. 4	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
22	B22-Apt. 4	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
22	B22-Apt. 4	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 4	R3.2	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 4	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
22	B22-Apt. 4	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
22	B22-Apt. 3	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
22	B22-Apt. 3	R3.2	Daily Activities	Napping	no tool	no cost	no damage
22	B22-Apt. 3	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
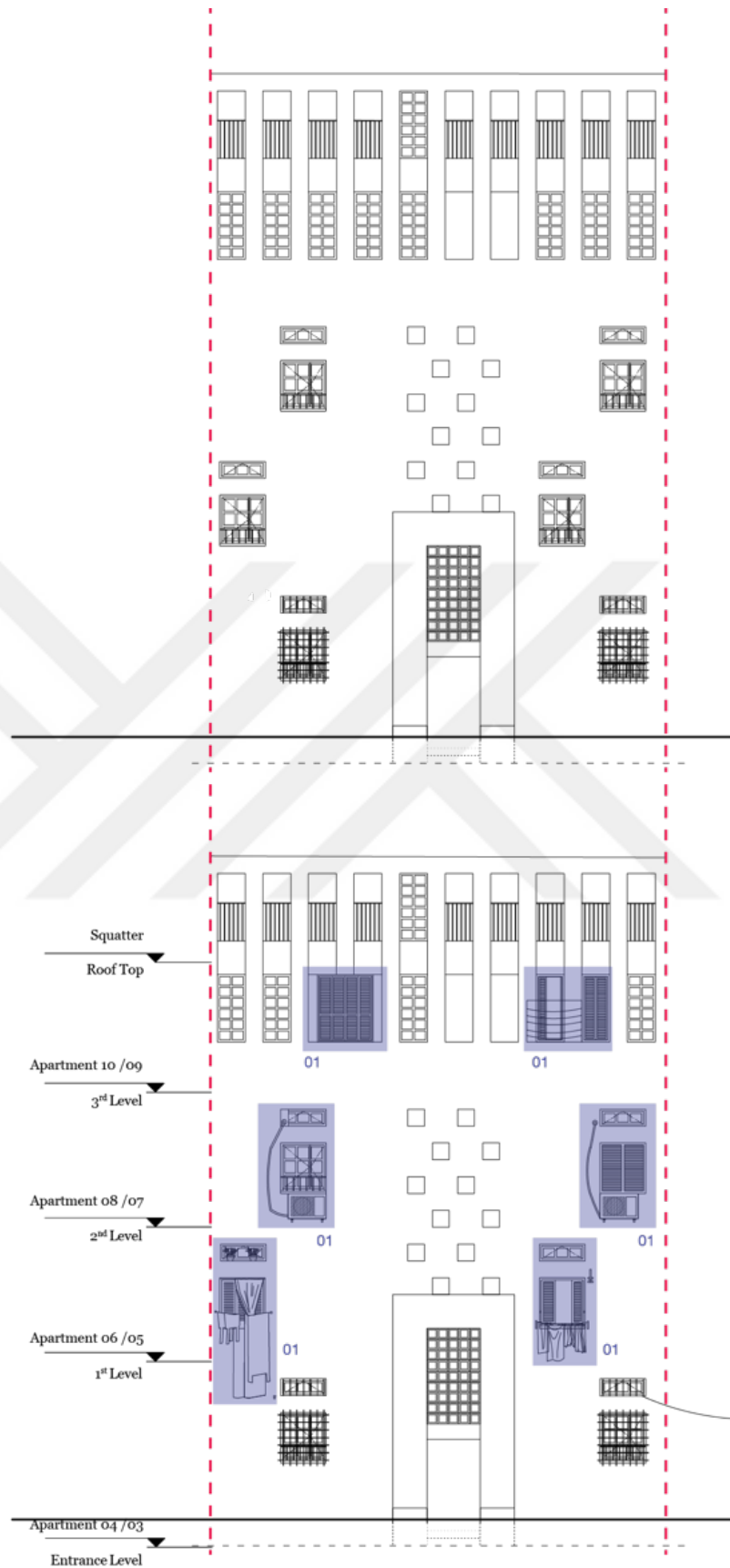
Figure B.13 : Original (top) and modified (bottom) façade drawings of Block 24. Residents modifications are highlighted on the modified façade (bottom).

Table B.12 : The list of rules applied for resident modifications in Block 24.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
24	B24-Apt.10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
24	B24-Apt.10	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
24	B24-Apt.10	R3.1	Daily Activities	Napping	no tool	no cost	no damage
24	B24-Apt.9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.9	R18.4	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.9	R3.1	Daily Activities	Napping	no tool	no cost	no damage
24	B24-Apt.9	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
24	B24-Apt.8	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
24	B24-Apt.7	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
24	B24-Apt.7	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.7	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.7	R3.1	Daily Activities	Napping	no tool	no cost	no damage
24	B24-Apt.6	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.6	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.6	R3.1	Daily Activities	Napping	no tool	no cost	no damage
24	B24-Apt.6	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
24	B24-Apt.6	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
24	B24-Apt.6	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
24	B24-Apt.6	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
24	B24-Apt.5	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.5	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
24	B24-Apt.5	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
24	B24-Apt.5	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
24	B24-Apt.4	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
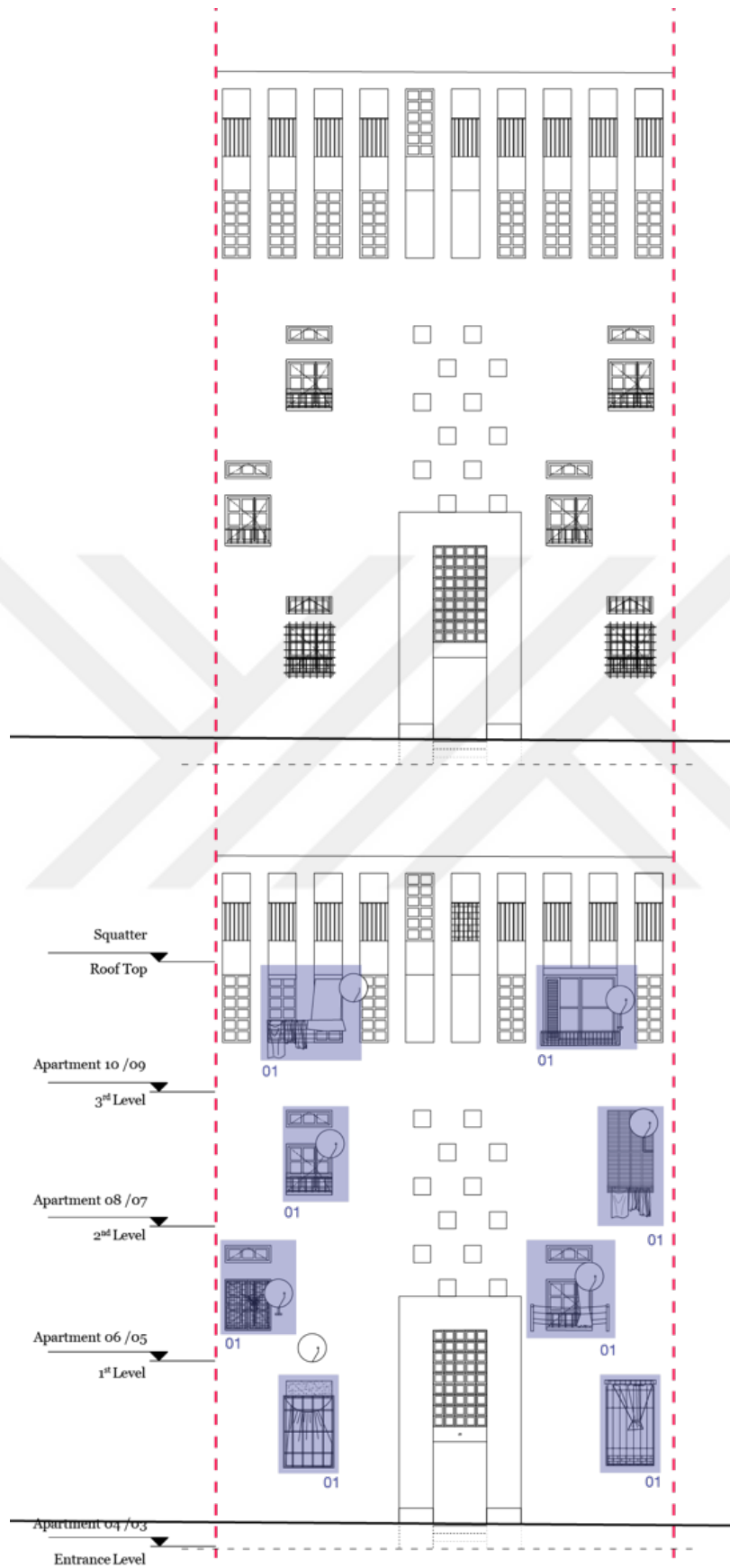
Figure B.14 : Original (top) and modified (bottom) façade drawings of Block 26. Residents modifications are highlighted on the modified façade (bottom).

Table B.13 : The list of rules applied for resident modifications in Block 26.

					Competence labels		Label for impact on the existing building
Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
26	B26-Squ 01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
26	B26-Squ 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
26	B26-Squ 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
26	B26-Squ 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
26	B26-Squ 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
26	B26-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
26	B26-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
26	B26-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
26	B26-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
26	B26-Apt. 10	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
26	B26-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
26	B26-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
26	B26-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 9	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 9	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
26	B26-Apt. 9	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 7	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
26	B26-Apt. 7	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
26	B26-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
26	B26-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 7	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 7	R3.1	Daily Activities	Napping	no tool	no cost	no damage
26	B26-Apt. 6	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
26	B26-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 5	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
26	B26-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 5	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
26	B26-Apt. 4	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
26	B26-Apt. 4	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 4	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 4	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
26	B26-Apt. 4	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
26	B26-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
26	B26-Apt. 3	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
26	B26-Apt. 3	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
26	B26-Apt. 3	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged

Table B.13 (continued) : The list of rules applied for resident modifications in Block 26.

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
26	B26-Apt. 3	R3.1	Daily Activities	Napping	no tool	no cost	no damage
26	B26-Apt. 3	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
26	B26-Apt. 3	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
26	B26-Apt. 3	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
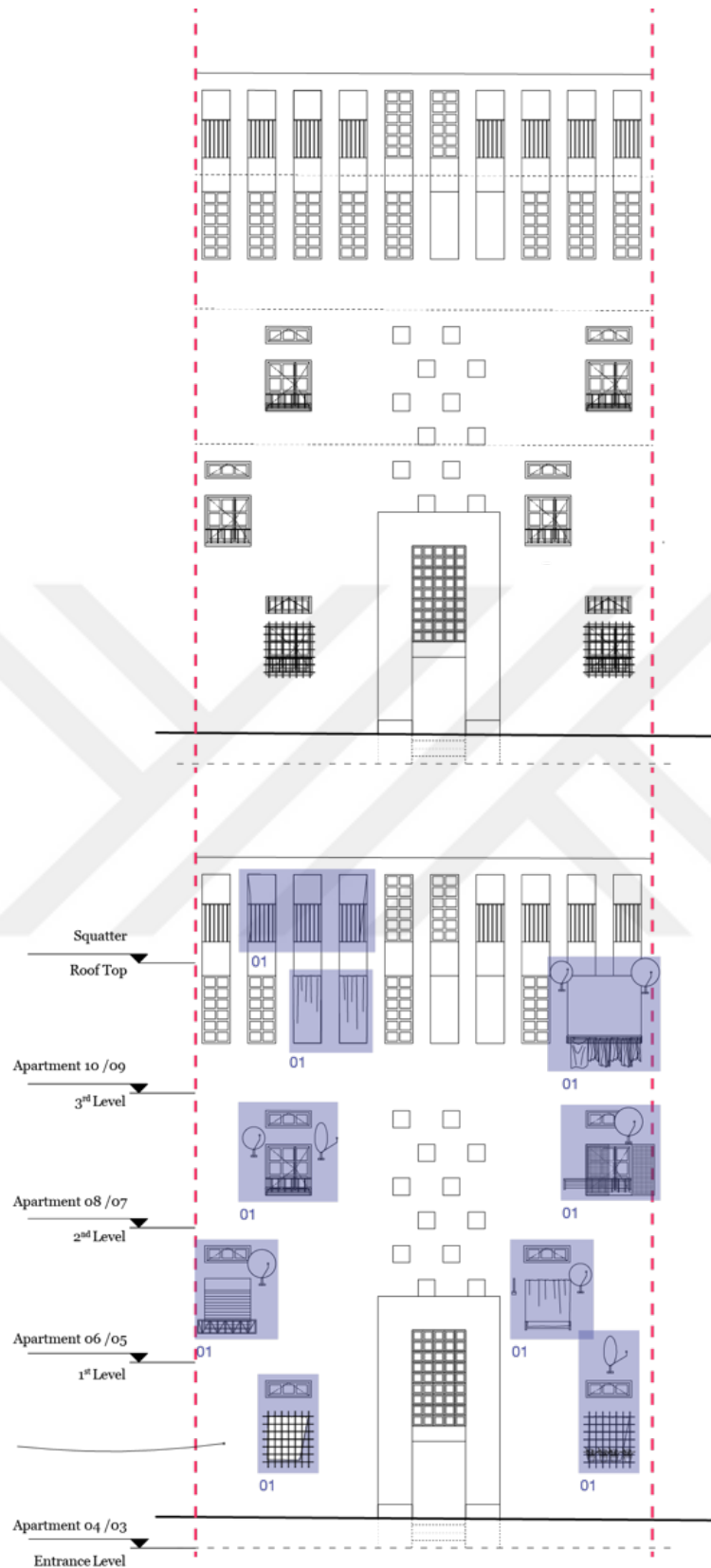
Figure B.15 : Original (top) and modified (bottom) façade drawings of Block 28. Residents modifications are highlighted on the modified façade (bottom).

Table B.14 : The list of rules applied for resident modifications in Block 28.

| Block Number | Apartments | Rules | Dwelling Activity | Taskscape | Competence labels | | Label for impact on the existing building |
					Skills	Cost	Impact
28	B28-Squ 01	R4.2	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Squ 01	R4.2	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Squ 01	R4.2	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
28	B28-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
28	B28-Apt. 9	R4.2	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 9	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 9	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 9	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
28	B28-Apt. 9	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
28	B28-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 7	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
28	B28-Apt. 7	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
28	B28-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

Table B.14 (continued) : The list of rules applied for resident modifications in Block 28.

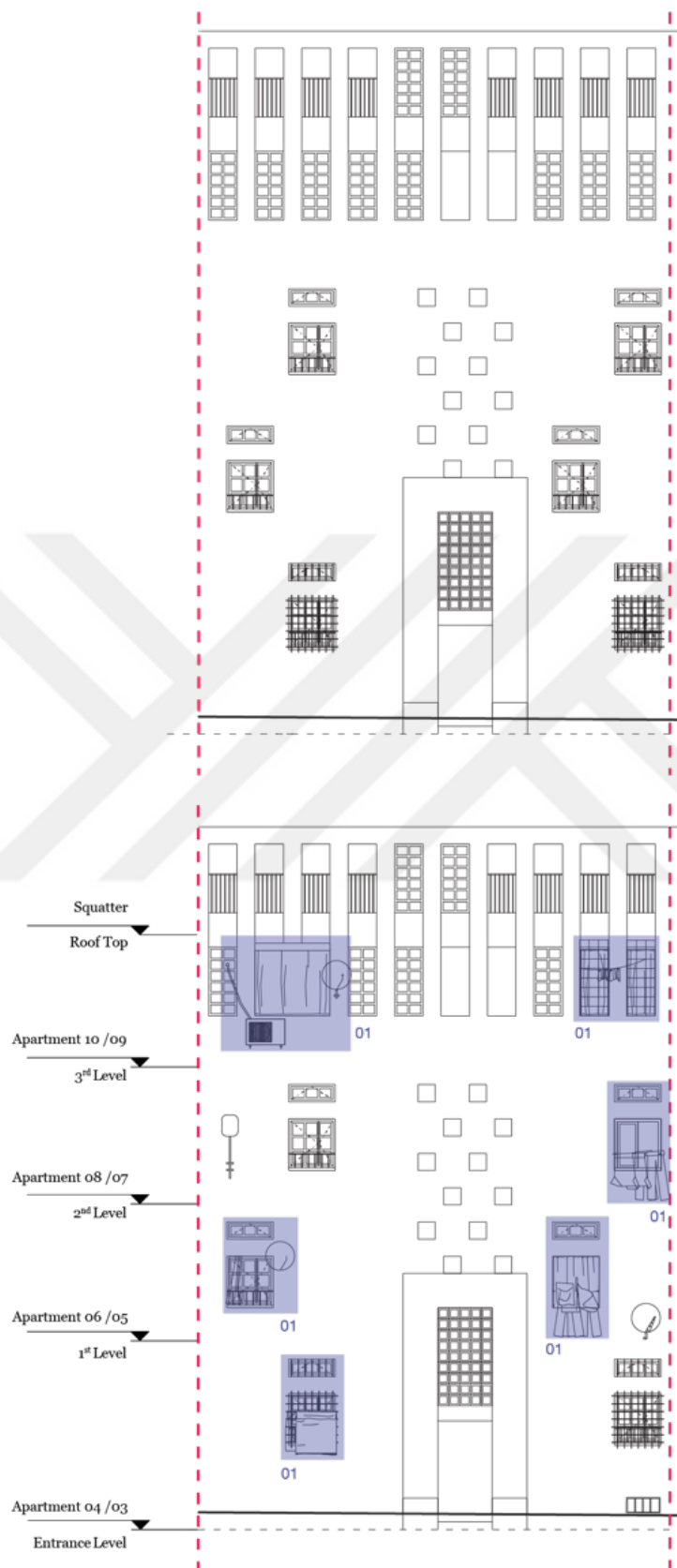| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
28	B28-Apt. 6	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
28	B28-Apt. 6	R18.24	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
28	B28-Apt. 6	R3.3	Daily Activities	Napping	no tool	no cost	no damage
28	B28-Apt. 6	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
28	B28-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 5	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 5	R3.2	Daily Activities	Napping	no tool	no cost	no damage
28	B28-Apt. 5	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
28	B28-Apt. 4	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 4	R3.2	Daily Activities	Napping	no tool	no cost	no damage
28	B28-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
28	B28-Apt. 3	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
28	B28-Apt. 3	R3.2	Daily Activities	Napping	no tool	no cost	no damage
28	B28-Apt. 3	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
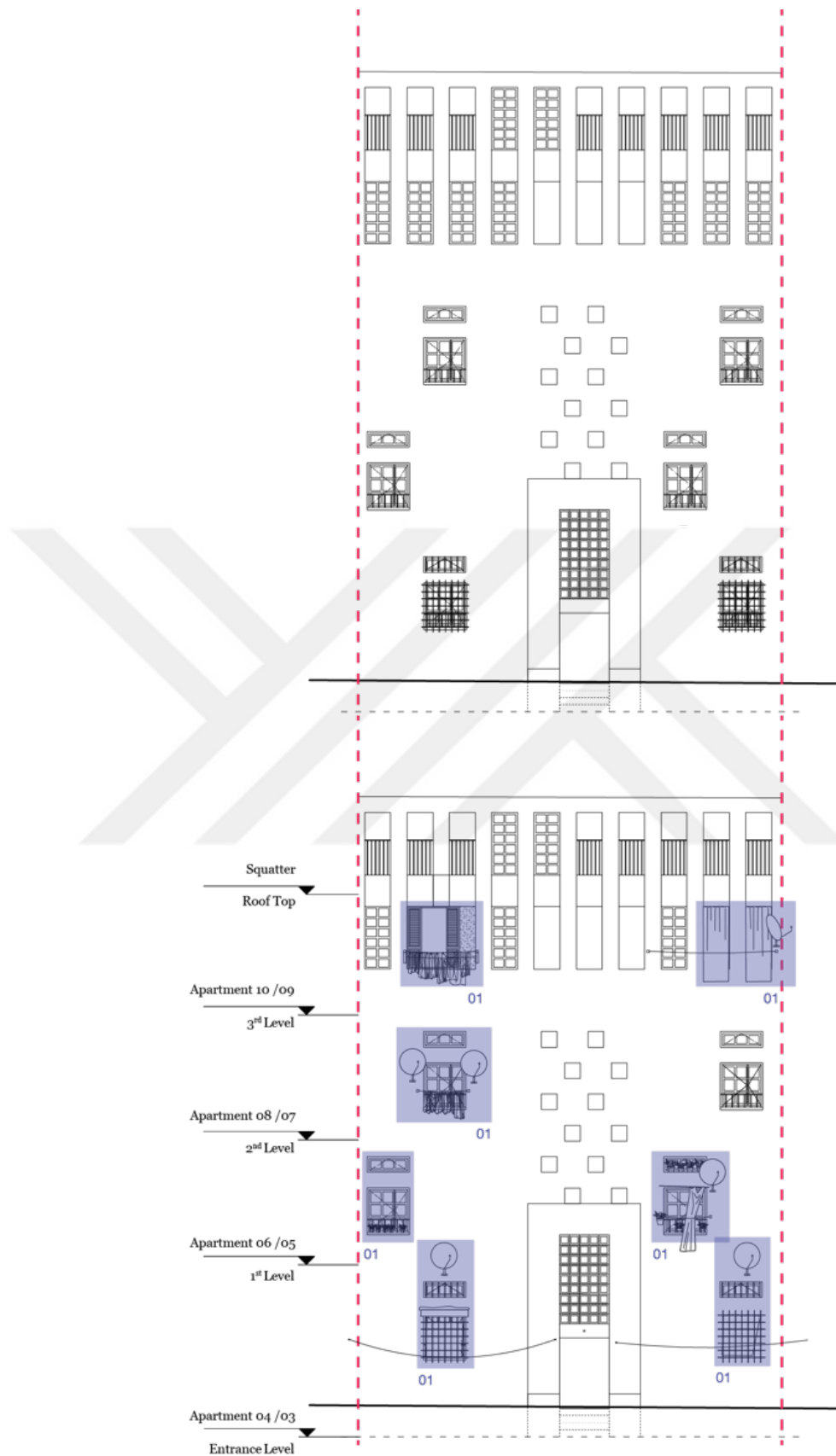
Figure B.16 : Original (top) and modified (bottom) façade drawings of Block 30. Residents modifications are highlighted on the modified façade (bottom).

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Table B.15 : The list of rules applied for resident modifications in Block 30.

| Block Number | Apartments | Rules | Dwelling Activity | Taskscape | Competence labels | | Label for impact on the existing building |
					Skills	Cost	Impact
30	B30-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
30	B30-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
30	B30-Apt. 10	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
30	B30-Apt. 10	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
30	B30-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
30	B30-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
30	B30-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
30	B30-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
30	B30-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
30	B30-Apt. 9	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
30	B30-Apt. 8	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
30	B30-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 7	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
30	B30-Apt. 7	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
30	B30-Apt. 7	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
30	B30-Apt. 7	R3.2	Daily Activities	Napping	no tool	no cost	no damage
30	B30-Apt. 6	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
30	B30-Apt. 5	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
30	B30-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 5	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
30	B30-Apt. 5	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
30	B30-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 4	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
30	B30-Apt. 4	R3.2	Daily Activities	Napping	no tool	no cost	no damage
30	B30-Apt. 4	R5.10	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
30	B30-Apt. 4	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
30	B30-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
30	B30-Apt. 3	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
30	B30-Apt. 3	R3.2	Daily Activities	Napping	no tool	no cost	no damage
30	B30-Apt. 3	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
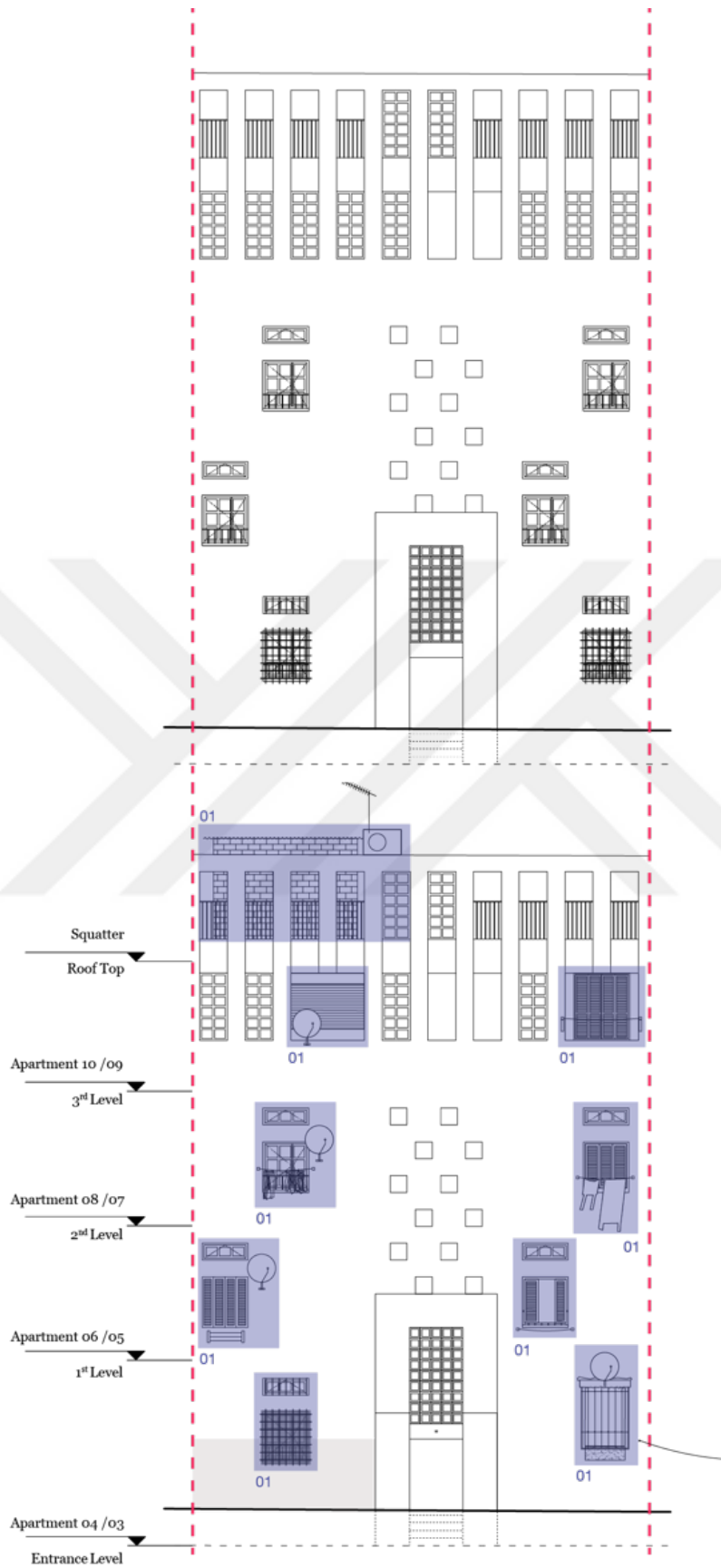
Figure B.17 : Original (top) and modified (bottom) façade drawings of Block 32. Residents modifications are highlighted on the modified façade (bottom).

Table B.16 : The list of rules applied for resident modifications in Block 32.

| Block Number | Apartments | Rules | Dwelling Activity | Taskscape | Competence labels | | Label for impact on the existing building |
					Skills	**Cost**	**Impact**
32	B32-Squ 01	R22.2	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	high impact
32	B32-Squ 01	R22.4	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	high impact
32	B32-Squ 01	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
32	B32-Squ 01	R10.2	Enhancing the Home Comfort	Satellite Dishes	Professional skills	mid cost	low impact
32	B32-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
32	B32-Apt. 10	R18.9	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
32	B32-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
32	B32-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
32	B32-Apt. 9	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
32	B32-Apt. 9	R3.1	Daily Activities	Napping	no tool	no cost	no damage
32	B32-Apt. 9	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
32	B32-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
32	B32-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
32	B32-Apt. 8	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
32	B32-Apt. 7	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
32	B32-Apt. 7	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
32	B32-Apt. 7	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
32	B32-Apt. 7	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 7	R3.1	Daily Activities	Napping	no tool	no cost	no damage
32	B32-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
32	B32-Apt. 6	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 6	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 6	R3.1	Daily Activities	Napping	no tool	no cost	no damage
32	B32-Apt. 6	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
32	B32-Apt. 5	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
32	B32-Apt. 5	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 5	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 4	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
32	B32-Apt. 4	R12.1	Taking care of the Environment	Painting	small tools	mid-high cost	no damage
32	B32-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
32	B32-Apt. 3	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
32	B32-Apt. 3	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
32	B32-Apt. 3	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
32	B32-Apt. 3	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
32	B32-Apt. 3	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
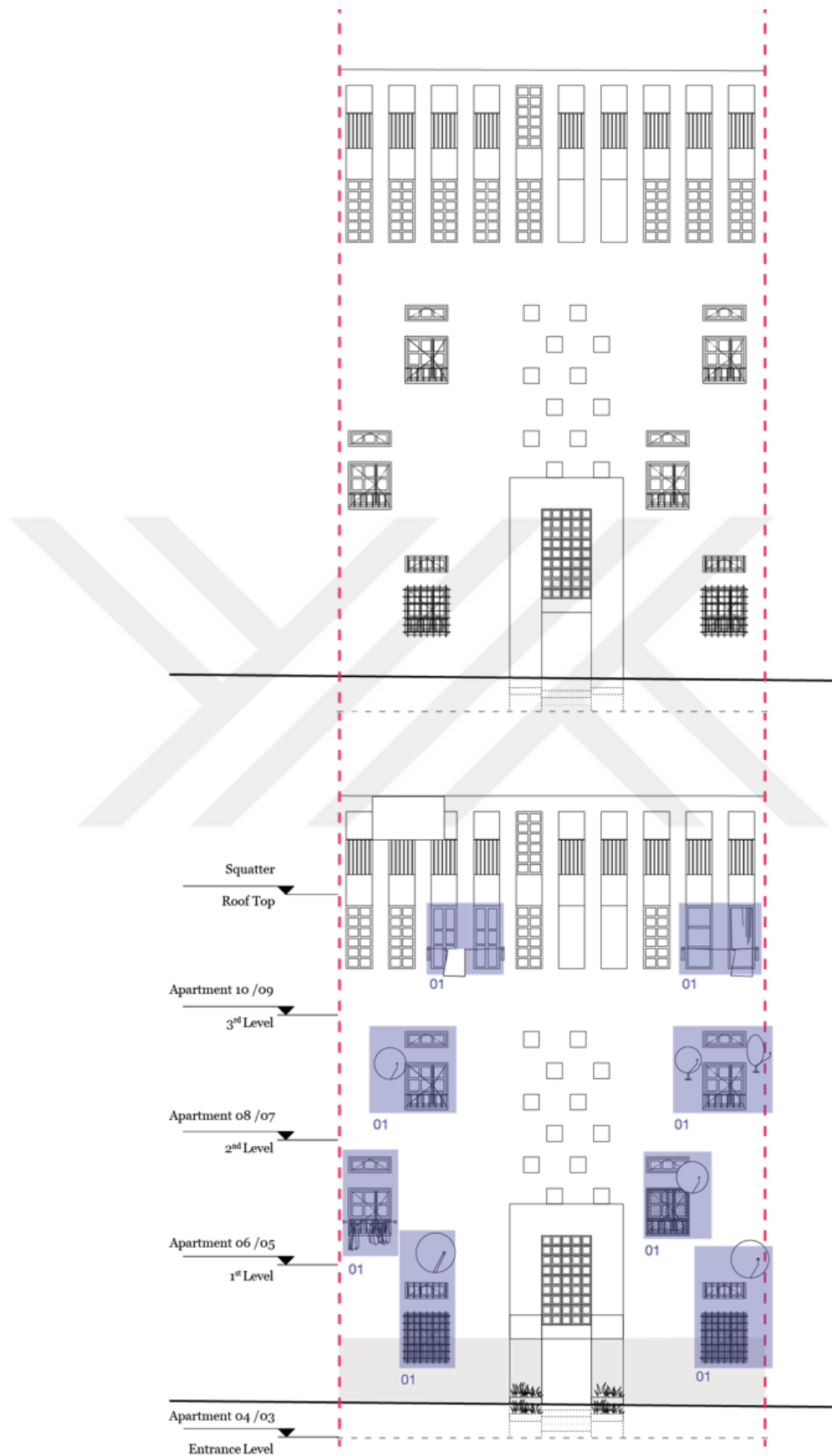
Figure B.18 : Original (top) and modified (bottom) façade drawings of Block 34. Residents modifications are highlighted on the modified façade (bottom).

Table B.17 : The list of rules applied for resident modifications in Block 34.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
34	B34-Apt. 10	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
34	B34-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
34	B34-Apt. 10	R18.3	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
34	B34-Apt. 9	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
34	B34-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
34	B34-Apt. 9	R18.4	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
34	B34-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
34	B34-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
34	B34-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
34	B34-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
34	B34-Apt. 8	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
34	B34-Apt. 8	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
34	B34-Apt. 8	R3.2	Daily Activities	Napping	no tool	no cost	no damage
34	B34-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
34	B34-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
34	B34-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
34	B34-Apt. 6	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
34	B34-Apt. 6	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
34	B34-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

Table B.17 (continued) : The list of rules applied for resident modifications in Block 34.

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
34	B34-Apt. 5	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
34	B34-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
34	B34-Apt. 4	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
34	B34-Apt. 4	R12.1	Taking care of the Environment	Painting	small tools	mid-high cost	no damage
34	B34-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
34	B34-Apt. 3	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
34	B34-Apt. 3	R12.1	Taking care of the Environment	Painting	small tools	mid-high cost	no damage
34	B34-Ent.	R11.1	Taking care of the Environment	Gardening	Constructional skills	mid cost	low impact
34	B34-Ent.	R11.3	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
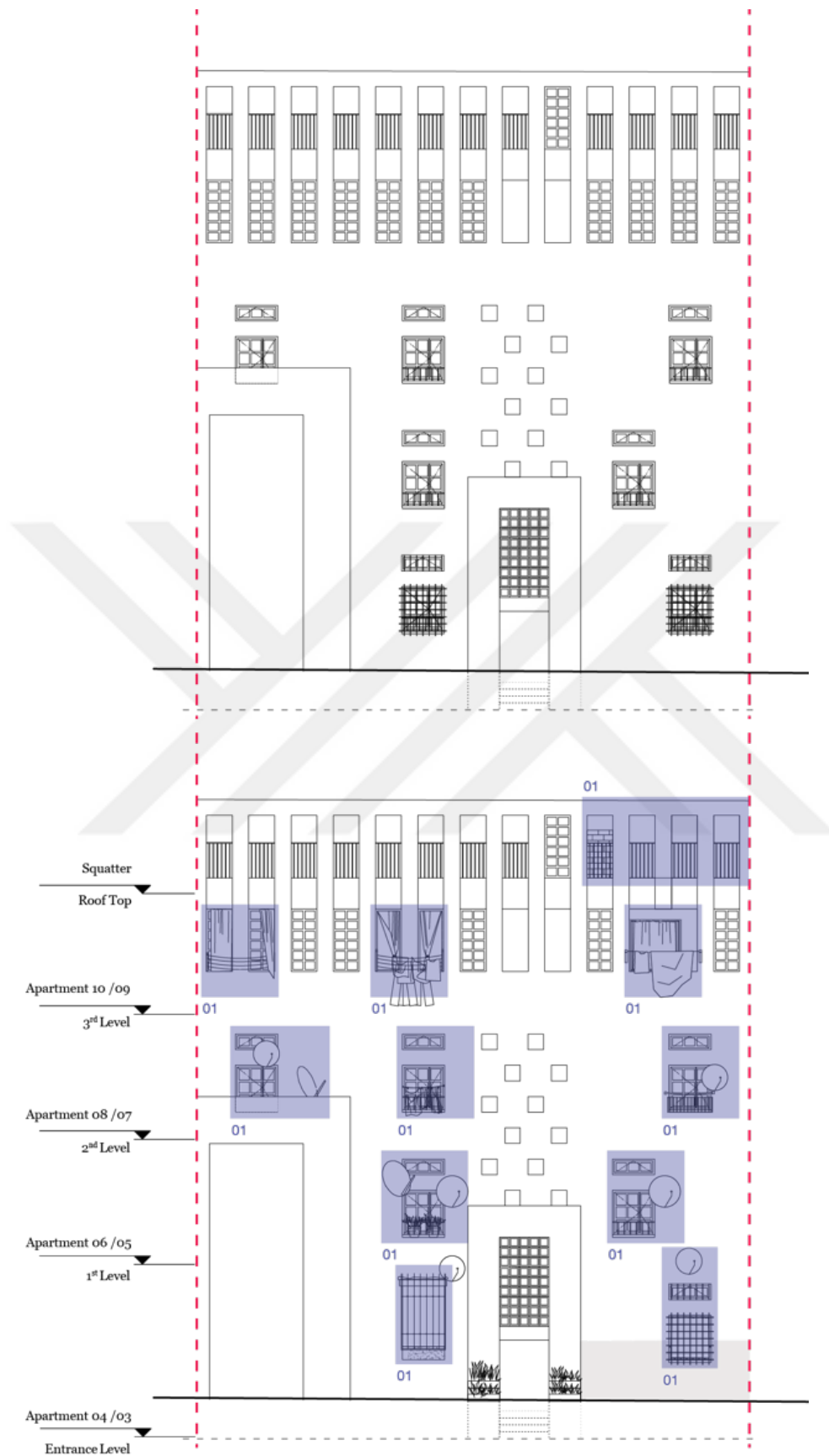
Figure B.19 : Original (top) and modified (bottom) façade drawings of Block 36. Residents modifications are highlighted on the modified façade (bottom).

Table B.18 : The list of rules applied for resident modifications in Block 36.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	**Cost**	**Impact**
36	B36-Squ 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
36	B36-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
36	B36-Apt. 10	R18.3	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
36	B36-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
36	B36-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
36	B36-Apt. 10	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
36	B36-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
36	B36-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
36	B36-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
36	B36-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
36	B36-Apt. 10	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
36	B36-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
36	B36-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
36	B36-Apt. 9	R18.10	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
36	B36-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
36	B36-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
36	B36-Apt. 9	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
36	B36-Apt. 9	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
36	B36-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
36	B36-Apt. 8	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
36	B36-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 7	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
36	B36-Apt. 7	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
36	B36-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 6	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
36	B36-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Apt. 4	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
36	B36-Apt. 4	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
36	B36-Apt. 4	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
36	B36-Apt. 4	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
36	B36-Apt. 4	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
36	B36-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
36	B36-Ent.	R11.1	Taking care of the Environment	Gardening	Constructional skills	mid cost	low impact
36	B36-Ent.	R11.3	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage

Figure B.20 : Original (top) and modified (bottom) façade drawings of Block 38. Residents modifications are highlighted on the modified façade (bottom).

Table B.19 : The list of rules applied for resident modifications in Block 38.

					Competence labels		Label for impact on the existing building
Block Number	**Apartments**	**Rules**	**Dwelling Activity**	**Taskscape**	**Skills**	**Cost**	**Impact**
38	B38-Apt. 10	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
38	B38-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
38	B38-Apt. 10	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
38	B38-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
38	B38-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
38	B38-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 9	R18.10	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 9	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
38	B38-Apt. 9	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
38	B38-Apt. 9	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
38	B38-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
38	B38-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 9	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
38	B38-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
38	B38-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
38	B38-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
38	B38-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
38	B38-Apt. 9	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
38	B38-Apt. 9	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
38	B38-Apt. 9	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
38	B38-Apt. 8	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
38	B38-Apt. 8	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 8	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 8	R3.1	Daily Activities	Napping	no tool	no cost	no damage
38	B38-Apt. 7	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
38	B38-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
38	B38-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
38	B38-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 7	R18.9	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 6	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
38	B38-Apt. 6	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
38	B38-Apt. 6	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
38	B38-Apt. 6	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
38	B38-Apt. 6	R18.25	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 6	R18.26	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 6	R5.10	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
38	B38-Apt. 6	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
38	B38-Apt. 5	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
38	B38-Apt. 5	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged

Table B.19 (continued) : The list of rules applied for resident modifications in Block 38.

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
38	B38-Apt. 5	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
38	B38-Apt. 5	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
38	B38-Apt. 4	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
38	B38-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
38	B38-Apt. 3	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
38	B38-Ent.	R11.1	Taking care of the Environment	Gardening	Constructional skills	mid cost	low impact
38	B38-Ent.	R11.3	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
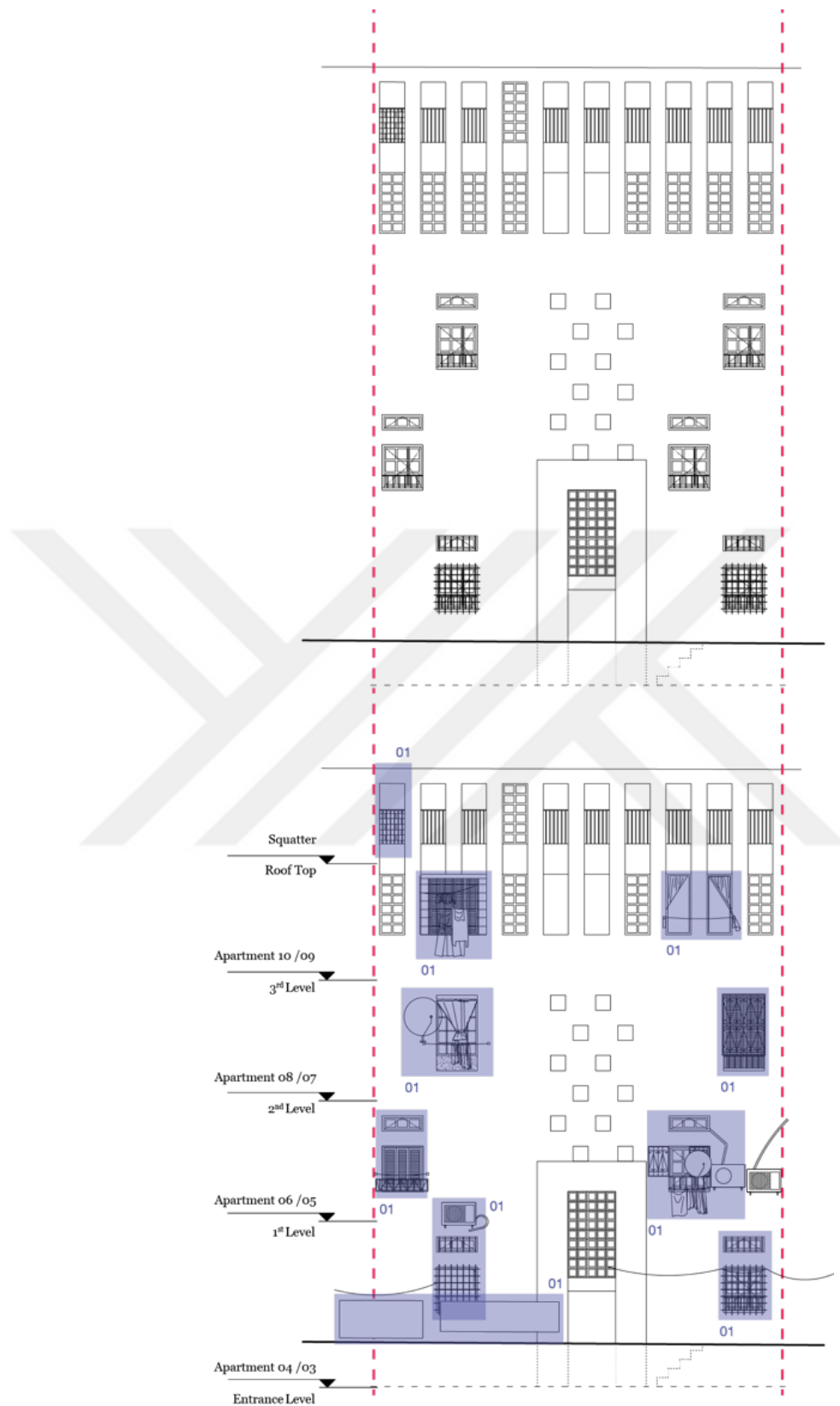
Figure B.21 : Original (top) and modified (bottom) façade drawings of Block 40. Residents modifications are highlighted on the modified façade (bottom).

Table B.20 : The list of rules applied for resident modifications in Block 40.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
40	B40-Squ 01	R22.6	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
40	B40-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
40	B40-Apt. 10	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
40	B40-Apt. 10	R3.1	Daily Activities	Napping	no tool	no cost	no damage
40	B40-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
40	B40-Apt. 10	R5.6	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
40	B40-Apt. 10	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
40	B40-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
40	B40-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 9	R18.3	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
40	B40-Apt. 9	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
40	B40-Apt. 8	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 8	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
40	B40-Apt. 8	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
40	B40-Apt. 8	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
40	B40-Apt. 8	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
40	B40-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
40	B40-Apt. 7	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
40	B40-Apt. 7	R5.6	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
40	B40-Apt. 6	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 6	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
40	B40-Apt. 6	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
40	B40-Apt. 6	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 5	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 5	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
40	B40-Apt. 5	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
40	B40-Apt. 5	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
40	B40-Apt. 4	R1.7	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 4	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
40	B40-Apt. 3	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 3	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
40	B40-Apt. 3	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
40	B40-Ent.	R2.2	Daily Activities	Cleaning	no tool	no cost	no damage
40	B40-Ent.	R2.2	Daily Activities	Cleaning	no tool	no cost	no damage
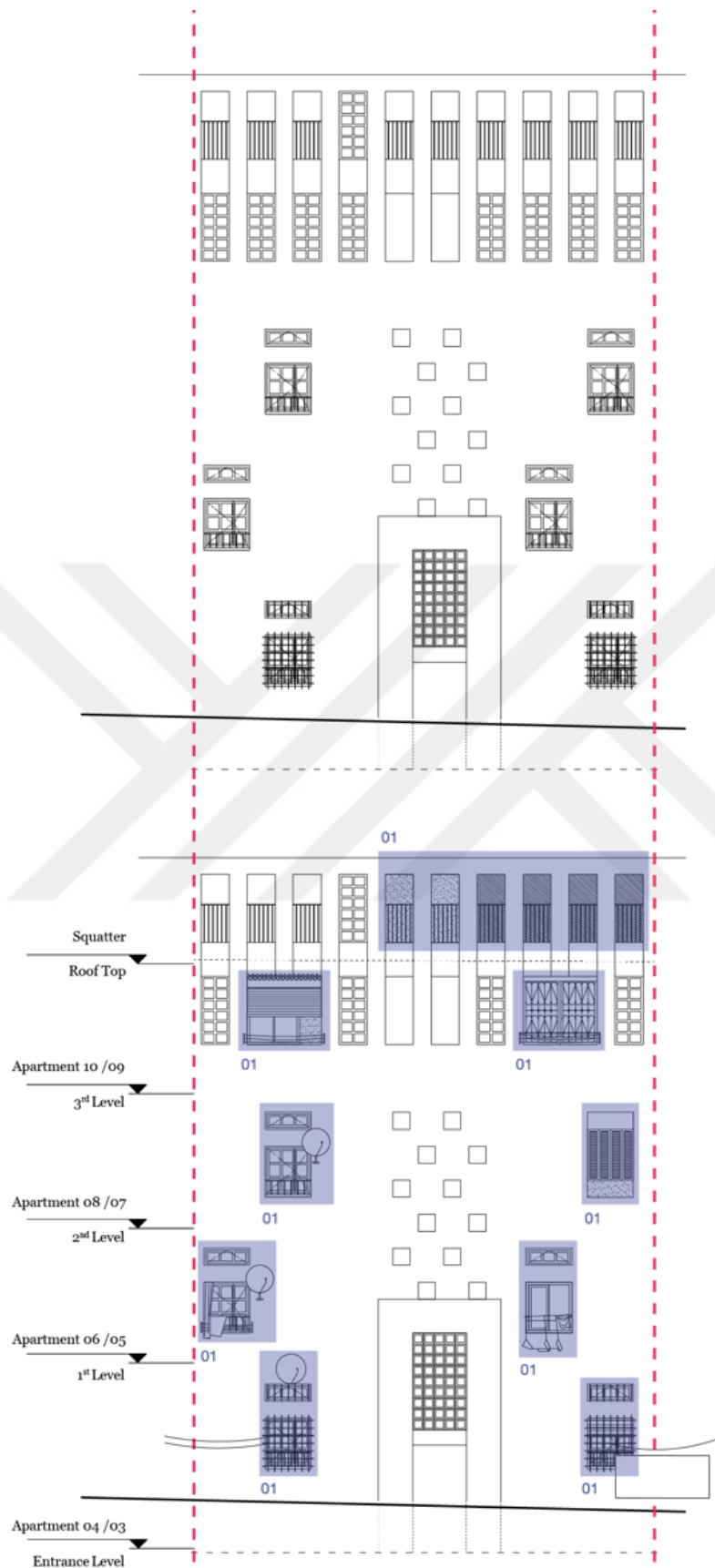
Figure B.22 : Original (top) and modified (bottom) façade drawings of Block 42. Residents modifications are highlighted on the modified façade (bottom).

Table B.21 : The list of rules applied for resident modifications in Block 42.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
42	B42-Squ 01	R22.7	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
42	B42-Squ 01	R22.7	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
42	B42-Squ 01	R22.7	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
42	B42-Squ 01	R22.7	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
42	B42-Squ 01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
42	B42-Squ 01	R22.5	Need of Space	Extra room on the rooftop	constructional skills	mid-high cost	low impact
42	B42-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
42	B42-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
42	B42-Apt. 10	R18.10	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
42	B42-Apt. 10	R4.3	Setting Boundaries	Privacy	Constructional skills	mid cost	low impact
42	B42-Apt. 10	R6.1	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
42	B42-Apt. 10	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
42	B42-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
42	B42-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
42	B42-Apt. 9	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
42	B42-Apt. 9	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
42	B42-Apt. 9	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
42	B42-Apt. 9	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
42	B42-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
42	B42-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
42	B42-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
42	B42-Apt. 7	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
42	B42-Apt. 7	R3.1	Daily Activities	Napping	no tool	no cost	no damage
42	B42-Apt. 6	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
42	B42-Apt. 6	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
42	B42-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
42	B42-Apt. 5	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
42	B42-Apt. 5	R18.23	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
42	B42-Apt. 5	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
42	B42-Apt. 5	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
42	B42-Apt. 4	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
42	B42-Apt. 4	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
42	B42-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
42	B42-Apt. 3	R1.4	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
42	B42-Apt. 3	R4.3	Setting Boundaries	Privacy	Constructional skills	mid cost	low impact
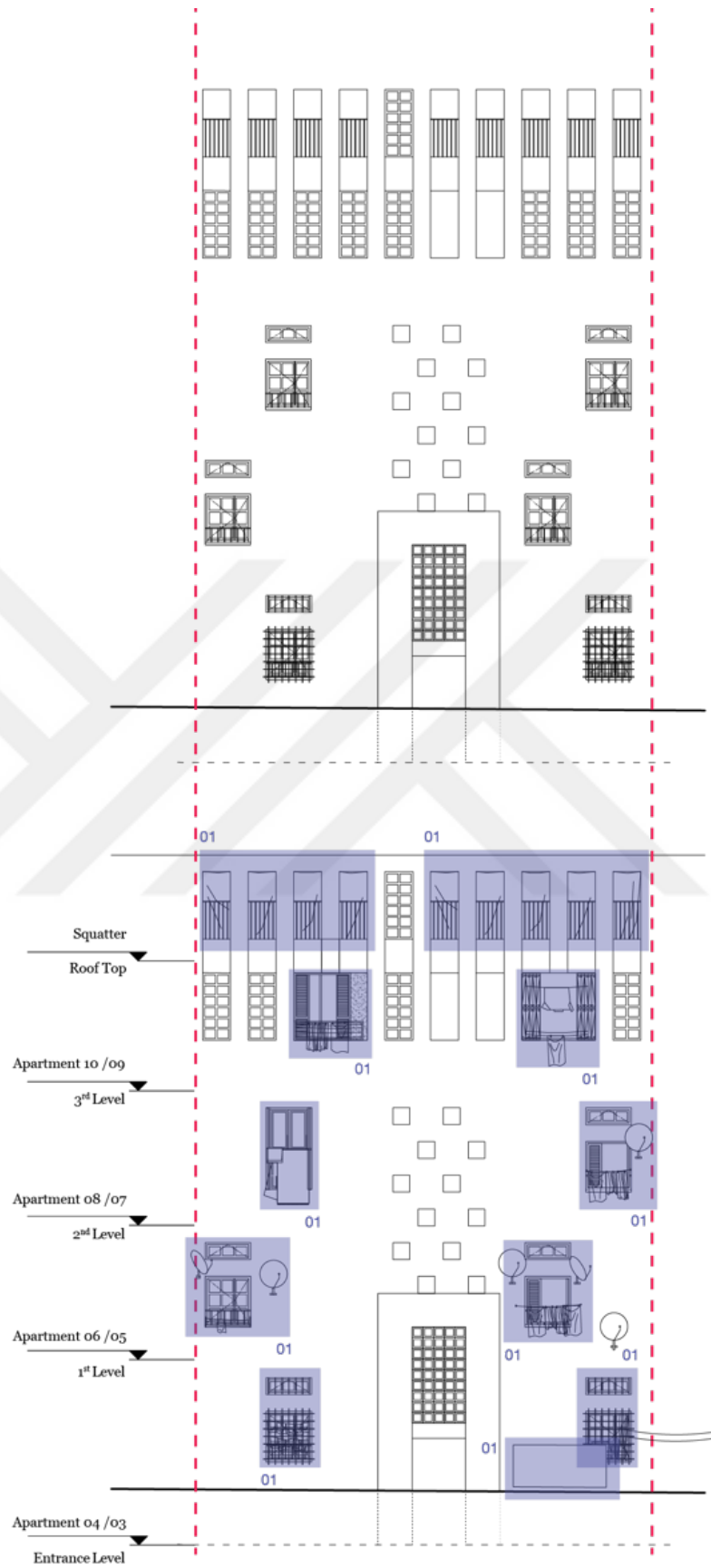
Figure B.23 : Original (top) and modified (bottom) façade drawings of Block 44. Residents modifications are highlighted on the modified façade (bottom).

Table B.22 : The list of rules applied for resident modifications in Block 44.

| Block Number | Apartments | Rules | Dwelling Activity | Taskscape | Competence labels | | Label for impact on the existing building |
					Skills	Cost	Impact
44	B44-Squ 01	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 01	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 01	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 01	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 01	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 02	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 02	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 02	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Squ 02	R22.8	Need of Space	Extra room on the rooftop	constructional skills	low-mid cost, DIY	low impact
44	B44-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
44	B44-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
44	B44-Apt. 10	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
44	B44-Apt. 10	R1.3	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
44	B44-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact

Table B.22 (continued) : The list of rules applied for resident modifications in Block 44.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
44	B44-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
44	B44-Apt. 9	R5.7	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
44	B44-Apt. 9	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 8	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
44	B44-Apt. 8	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
44	B44-Apt. 8	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
44	B44-Apt. 8	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
44	B44-Apt. 8	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 7	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
44	B44-Apt. 7	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
44	B44-Apt. 7	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 7	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
44	B44-Apt. 7	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
44	B44-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
44	B44-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
44	B44-Apt. 6	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
44	B44-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
44	B44-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
44	B44-Apt. 5	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
44	B44-Apt. 5	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 5	R18.21	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
44	B44-Apt. 5	R18.22	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
44	B44-Apt. 4	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 4	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 3	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 3	R1.9	Daily Activities	Making the Laundry	no tool	no cost	no damage
44	B44-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
44	B44-Ent.	R2.2	Daily Activities	Cleaning	no tool	no cost	no damage

Figure B.24 : Original (top) and modified (bottom) façade drawings of Block 46. Residents modifications are highlighted on the modified façade (bottom).

Table B.23 : The list of rules applied for resident modifications in Block 46.

					Competence labels		Label for impact on the existing building
Block Number	**Apartments**	**Rules**	**Dwelling Activity**	**Taskscape**	**Skills**	**Cost**	**Impact**
46	B46-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
46	B46-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 10	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 10	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
46	B46-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
46	B46-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
46	B46-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 10	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 10	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
46	B46-Apt. 10	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
46	B46-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
46	B46-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
46	B46-Apt. 9	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
46	B46-Apt. 9	R3.2	Daily Activities	Napping	no tool	no cost	no damage
46	B46-Apt. 9	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
46	B46-Apt. 9	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
46	B46-Apt. 8	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
46	B46-Apt. 8	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 8	R18.14	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 8	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact

| Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
46	B46-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
46	B46-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
46	B46-Apt. 8	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
46	B46-Apt. 8	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 8	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 8	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
46	B46-Apt. 8	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
46	B46-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
46	B46-Apt. 7	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
46	B46-Apt. 7	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
46	B46-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
46	B46-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 7	R18.15	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
46	B46-Apt. 7	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
46	B46-Apt. 7	R3.2	Daily Activities	Napping	no tool	no cost	no damage
46	B46-Apt. 6	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
46	B46-Apt. 6	R5.4	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
46	B46-Apt. 5	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
46	B46-Apt. 4	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
46	B46-Apt. 4	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
46	B46-Apt. 3	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
46	B46-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

Figure B.25 : Original (top) and modified (bottom) façade drawings of Block 48.
Residents modifications are highlighted on the modified façade (bottom).

Table B.24 : The list of rules applied for resident modifications in Block 48.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Competence labels		Label for impact on the existing building
					Skills	Cost	Impact
48	B48-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
48	B48-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 10	R18.10	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 10	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
48	B48-Apt. 10	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
48	B48-Apt. 10	R11.4	Taking care of the Environment	Gardening	no tool	low cost, DIY	no damage
48	B48-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
48	B48-Apt. 10	R3.2	Daily Activities	Napping	no tool	no cost	no damage
48	B48-Apt. 10	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
48	B48-Apt. 10	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 10	R18.7	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 10	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
48	B48-Apt. 10	R1.2	Daily Activities	Making the Laundry	small tools	low-mid cost	low impact
48	B48-Apt. 10	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
48	B48-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 9	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 9	R3.1	Daily Activities	Napping	no tool	no cost	no damage

Table B.24 (continued) : The list of rules applied for resident modifications in Block 48.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
48	B48-Apt. 9	R18.1	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
48	B48-Apt. 9	R18.5	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 9	R18.6	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 9	R3.1	Daily Activities	Napping	no tool	no cost	no damage
48	B48-Apt. 8	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 8	R1.1	Daily Activities	Making the Laundry	small tools	low cost, DIY	low impact
48	B48-Apt. 8	R1.5	Daily Activities	Making the Laundry	no tool	no cost	no damage
48	B48-Apt. 8	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
48	B48-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
48	B48-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 7	R18.24	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 7	R4.3	Setting Boundaries	Privacy	Constructional skills	mid cost	low impact
48	B48-Apt. 7	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
48	B48-Apt. 7	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
48	B48-Apt. 7	R18.11	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	low impact
48	B48-Apt. 7	R18.12	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 7	R18.24	Renovating the Interior	Doors and Windows	constructional skills	mid-high cost	damaged
48	B48-Apt. 7	R4.3	Setting Boundaries	Privacy	Constructional skills	mid cost	low impact
48	B48-Apt. 7	R5.9	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
48	B48-Apt. 7	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
48	B48-Apt. 6	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact

The list of rules applied for resident modifications in
Block 48.

Block Number	Apartments	Rules	Dwelling Activity	Taskscape	Skills	Cost	Impact
48	B48-Apt. 6	R4.1	Setting Boundaries	Privacy	small tools	low cost, DIY	low impact
48	B48-Apt. 6	R3.2	Daily Activities	Napping	no tool	no cost	no damage
48	B48-Apt. 6	R9.1	Enhancing the Home Comfort	Air Conditioning	Professional skills	high cost	low impact
48	B48-Apt. 5	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
48	B48-Apt. 5	R5.1	Setting Boundaries	Fences	Constructional skills	mid cost	low impact
48	B48-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 4	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 4	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
48	B48-Apt. 4	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
48	B48-Apt. 4	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
48	B48-Apt. 3	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
48	B48-Apt. 3	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact
48	B48-Apt. 3	R6.2	Setting Boundaries	Awning	Constructional skills	mid cost	low impact
48	B48-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 3	R10.1	Enhancing the Home Comfort	Satellite Dishes	Professional skills	high cost	low impact
48	B48-Apt. 3	R5.5	Setting Boundaries	Fences	Small tools	low cost, DIY	low impact

APPENDIX C: Dataset.

Table C.1 : The number of rules used in Block 02.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Apt.Ent.	Block 02 Total
R1.1						1				1
R1.2				1						1
R1.3					1					1
R1.5		1		1						2
R1.7	1	1								2
R11.1									1	1
R18.1							3	1		4
R18.11	1									1
R18.12	1									1
R18.15	1									1
R18.2							1			1
R18.4							1			1
R18.5								1		1
R18.7								1		1
R18.8							1			1
R20.1	1									1
R4.1	1						1			2
R5.1	1									1
R5.2								1		1
R5.4			1							1
R5.7								1		1
R6.1	1									1
R9.1	1				1					2

Table C.2 : The number of rules used in Block 04.

Rules	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Squ. 01	Squ. 02	Block 04 Total
R1.1					1	1			2
R1.4				1					1
R1.5				1	1	1			3
R10.1		1		1					2
R11.4						1			1
R18.1					1	2			3
R18.10						1			1
R18.3						1			1
R18.5					1	1			2
R18.6					1				1
R22.5							1	1	2
R22.6							1	1	2
R3.2			1	2					3
R4.1	1		1	2		1			5
R5.4		1							1

Table C.3 : The number of rules used in Block 06.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Block 06 Total
R1.1						1			1
R1.5						1			1
R10.1					1	1			2
R18.1							2	1	3
R18.11					1				1
R18.12					1				1
R18.15					1				1
R18.17		1						1	2
R18.4							2		2
R3.2			1						1
R4.1			1				1		2
R5.5	1								1
R5.8				1					1
R9.1					1				1

Table C.4 : The number of rules used in Block 08.

Rules	Apt. 04	Apt. 05	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Squ. 01	Squ.02	Block 08 Total
R1.1			1	1	1	1			4
R1.5					1				1
R10.1			1	1		1			3
R18.1					1				1
R18.11			1						1
R18.12			1						1
R18.15			1						1
R18.17					1				1
R18.19		1							1
R22.5							2	1	3
R3.2			1	1					2
R4.1	1		1	1	1				4
R4.2						1			1
R5.4		1							1
R6.2				1					1
R9.1		1							1

Table C.5 : The number of rules used in Block 10.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	B.Squ. 01	Block 10 Total
R1.1			1		1	1	1			4
R1.5			1			1				2
R10.1		1	1		1	2				5
R18.1								2		2
R18.11	1	1								2
R18.12		1								1
R18.14		1								1
R18.16	1									1
R18.5								2		2
R18.9								2		2
R23.3									1	1
R3.2					1		1			2
R4.1					1		1			2
R5.1							1			1
R5.6	1			1						2
R5.8		1								1
R6.1	1	1								2
R9.1	1	1			1					3

Table C.6 : The number of rules used in Block 12.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Squ.01	Block 12 Total
R1.1				1						1
R1.5				1						1
R10.1	1	1	1	1				1		5
R18.1							1			1
R18.11				1		1				2
R18.12						1				1
R18.14						1				1
R18.20				1						1
R18.5							1			1
R18.6							1			1
R22.5									1	1
R22.6									2	2
R3.2				1			1			2
R4.1				1	1	1	1			4
R5.4			1							1
R5.7								1		1
R5.8				1						1
R9.1						1				1

Table C.7 : The number of rules used in Block 14.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 07	Apt. 09	Apt. 10	Block 14 Total
R1.1			1				1
R1.5			1				1
R10.1	1		1	2		1	5
R18.1					1		1
R18.10					1		1
R18.11	1	1		1			3
R18.12	1	1		1			3
R18.15	1	1		1			3
R18.5					1		1
R3.2		1			1	1	3
R4.1		1			1	1	3
R5.1	1						1
R6.2	1	1					2
R9.1				1			1

Table C.8 : The number of rules used in Block 16.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Block 16 Total
R1.1				1	1				**2**
R1.3						1	1		**2**
R1.5	1		1	1	1				**4**
R1.7	1								**1**
R1.8			1						**1**
R10.1			1	4					**5**
R18.11	1	1							**2**
R18.12	1	1							**2**
R18.14		1							**1**
R18.15	1								**1**
R3.2		1					1	1	**3**
R4.1		1					1	1	**3**
R5.1	1	1							**2**
R5.7				1					**1**
R6.1	1								**1**

Table C.9 : The number of rules used in Block 18.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Block 18 Total
R1.1				1	1				**2**
R1.5				1	1				**2**
R10.1			1	1	1				**3**
R11.4		1							**1**
R12.1		1							**1**
R18.1							1	1	**2**
R18.11		1							**1**
R18.12		1							**1**
R18.15		1							**1**
R18.2							1		**1**
R18.3								1	**1**
R3.2	1			1					**2**
R4.1	1			1		1			**3**
R5.1		1							**1**
R5.7			1						**1**
R9.1						1			**1**

Table C.10 : The number of rules used in Block 20.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 09	Apt. 10	B.Squ 01	Block 20 Total
R1.1		1			1				2
R1.4						1			1
R1.5			1		1				2
R1.6		1							1
R1.8			1						1
R10.1	1			1			1		3
R18.1							1		1
R18.16					1				1
R18.21					1				1
R18.5							1		1
R18.7							1		1
R23.3								1	1
R3.2			1			2	1		4
R4.1			1			2	1		4
R5.1						2			2
R5.2				1					1
R9.1							1		1

Table C.11 : The number of rules used in Block 22.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Block 22 Total
R1.2	2								2
R1.5			1						1
R1.7			1						1
R1.8					1				1
R1.9		1							1
R10.1					1	1	1		3
R11.2			1						1
R11.3			1						1
R11.4	1								1
R18.1	1							1	2
R18.11			2						2
R18.12			2						2
R18.15			2						2
R18.21							2		2
R18.22							2		2
R18.5	1							1	2
R18.6								1	1
R18.7	1								1
R24.1					1				1
R3.1							1		1
R3.2	1	1	2		1	1			6
R3.3							1		1
R4.1	2	1	2	1	2	1			9
R4.2	1								1
R5.1			2						2
R5.9							2		2
R6.2			2						2
R6.4			1						1

Table C.12 : The number of rules used in Block 24.

Rules	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Block 24 Total
R1.1		1	1					**2**
R1.3						1		**1**
R1.5		1	1					**2**
R11.4			1					**1**
R18.1						1	1	**2**
R18.21		1	1	1				**3**
R18.22		1	1	1				**3**
R18.4						1		**1**
R18.5							1	**1**
R18.6							1	**1**
R3.1			1	1		1	1	**4**
R4.1			1					**1**
R9.1	1			1	1			**3**

Table C.13 : The number of rules used in Block 26.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Squ 01	Block 26 Total
R1.1						1				**1**
R1.2	1			1						**2**
R1.5	1					1				**2**
R10.1	1		1	1	1	1	1	1		**7**
R18.1								1		**1**
R18.11		1	1			1				**3**
R18.12		1	1			1				**3**
R18.14		1	1							**2**
R18.15						1				**1**
R18.5								1		**1**
R18.6								1		**1**
R22.5									1	**1**
R22.6									4	**4**
R3.1		1				1				**2**
R3.2	1									**1**
R4.1	1	1	1	1						**4**
R5.1		1	1							**2**
R5.7					1					**1**
R5.9								1		**1**
R6.1		1								**1**
R6.2	2									**2**

Table C.14 : The number of rules used in Block 28.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Squ 01	Block 28 Total
R1.3						1		1		2
R1.4				1						1
R1.5								1		1
R10.1		1		1	1	1	2	2		8
R11.4		1								1
R18.11					1					1
R18.24					1					1
R3.2	2	1	1	1						5
R3.3					1					1
R4.1	2	1	1	1						5
R4.2								1	3	4
R5.4						1				1
R5.9					1					1

Table C.15 : The number of rules used in Block 30.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Block 30 Total
R1.1				1		1	1		3
R1.2	1								1
R1.5	1					1	1		3
R1.7		1	1						2
R10.1		1	1	1		2	2	1	8
R11.4				1	1				2
R18.1	1								1
R18.5	1								1
R18.6	1								1
R3.2		1	1			1		2	5
R4.1		1	1	1		1		2	6
R5.10			1						1

Table C.16 : The number of rules used in Block 32.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Squ 01	Block 32 Total
R1.1				1		1	1	1		4
R1.2					1					1
R1.5						1	1			2
R10.1	1	1			1		1			4
R10.2									1	1
R12.1			1							1
R18.1	1							1		2
R18.11		1								1
R18.12		1								1
R18.14		1								1
R18.21				1	1	1				3
R18.22				1	1	1				3
R18.5	1							1		2
R18.6								1		1
R18.9	1									1
R22.2									1	1
R22.4									1	1
R3.1					1	1		1		3
R5.1		1								1
R5.5			1							1
R6.1		1								1
R9.1									1	1

Table C.17 : The number of rules used in Block 34.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Ent.	Block 34 Total
R1.1	1				1		1	1		4
R1.5					1		1			2
R10.1		1	1	1	1	2	1			7
R11.1									1	1
R11.3									1	1
R12.1		1	1							2
R18.1	1							1		2
R18.3	1									1
R18.4								1		1
R3.2							1	1		2
R4.1							1	1		2
R5.5		1	1							2
R5.7				1						1

Table C.18 : The number of rules used in Block 36.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Ent.	Block 36 Total
R1.1	2					1	1	1		5
R1.5	1						1	1		3
R10.1		1	1	1	2	1	2			8
R11.1									1	1
R11.3									1	1
R11.4					1					1
R18.1	1							1		2
R18.10								1		1
R18.11			1							1
R18.12			1							1
R18.14			1							1
R18.3	1									1
R18.5								1		1
R22.6										1
R3.2	1							1		2
R4.1	4							1		5
R5.1			1							1
R5.9						1				1
R6.1			1							1

Table C.19 : The number of rules used in Block 38.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Ent.	Block 38 Total
R1.2					1	1		1		**3**
R1.3								1		**1**
R1.5					1			1		**2**
R1.7			1							**1**
R10.1			1			1		1		**3**
R11.1									1	**1**
R11.3									1	**1**
R11.4								1		**1**
R18.1								2		**2**
R18.10								1		**1**
R18.11				1	1	1	1			**4**
R18.12				1		1	1			**3**
R18.15				1			1			**2**
R18.25					1					**1**
R18.26					1					**1**
R18.5								2		**2**
R18.7								1		**1**
R18.9						1				**1**
R3.1							1			**1**
R3.2								2		**2**
R4.1								3		**3**
R5.1	2									**2**
R5.10					1					**1**
R5.4				1	1					**2**
R5.5		1								**1**
R6.2	2									**2**
R9.1					1			1		**2**

Table C.20 : The number of rules used in Block 40.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Ent.	Block 40 Total
R1.1				1	1		1	1		**4**
R1.4		2								**2**
R1.5	1			1						**2**
R1.7			1							**1**
R1.9	1	1								**2**
R10.1							1			**1**
R18.1	1							1		**2**
R18.11						1	1			**2**
R18.12						1	1			**2**
R18.14							1			**1**
R18.15						1				**1**
R18.21					1					**1**
R18.22					1					**1**
R18.3								1		**1**
R18.5	1									**1**
R18.6	1									**1**
R2.2									2	**2**
R22.6										**1**
R3.1	1									**1**
R4.1							1	1		**2**
R5.6	1					1				**2**
R5.7				1						**1**
R5.9					1					**1**
R6.2	1						1			**2**
R9.1			1	1						**2**

Table C.21 : The number of rules used in Block 42.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Squ 01	Block 42 Total
R1.2	1				1					2
R1.3								1		1
R1.4		1	2	1						4
R1.5				1						1
R10.1			1		1		1			3
R18.1	1							1		2
R18.10	1									1
R18.11						1				1
R18.12						1				1
R18.14						1				1
R18.21				1						1
R18.23				1						1
R18.5	1							1		2
R18.7								1		1
R22.5									2	2
R22.7									4	4
R3.1						1				1
R4.1					1					1
R4.3	1	1								2
R5.7								1		1
R6.1	1									1
R6.2								1		1

Table C.22 : The number of rules used in Block 44.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Apt.Ent.	Apt.Squ 02	Block 44 Total
R1.1				1		1					2
R1.2					1		1				2
R1.3	1										1
R1.5	1		1	1		1	1				5
R1.9		2	1					1			4
R10.1		1		2	2	1					6
R18.1	1							1			2
R18.11							1				1
R18.12							1				1
R18.15							1				1
R18.21				1		1					2
R18.22				1		1					2
R18.5	1							1			2
R18.6	1										1
R2.2									1		1
R22.8										4	9
R5.7								1			1

Table C.23 : The number of rules used in Block 46.

Rules	Apt. 10	Apt. 3	Apt. 4	Apt. 5	Apt. 6	Apt. 7	Apt. 8	Apt. 9	Block 46 Total
R1.1						1	2		3
R1.2								1	1
R1.5								1	1
R10.1		1		1			1		3
R18.1	2								2
R18.11						1	2		3
R18.12						1	2		3
R18.14							1		1
R18.15						1	1		2
R18.5	2								2
R18.7	2								2
R3.2						1		2	3
R4.1						1	1	2	4
R5.1	2								2
R5.4					2				2
R6.2	2	1	2				2		7
R9.1						1			1

Table C.24 : The number of rules used in Block 48.

Rules	Apt. 03	Apt. 04	Apt. 05	Apt. 06	Apt. 07	Apt. 08	Apt. 09	Apt. 10	Block 48 Total
R1.1						1		1	2
R1.2								1	1
R1.5						1		1	2
R10.1	2	2		1	1	1	1	2	10
R11.4								1	1
R18.1							2	2	4
R18.10							2	1	3
R18.11					1				1
R18.12					1				1
R18.15					1				1
R18.5							2	2	4
R18.6								1	1
R3.1							2		2
R3.2				1				2	3
R3.3					1				1
R4.1				1				2	3
R5.5	2	2							4
R5.9					1				1
R6.2	2	1			1				4
R9.1				1					1
R5.11			2			1			3

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Table C.25 : The total number of rules used in each block.

Rules	Block-02	Block-04	Block-06	Block-08	Block-10	Block-12	Block-14	Block-16	Block-18	Block-20	Block-22	Block-24	Block-26	Block-28	Block-30	Block-32	Block-34	Block-36	Block-38	Block-40	Block-42	Block-44	Block-46	Block-48	Total
R1.1	1	2	1	4	4	1	1	2	2	2		2	1		3	4	4	5		4		2	3	2	50
R1.2											2		2		1	1			3		2	2	1	1	16
R1.3	1						2					1		2					1		1	1			9
R1.4		1								1			1							2	4				9
R1.5	2	3	1	1	2	1	1	4	2	2	1	2	2	1	3	2	2	3	2	2	1	5	1	2	48
R1.6										1															1
R1.7	2							1			1					2				1	1				8
R1.8								1		1														1	3
R1.9											1									2		4			7
R10.1		2	2	3	5	5	5	5	3	3	3		7	8	8	4	7	8	3	1	3	6	3	10	104
R10.2																1									1
R11.1	1																1	1	1						4
R11.2							1																		1
R11.3							1										1	1	1						4
R11.4			1					1			1	1			2		1	1	1					1	10
R12.1						1										1	2								4
R18.1	4	3	3	1	2	1	1	2	1	2	2		1		1	2	2	2	2	2	2	2	2	4	44
R18.10		1	1				1											1	1		1			3	8
R18.11	1		1	1	2	2	3	2		1		2	3	1		1		1	4	2	1	1	3	1	33
R18.12	1		1	1	1	3	2	1			2		3		1		1		3	2	1	3	1		29
R18.14				1	1			1					2			1			1	1	1		1		10
R18.15	1		1	1			3	1	1		2		1							2	1	1	2	1	18
R18.16				1						1															2
R18.17			2	1																					3
R18.19				1																					1

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Table C.25 (continued) : The total number of rules used in each block.

Rules	Block-02	Block-04	Block-06	Block-08	Block-10	Block-12	Block-14	Block-16	Block-18	Block-20	Block-22	Block-24	Block-26	Block-28	Block-30	Block-32	Block-34	Block-36	Block-38	Block-40	Block-42	Block-44	Block-46	Block-48	Total
R18.2	1								1																2
R18.20						1																			1
R18.21										1	2	3				3				1	1	2			13
R18.22											2	3				3				1		2			11
R18.23																					1				1
R18.24													1												1
R18.25																			1						1
R18.26																		1							1
R18.3		1							1								1	1		1					5
R18.4	1		2									1					1								5
R18.5	1	2			2	1	1			1	2	1	1		1	2		1	2	1	2	2	2	4	29
R18.6		1				1				1	1	1			1	1				1		1		1	10
R18.7	1									1	1							1		1			2		7
R18.8	1																								1
R18.9					2										1				1						4
R2.2																				2		1			3
R20.1	1																								1
R22.2															1										1
R22.4															1										1
R22.5		2	3			1						1									2				9
R22.6		2				2							4					1		1					10
R22.7																					4				4
R22.8																							9		9
R23.3				1					1																2

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Table C.25 (continued) : The total number of rules used in each block.

Rules	Block-02	Block-04	Block-06	Block-08	Block-10	Block-12	Block-14	Block-16	Block-18	Block-20	Block-22	Block-24	Block-26	Block-28	Block-30	Block-32	Block-34	Block-36	Block-38	Block-40	Block-42	Block-44	Block-46	Block-48	Total
R24.1											1														1
R3.1											1	4	2			3			1	1	1			2	15
R3.2		3	1	2	2	2	3	3	2	4	6		1	5	5		2	2	2				3	3	51
R3.3											1			1										1	3
R4.1	2	5	2	4	2	4	3	3	3	4	9	1	4	5	6		2	5	3	2	1		4	3	77
R4.2				1							1			4											6
R4.3																					2				2
R5.1	1			1		1	2	1		2	2		2			1		1	2				2		18
R5.10															1			1							2
R5.2	1									1															2
R5.4	1	1		1		1							1					2				2			9
R5.5			1												1	2		1						4	9
R5.6				2												2									4
R5.7	1				1		1	1			1		1				1			1	1	1			9
R5.8			1		1	1																			3
R5.9											2		1	1			1		1				1		7
R6.1	1			2			1				1		1				1			1					8
R6.2			1			2					2		2					2	2	1			7	4	23
R6.4											1														1
R9.1	2	1	1	3	1	1		1	1		3					1				2	2		1	1	21
R5.11																								3	3

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Table C.26 : The impact, skill and cost labels of the applied rules in each block.

	Impact Labels of the Applied Rules				Skill Labels of the Applied Rules				Cost Labels of the Applied Rules						
	Damaged	High impact	Low impact	No damage	constructional skills	no tool	Professional skills	Small tools	high cost	low cost	low cost, DIY	low-mid cost	mid cost	mid-high cost	no cost
Block 02	5		23	2	18	2	2	8	2	5		2	7	12	2
Block 04	4		19	7	13	7	2	8		9			3	12	6
Block 06	2		16	2	11	2	3	4	1	4			3	10	2
Block 08	2		22	3	11	3	4	9	1	9			5	9	3
Block 10	8		24	4	18	4	8	6	4	6		11	11		4
Block 12	4		21	3	14	3	6	5	1	5		8	11		3
Block 14	8		17	4	15	4	6	4	1	4		8	12		4
Block 16	4		20	7	10	7	5	9		7		2	9	6	7
Block 18	2		16	6	9	5	4	6	1	6		5	8		4
Block 20	4		17	7	8	7	4	9	2	8		6	5		7
Block 22	9	1	30	14	24	13	3	14		14		3	10	16	11
Block 24	2		16	7	11	7	3	4	3	4		1	11		6

Table C.26 (continued) : The impact, skill and cost labels of the applied rules in each block.

	Impact Labels of the Applied Rules				Skill Labels of the Applied Rules				Cost Labels of the Applied Rules						
	Damaged	High impact	Low impact	No damage	constructional skills	no tool	Professional skills	Small tools	high cost	low cost	low cost, DIY	low-mid cost	mid cost	mid-high cost	no cost
Block 26	8		30	5	24	5	7	7		5		2	14	17	5
Block 28	1		23	8	4	8	8	12		11		2	10	2	7
Block 30	2		22	10	4	10	8	12		13		1	9	3	8
Block 32	6	2	23	6	19	5	6	7	1	5		1	7	18	5
Block 34			21	7	6	5	7	10		9			9	6	4
Block 36	4		27	7	13	7	8	10		12			12	9	5
Block 38	12		28	7	26	7	5	9	2	7		4	11	18	5
Block 40	6		26	7	20	7	3	9	2	9		7	14		7
Block 42	6		27	2	22	2	3	8		5		7	8	13	2
Block 44	5		28	10	22	10	6	5		2		12	7	12	10
Block 46	10		28	4	26	4	4	8	1	7		1	14	15	4
Block 48	10		34	9	23	9	11	10	1		10	1	18	15	8

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PUBLICATIONS, PRESENTATIONS AND PATENTS ON THE THESIS:

- **Rezoug, A**., Özkar, M. 2020. Visual Rules for Socio-Spatial Analysis: Inferring a Grammar of Use in an Inhabited Climat de France, *Dearq, no27, 50-61.* https://doi.org/10.18389/dearq27.2020.04

- **Rezoug, A**., Özkar, M. 2019. When Residents are Makers: Using Additive Manufacturing for Rehabilitating Modernist Housing Heritage. Architecture in the

Age of the 4th Industrial Revolution, 37th Annual Conference eCAADe and 23rd SIGraDi, September 2019, University of Porto, Porto, Portugal.

- **Rezoug, A.** 2018. Made by Architects, Modified by People: A Grammar for User Interventions. Formal Methods in Architecture, Fourth International Symposium, April 2018, ESAP, Porto, Portugal.

OTHER PUBLICATIONS/PRESENTATIONS

- **Rezoug, A**., Aggündüz, A. 2019. The Triggering Failures and Attractive Deficiencies in Design Through Making Process. Materiart International Symposium, April 2019, Lisbon School of Architecture, Lison, Portugal.

- **Rezoug, A.** 2016. What if CIAM-Alger Included a Shape Grammarist. Space and Flows: Seventh International Conference on Urban and ExtraUrban Studies, November 2016, University of Pennsylvania, Philadelphia.