Urban and Architectural Adaptive Strategies for Inclusive Cities: A Review of International Innovation Experiments

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The current migration flows toward Europe are having a significant impact on social composition, economy, urban services, and on the physical dimensions of cities. Cities have a key role in developing immigration policies and sustainable accommodation models, that can promote an inclusive society as well as local development. Due to the persistence of migratory flows, these models of integration and development cannot be supported by an emergency condition, but they should be based on systematic strategies. This paper presents a series of accommodation models and urban policies, coming from international experimental projects, that we argue can foster integration and urban development. These strategies show the potentials of immigration in boosting urban transformation and regeneration. Innovative strategies for dealing with immigration are based on flexible tools, typically from temporary habitat (housing modules, light construction systems, customized solutions) that find a place inside the city. Integrated design strategies use the existing city as a frame being filled up by flexible houses, through urban densification or regeneration process. Housing dissemination, temporary and flexible architectural solutions and inclusive process are the drivers for developing a flexible habitat, at the base of a more sustainable and democratic city.

Keywords: resilient city; inclusive city; migratory flow; place-based strategies; temporary habitat.

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Introduction: City and Immigration, Opportunities for an Inclusive Urban Development

It is internationally recognised that migration is an urban phenomenon. Immigration influences cities from social, economic and spatial perspectives. Cities serve as first points of arrival, transit hubs, and ultimate destinations of millions of migrants (100 Resilient Cities Report, 2016). Cities provide food, shelter and healthcare at arrival; accommodation and subsistence during transit; employment and social integration for long permanency. Regardless of their origin or their motives, the number of international migrants is increasing, and it peaked at 244 million people in 2015 (UN Report, 2015b), a number which stokes the fear of local populations, due to the considerable presence and polarization in urban areas[1]. Europe has seen, for centuries, many migration phases. The several migration flows, with all problems linked to it, were and still are formative for how cities today are shaped and can be transformed. Migrant flows can give different contributions to European cities. In ageing economies, for example, newcomers are fundamental to keeping the economic demand and the workforce stable. Immigrants also bring social and cultural vitality to cities, launching new economic activities, bringing cultural influence, increasing urban demands related to public spaces and services, and making a renaissance of depopulated areas, for example in rural areas[2].

The Urban Land Institute (ULI) report (2017) showed the implications of the migration flow in European cities. A key focus of that research was to understand how cities can best accommodate migrants and how the real estate industry can respond effectively to it. The ULI report (2017) identified the need for innovative strategies taken by local authorities and the real estate industry, to respond effectively to current and future housing demand.

There are many examples of European neighbourhoods in which the concentration of immigrants brought with it urban requalification. Sarpi District in Milan (Balducci et al., 2006), Belleville in Paris (Kaplan & Le Moigne, 2019), Brick Lane in London (Frost, 2015) or Kreuzberg in Berlin (Akcan, 2018; Pratt Ewing, 2004), represent cases of good integration between immigrants and cities. In these neighbourhoods, foreigners filled depreciated urban areas, started to develop economic activities, first addressed to compatriots, and later opening to the whole population. This increased the attractiveness and appeal of those neighbourhoods through ethnic restaurants or commercial activities which triggered economic growth, investment, tourism and urban gentrification processes. All these phenomena, fostered by the immigration process, helped to re-shape and change the functions of these cities, or parts of them in unanticipated ways. Such experiences represent evidence of the opportunities related to embracing migrants within our cities and seeing them as central actors in urban transformation processes (Schiller et al., 2011). Despite those good and rare examples, the mainstream immigration policies still follow an approach based on hiding the problem and relegating it, under temporary (emergency) solutions or leaving it to a self-resolution (Castles, 2004; UNHCR, 2015a; 100 Resilient Cities Report, 2016; Baobab Experience Report, 2017; World Economic Forum and pwc report, 2017; Cesareo, 2018).

Migration flows may be seen as a new dynamic chance, or a seed of urban conflicts and tensions. This largely depends on the way in which immigration is dealt with, from a political

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[1] The 92% of immigrants in the United States live in urban areas, as do 95% in the United Kingdom and Canada, and 99% in Australia (Woetzel et al., 2016). The 92% of immigrants in the United States live in urban areas, as do 95% in the United Kingdom and Canada, and 99% in Australia (Woetzel et al., 2016).
[2] According to the 100 Resilient Cities Report (2016) Migrants contributed 9.4% of global GDP between 2000 and 2014.

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and administrative point of view, but also in terms of spaces and built form. Ineffective management of new populations can exacerbate existing stresses. As many migrants cannot, or do not intend to, return to their place of origin, municipal authorities must start seeing their role as long-term, or even permanent, hosts. This means that migration is not linked to a temporary state of emergency, even if its size forecasting is uncertain. The uncertainty about the future dimension of immigration flow brings the need for *flexible solutions* to be able to adapt to different situations, incremental or in reduction. It is important that cities look beyond reactive short-term strategies to strategies that focus on long-term possibilities. To realize this vision, it is important to consider migration dynamics as an essential element of urban planning and urban governance. Cities must design city plans and policies that explicitly address migration and create the framework for an immigrant-friendly city (Fincher et al., 2014; Shepard, 2016). It is important the promotion of a flexible approach to all urban planning instruments, including spatial planning, mobility planning, public space design (parks, streets, malls), building codes (for driving the building sector and the migrants housing design), zoning by-laws, neighbourhood renewal projects, participatory budgeting and local environmental initiatives.

The space where we live has a direct influence on people behaviours. Thus, urban planning and architecture should incorporate immigration concerns in their approaches, instruments, practices and actions, in order to foster integration, reduce the shared fear perception, involve newcomers in public life and in the job market, avoid marginalization processes, incentivise economic development, improve the quality of life – even in terms of social relationship –, promote environmental and resource protection.

The paper aims to investigate the opportunities given by innovative building designs and district renewal projects concerning accommodation models for migrants. The novelty of the examples selected is based on them possessing 4 key characteristics: *inclusiveness, flexibility, reversibility, and relationship with the city*. Each example reinterprets, to a large or lesser degree, all those concepts, suggesting new forms and strategies for accommodation housing models for migrants, able to give a new identity to the city or part of it (for instance vacant area or areas under a regeneration process). A shared characteristic is also the use of mid-long-term solutions. The need to treat and plan migrant accommodation as not an emergency/ temporary situation is crucial for the immigrants themselves, and as well as an opportunity to revitalize the host cities.

The paper contribution is intended in the possibility of learning from innovative design solutions and urban strategies related to accommodation housings for migrants. The city's capacity to embrace immigrants and create good conditions for more inclusive and booming society goes through the innovation of accommodation strategies. The paper shows some experiments taken in the last decades in Europe, through a review analysis focused on the 4 criteria mentioned above, which represent a vision for design housing models for migrants and integrate them within the city.

The paper is composed of 4 parts: the research design; the analysis and discussion; the conclusion; and the paths for future research.

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Research Design

The paper presents a selection of architectural and building system examples for migrants' accommodation models[3], intending to show innovative practices in use internationally. The examples refer to mid and long-term[4] solutions, focusing both on the design field and the impact on cities. The best practices are selected for their capacity to interact with the urban context and achieve impacts on city spatial planning and governance, avoiding emergency solutions.

The medium-term is particularly crucial in this review. It means the first 4/5 years in the arrival country, which is quite important for an immigrant: in this period, she/ he defines a social role, creates a network, tries to find a job. The paper focuses on the accommodation housing models for migrants, and it does not trait the whole immigration strategy in force in countries. Talking about housings for migrants refers to the relationship with the built environment, with vacant areas, with blight districts, with the future of the city. The paper aims to analyse what are the possible design strategies or accommodation models that can be employed for migrants in the middle period. The selection of those best practices is based on 4 criteria:

- the possibility to *involve* the future inhabitants in the living space configuration (people side);
- the grade of *flexibility* reached by migrants' accommodation models (building design side);
- the *reversibility* achieved and the possibility of incrementing the cycles of uses (building design side);
- the capacity to *reshape the city and the governance* of the city related to migration accommodation policies (city policy side).

Flexibility and *reversibility* are key elements to go beyond the emergency and short-term solution approach. Flexibility means designing plans, rules, policies, shelters and housing for migrants able to address different (urban and social) needs, which shift over time, with a strong shared goal, and where diversity is a core value. Flexibility refers also to the capacity of accommodation solutions for migrants to facilitate building transformations, according to changes in needs and requirements. It is based on the principle that our needs and requirements for the built environment will always change.

Reversibility refers to the possibility of a building to be entirely disassembled and re-assembled in another place without damaging the building components. These building solutions, light and temporary, can set up a relationship with the context and give a new sense to empty urban areas or residual spaces. The aim is to create buildings that support change effectively and efficiently (Durmisevic, 2019). Adaptability and upgradability, durability and compatibility of buildings (or parts of them) are the elements which guarantee multiple life options for mid-term but also for long-term housing solutions for migrants.

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[3] It has been quoted also some projects conceived not specifically for refugees, but for the poorest brackets of the population or residential architectures, whose design strategy allows a high level of flexibility and interaction from the final user.
[4] Short-term responses include emergency shelters used at the first accommodation phase in areas with high volume of arrivals. The medium-term responses are those that need quick construction processes and utilize industrial and modular building systems or that re-use existing structures. Long-term solutions consider the possibility to build permanent new buildings, connected with social infrastructures and urban services (Urban Land Institute, 2017).

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Starting from those two elements (flexibility and reversibility), we analyse innovative strategies of housings for migrants and refugees[5]. The novelty of this review is its intent on understanding the integration between building design and urban planning. We found three main paths of integration:

- take advantage of vacant areas in the cities by building reversible houses;
- densify existing districts wherever possible, by innovating building rights acquisition mechanisms for new temporary immigrants;
- use an open building approach.

Those come from the study on accommodation models and immigrants' accommodation policies, most of them presented in the paper. The presence of a connection between building models for migrants and urban impact was a prerequisite for the examples' selection. When selected and analysed the examples brought to light the three interaction paths, as the most recurring and interesting ones.

Functional intensification and densification mean to increase the concentration of buildings, residents and activities, through infill process, and deep requalification programs (Rosol, 2015), which can lead the increasing of health, security, and social cohesion, often reinforcing public services. In this infill process, local authorities can find a location for newcomers, avoiding the ethnic spatial segregation. To favour a 'mixité' approach it is necessary to adopt flexible regulations and zoning plans, be able to switch the functional designation of buildings and (parts of) areas in order to adjust housing needs and promote economic entrepreneurship, especially for newcomers. In this approach a flexible housing design is necessary. Flexible housing models permit to adapt to different urban contexts and social needs, which can change in time.

Other solutions go through the identification of empty urban spaces, vacant or abandoned buildings (waiting for a new life), both in the downtown than in the suburbs, suitable for reconversion, requalification, or infill programs for new social housing solutions, new urban services or economic activities. Developing housing for refugees and newcomers in underutilized spaces can catalyse other projects and benefits: it can address inadequate or unaffordable housing for the homeless, mitigate climate change effects and improve energy security through retrofits, and it can beautify and revitalize abandoned neighbourhoods (100 Resilient Cities Report, 2016). In these cases, reversibility characteristics are crucial, as well as the flexibility of urban planning tools and strategies. The open building approach makes the building structure and systems permanent, changing only the internal space configuration, when users change, according to their necessity or desire. It images the architecture as an unfinished structure that finds its morphological and formal identity only after a participatory design process, which includes final users.

The best practices selected following the 4 criteria (involvement, flexibility, reversibility, and reshaping urban governance) are classified into 3 categories, according to the main paths of integration between building design and urban planning came out:

- temporary building on empty urban spaces waiting for regeneration;
- urban densification (rooftop architecture, infill, etc);
- open building approach.

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5 Also see the open source online platform collecting best practices on accommodation housing for immigrants and refugees http://architectureforrefugees.com/ (last view August 2019).

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Table 1. List of best practices analysed

STRATEGY	PROJECT	ARCHITECT	PLACE	YEAR	STATUS	FUNCTION	DURATION OF USE CYCLE	DURATION OF STAY
EMPORARY BUILDING UPON MUNICIPAL LAND WAITING FOR REGENERATION	Start block Riekerhaven	Local authority	Amsterdam, Netherlands	2016 – on going	built	Affordable rented homes for young people (refugees and young Dutch) in Amsterdam	10 years (second cycle of use)	5 years
	Blue Village	Architekten BDA Feldschnieders + Kisters	Bremen, Germany	2016	built	Houses for refugees	5 years (expected at least two cycles of use)	5 years
	Ladywell place	Roger Stirk Harbor and Partners	London – Lewisham borough, England	2016	built	Affordable house for the homeless and needy person	4 years (expected at least two cycles of use)	4 years
DENSIFICATION OF EXISTING NEIGHBORHOOD (ROOFTOP ARCHITECTURE, INFILL)	Starting with the roof	Satoshi Ohtaki	Finland	2015	concept	Temporary houses for refugees	10 years (expected two cycles of use)	10 years
	IMBY	Quatorze	Paris, France	2015	prototyped	Mobile houses for refugees or homeless	1 year (expected at least two cycles of use)	1 year
	Las Palmas parasite	Korteknie and Stuhlmacher	Rotterdam, Netherlands	2001	prototyped	Parasite Architecture-small house or small office	5 years (second cycle of use)	5 years
	Mobile architecture	Yona Friedman	Rome, Italy	2017	Concept	Temporary houses for refugee	6 years (expected at least two cycles of use)	6 years
OPEN BUILDING	Ökohaus district	Otto Frai	Berlin, Germany	1987	Built	Houses	Long term	1 year

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The selection of best practices started from the database[6] created during the 2016 Venice Architecture Biennale and focused on the relationship between architectonic design and social innovation, especially related to refugee's accommodation models and strategies. In 2017 the Urban Land Institute (ULI) published its report, collecting innovate solutions and strategies to deal with migration flow within cities. The two starting points were crucial for identifying the 4 criteria at the base of the best-practice selection process. The best practices have been selected during one year of research in this field, through literature and project reports published by authors and architecture studios. When identified each best practice was organised in a table (table 1) according to the strategy applied and according to the impact on the city: urban densify aim; urban regeneration aim; open building aim.

Table 1 summarizes the best practices analysed in the review, identifying for each one the location, the status, the function, the duration of use, the duration of stay. The last two characteristics refer to the life cycle of the architecture and its capacity to being re-use in some other ways (disassembly, moving and reassembly) and the time of permanency of one refugee family.

In the next sections, the best practices are analysed and compared with the aim of finding strengths, weaknesses and opportunities for improving. In the discussion, the best practices do not strictly follow the table 1. It was necessary to better compare solutions and strategies applied in each example, finding differences and grade of impact in terms of urban practices/policy and architecture innovation.

Urban and Architectural Opportunities for Innovative Inclusive Projects

The idea to create socially integrated and diversified cities underpinned the Startblock Riekerhaven project in Amsterdam[7]. Startblock is a new temporary borough that encourages the cohabitation and cultural exchange between new families of young immigrants and Dutch population and promotes the self-management of spaces and social activities. In this way the tenants get the opportunity to manage their own living environment. By combining the use of empty containers with disused space, Startblok has created an affordable option for two groups of young people who struggle to access housing in the city of Amsterdam[8].

At the 2016 Venice Architecture Biennale, by Alejandro Aravena, several countries and architects showed urban and architectural design solutions-oriented to address the increased migration. Following this request, some European countries announced international design competitions, calling architects to understand how cities can best accommodate migrants.

The Finland Pavilion presented a shortlist of projects from the contest 'From border to home'. Interesting was the proposal of Satoshi Ohtaki (Starting with the roof)[9] which designed roof structures for future buildings (or existing buildings) to be used as temporary accommodations for asylum seekers. These structures are not conceived as temporary but as 'potential extensions' of existing or at least planned structures, economically sustainable.

Another project, prototyped in Paris, intends to give to asylum seekers small houses in the courtyards of French homeowners. The idea is that refugees would work on the construction

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[6] Making heimat. Atlas of Refugee Housing. See also: http://www.makingheimat.de/en/refugee-housing-projects/database (last view August 2019)

[7] http://www.startblok.amsterdam/en/about-the-project/what-is-startblok/ (last view January 2018)

[8] https://use.metropolis.org/case-studies/startblok-riekerhaven#casestudydetail (last view August 2019)

[9] http://frombordertohome.fi/competition/start-with-a-roof/ (last view January 2018)

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of their own home –to develop their sense of investment in the local community while providing them with housing. Thus, refugees could develop their social and employment networks. As these small houses would be part of established neighbourhoods, refugees could start feeling part of the neighbourhood more quickly. The 'In My Backyard' (IMBY) initiative was born from an idea by Quatorze, an organization that deals with architecture and social justice. 'IMBY' intends to express the opposite feeling of NIMBY (an acronym for 'Not In My Backyard'), which refers to people who fight initiatives close to their place of abode, even though it may be useful to society[10]. Many people in France host refugees into their houses but having a small 'outbuilding' in the garden is a perfect solution. It also means that future residents will be quite independent. To the people who move into the new small houses will be assigned a social worker, through the ELAN program, which is managed by the Paris branch of SAMU Social. The idea is that people can stay in this micro-house for up to a year. The hope is that, after this period, they will have found a stable job and they will have become independent.

Analogously, the German exhibition investigated the concept of the 'Arrival City'. It represents the first contact between migrants and urban space. 'Arrival City' can overlay an existing neighbourhood, or it can become a new physical presence. A series of projects designed to accommodate refugees were shown in the German pavilion.

In Bremen, the Blue Village project focused on temporary houses built on communal ownership land and that would stay for five years. A Muslim mediator guided architects to meet the needs of the future Muslim community. The layout of the courtyard allows privacy and silence, creating a sequence of private, semi-private and public areas.

One of the main reasons for the success of this temporary village is the architectural choices that have been able to use standardized construction modules to create individualized housing configurations. These temporary architectures take advantage of a modular system, that allows to configure the structures and spaces easily and use the possibility of customizing the facade components. This greatly reduces the planning and construction costs and allows the buildings to be built quickly. The container modules do not have standard dimensions and, combined, they display a mix of coloured single-family houses, that give a sense of identity and characterization to the spaces. The 'Blue Village' has excellent connections with infrastructures and it is close to residential areas, schools, kindergartens and international universities. The concept of the modular courtyard house, with self-sufficient residential units, has been further developed in various projects that replace the container with more resistant wooden modules. Wooden building modules save resources and, compared to not wooden systems, they guarantee reversibility, allows to create temporary architectures, reducing construction costs. These projects demonstrate the possibilities offered by integrating architecture and urban planning in breaking down social boundaries.

A persistent housing shortage lead the German government to double its investments, and to finance and incentivise programmes, focused on building affordable houses produced with industrialized and modular building systems: the 'Vario apartment program' (Rettich, 2016). This program fosters an industrialized building approach inspired by the one at the base of the modernist movement for the social housing buildings, in the post-second world war.

In the research and experiments of the 30s in Germany, we recognize a similar approach to reach the same purpose. The exhibition 'Sun, Air, and housing for all', presented twenty-four prototypical extendable houses, small basic modules that can be added when necessary,

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[10] https://www.imby.fr/(last view August 2019)

designed by the most prominent exponents of the Neues Bauen movement. Similar research was developed in the early 30s, by key Italian industries in the building sector, leading to the production of innovative prototypes, defining construction techniques, and technologically advanced models. It would be interesting to understand how these solutions and strategies, may become more than prototypes and experimentations, defining new standards for the real estate market, reaching large-scale production.

Contrary to Germany (Bertelsmann Stiftung Report, 2005), Italy did not design any program to address housing problems, with a specific focus on technical solutions. The use of industrialized and modular building systems is supported only for temporary post-earthquake housing solutions. In this case, the regulations also foresee the building reversibility. The architects, learning this lesson from the past, can still play an active role in this crisis trying to give a typologically innovative design response. The building industry offers new powerful tools for design solutions sustainable from an economic and environmental point of view:

- modular and industrialized building solutions,
- new software for building management
- building materials with low environmental impact
- technological solutions that allow easy maintenance and high reversibility.

In the main European cities, newcomers can find accommodation only in the huge modernist residential buildings due to the lack of affordable houses in the rest of the city. The urban layout of these neighbourhoods does not favour the integration and needs a morphological and urban rethinking. At the same time, they show high potential, thanks to a large amount of empty land. An example of successful infill is the project at Altenhagener Weg estate in Hamburg by the architects Heidenreich & Springer (Werkstatt-Stadt, 2015). In the requalification project, architects tried to establish a dialogue with the modern pre-existing context, increasing the density and the number of housing with respectful actions that promoted social cohesion. This type of solution is more effective than the one adopted, as well, by the city of Hamburg, which has planned four new suburban settlements to accommodate 4000 refugees. The latter projects aim was not to build a new ghetto, however, it has not been possible finding empty urban areas, where locate refugee settlements in proximity to Germans, in order to ensure social mix. Thus, refugees accommodated in these new settlements at risk of being isolated from the rest of the German population and from fellow immigrants. These settlements could assume the connotation of 'planned ghettos' (Siebel, 2016). Berlin has announced a similar project, called 'Pioneer Housing', in which refugees can be the pioneers of the first settlements. The decision to build new settlements in the suburbs of the city needs a comparison with the past in order to avoid making the same mistakes. However, there is a too small number of low-cost houses or vacant areas in downtowns, suitable for buildings, especially when the housing market is tight like now.

The conflicts in searching for housing arise not only between the autochthonous population and refugees but also between job seekers and those who have jobs, between people with many children and singles, between young and old. Where living space is scarce, this becomes a means of social exclusion and conflicts. Despite this, the space to live in is a human right. Cities are integration machines, engines for work and places of knowledge. Allocation conflicts and housing shortages offer the opportunity to reinvent the city and revive its essence: density and difference, combined with spatial quality. Planning and design, opening spaces and perspectives: this is the goal of the day.

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Temporary housing and flexibility

This path leads from a country of origin to a provisional accommodation in another country: the 'Arrival city' (Saunders, 2010; Schmal et al, 2016), and finally to a definitive accommodation in another city or in another neighbourhood, maybe in another country as well. Thus, the Arrival cities may become a temporary habitat, also because many immigrants will not stay so long in the first arrival city. An interesting case-study to consider is a settlement in the London borough Lewisham that was designed by the architectural firm Roger Stirk Harbor and Partners (RSHP). This housing project is part of a wider political program that attempts to give an exemplary answer to the lack of temporary and low-cost accommodation in London.

Temporary accommodation problems are a symptom of the urban housing crisis. Historically London hosts three-quarters of those in temporary accommodations of the whole United Kingdom (RSA, 2016). Often some districts are forced to relocate the people entitled to have a house in other boroughs; so, it happens that vulnerable people are forced to leave their neighbourhood, and sometimes even London. This could have negative consequences for already vulnerable people, related to losing social ties and network, losing identity, losing the sense of stability, etc. In this context, Lewisham Ladywell's project stands out for its innovative approach. The buildings, composed by twenty-four self-contained modular units, were built on public land, waiting for further regeneration plan. The project took place on the site of an old leisure centre, which was waiting for a regeneration plan. The planning process is notoriously complicated and long. Thus, the local authority decided to put the area to use for temporary homes while longer-term projects are finalised. The building will remain on the site for four years, before being relocated to another vacant site, following the housing needs. It is calculated that the economic intervention costs will be repaid in eight years, including the costs of disassembling and relocation. The purpose of this project was specifically to build emergency homes, and despite achieving high-quality levels, it cut costs. The building system chosen for Ladywell buildings is similar to the Y-cube housing one, in Mitcham. 'The offsite construction method used means quick construction phase and less cost, and combined with being moveable, creates the potential to be used in temporary sites'[11].

The idea of taking advantage of vacant urban areas, for the period in which they are not used, is particularly effective because it does not prevent or oppose any future area development. There are many empty central areas in downtowns, waiting for regeneration plans and that are suitable for temporary projects. Supported by financial plans and facilitated by industrialized building technology those areas have great potential in terms of building refugee houses, from short to medium terms, letting refugees and immigrants achieve a more stable socioeconomic position. It is about exploring the potential existing in cities and defining mixed approaches for architectural and urban development.

In Italy, temporary homes are interesting under two points of view: first for giving accommodation to refugees and immigrants, and second for reacting to natural disaster emergencies, such as flooding and earthquakes. Towns in natural risk areas must identify[12] emergency areas suitable to build temporary housing in case of a natural disaster (Italian National Law n. 39, 2009). The areas need to be infrastructure-based to facilitate rescue operations and speed up the construction phase of temporary housing. The same duty could

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[11] Homeshell Projects Roger Stirk Harbour + Partners in 2016.
Retrieved from *https://www.rsh-p.com/projects/homeshell/* (last access December 2019).
[12] On 2th February are been defined, as *Direttiva del Presidente del Consiglio dei Ministri,* the "Guidelines for the identification of emergency shelter areas for prefabricated structures of civil protection.

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be linked to the need for temporary houses related to refugees and immigrants.

In Italy, the accommodation system for asylum seekers and refugees continues largely to be based on extraordinary measures. According to the latest estimates (Cesareo, 2018), at least 600,000 foreigners live illegally on the Italian territory, suffering from marginality (Cesareo, 2018). Especially in cities, where there are no appropriate accommodation solutions, migrants and refugees live in hidden places, in a state of growing fear and frustration, and with limited contacts with local services, including health care. Without social inclusion programs, they try to cross illegally the borders, or they contribute to unhealthy situations in big cities (e.g. Rome), living in 'ghettos' as occurring in the South (e.g. Puglia, Calabria), where the immigrant population grows in coincidence with the seasonal agricultural work (Baobab Experience Report, 2017). The lack of accommodation solutions forces refugees to occupy buildings. In the last three years, the number of refugees and asylum seekers has increased in illegally occupied public and private buildings (Cesareo, 2018). Compared to the planned accommodation system for asylum seekers and refugees, the occupation follows a model based on self-management and the self-recovery of vacant buildings.

Urban and architectural parasitism

International immigration reports help to show how increases in immigration to European cities are often associated with the 'architectural parasitism'. Immigrants, like the homeless, rejected by society, become unofficial city inhabitants. They recycle, exploit and inhabit spaces that the city refuses or ignores. Their presence and concentration in cities outline a map of waiting or empty areas, full of potential. This section presents a series of design examples of parasitic architectures to indicate a possible interpretation of the contemporary city as a palimpsest. The urban areas characterized by a condition of instability, become possible places for transformation and change, where 'parasitic' elements can become a tool to overwrite the existing city. The Dutch experiments on parasitic architectures, starting from 2001, become particularly interesting, especially those that imagine the parasite strategy as a possible cheap and sustainable answer to the problems of contemporary living, like the high cost of daily life, the high cost of accommodations, the segregation phenomena of such communities like immigrants with less economic income, which find accommodation outside the city and far from services, schools, workplaces, etc (World Economic Forum and pwc report, 2017). The approach used by these experiments changes the way the built city is seen and used, promoting temporary architecture and flexible urban planning. The term itself, 'p.a.r.a.s.i.t.e.', is the acronym of 'Prototypes for Advanced Ready-made Amphibious Small Scale Individual Temporary Ecological houses and boats' and consequently it refers to mobile and 'light houses' designed to colonize residual urban spaces. The characteristics of lightness, mobility and flexibility of these houses recall the industrial construction systems.

These experiments in the Netherlands were not limited to promoting architecture reuse or renovation, but rather in pursuing a model of urban stratification, as for example in the district Leidsche Rjin in Utrecht, where the 'Paradise Parasite' exhibition took place. In that occasion 'the parasites' colonized an awaiting area, creating an 'another city' with houses, spaces public, cinema, hotels, etc., architectures without foundations that showed a 'different' way of planning the territory (Melis, 2003).

The preconditions behind the architectural 'parasites' show the desire of testing an architecture without roots that establishes a temporary and non-invasive relationship with the ground, finding new meanings for the abandoned sites. The 'Las Palmas parasite' project tried to give an answer to the problem of the lack of space, reusing materials, with a flexible function

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aim. Korteknie and Stuhlmacher interpret the theme of the 'parasite' designing a building that can be moved over another place, using prefabricated and adaptable components for a customized assembly. An architecture designed to be reusable even before being temporary. The target for this strategy is someone who is looking for flexible and customizable architecture. The 'parasitic' approach of these architects supports a continuous transformation of the city[13].

This approach is not different from the one suggested by John Hejduk in his 'House for homeless' (Vidler, 1992). In 'The architecture uncanny' Vidler (1992) reinterprets Hejduk's mobile constructions, starting from the relationship with the city. 'The Hejduk's mobile construction, an emblematic site of a range of modern occupations worthy of Kafka, is designed for the staging of guerrilla attacks on privileged urban sites, from Vladivostok to Berlin. [...] The notions of *objet touvè* and ready-made are considered an application to the building, which, in its relations with the mind or with other buildings, is able to arouse associations and, we could say, to act as a vehicle for uncanny mechanisms' (Vidler, 1992, p. 208).

A scheme based on this principle is the one proposed by Yona Friedman at the MAXXI exhibition in 2017: Yona Friedman, Mobile Architecture, People's Architecture. 'Originally, Rome was a place for refugees as well as all major American cities […]. The cities of refugees can be absorbed in our large cities by creating spaces on unused lots […]: an example would be the flat roofs of the modern buildings above they could build temporary housing by scattering a new population into the city […] the immigrant has temporary accommodation; 6 years is a reasonable time to find a place within the society and while the owner of the property acquires the right to build an "extra plan". A real fact can turn into a unique social experience on a city scale, […] The solution is not the concentration camps for migrants, the real solution is to "seed" the city. This is exactly what is happening in many countries of the world where farmers abandon the countryside to settle in the city' (Friedman, 2017). The Italian government has allocated funds to support houses volumetric increase (in specific areas) with tax relief initiatives. If the financial provision of this instrument would have extended to district-level, urban densification could be encouraged, supporting the sustainable development of the city and reducing land use. The new buildings could occupy vacant areas or take up the existing buildings (using appropriate building systems).

The Friedman approach becomes a key element to work on social inclusion and integration. There are building systems or housing modules light enough to not require foundations, such as the Cyclopen house[14] (Ensamble studio). It uses ultra-light construction systems to avoid the pre-existing structure overload, with a core made of foam reinforced by steel profile. Another example is Loftcube (Werner Asslinger) specifically designed to be positioned on the roofs of modernist buildings[15].
On the international scene, there are more and more examples of rooftop architecture. The Viennese project 'Ray 1'[16], by architects Delugan and Mieissl, tries out a similar approach. The unused roof of a building from the 1960s was rented for 99 years for a 'temporary' and reversible house.

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[13] http://www.kortekniestuhlmacher.nl/en/projects/parasite-las-palmas (last view October 2019)

[14] https://www.ensamble.info/cyclopeanhouse (last view August 2019)

[15] https://inhabitat.com/prefab-friday-rooftop-prefabs/loftcube-werner-aisslinger-rooftop-prefabs/ (last view October 2019)

[16] https://www.dmaa.at/projekte/detail-page/house-ray1.html (last view October 2019)

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These 'anti-tabula rasa' proposals apply strategies that operate on the addition or integration of new volumes rather than demolition. They adopt low-cost materials and industrialized systems and components. They use standardized constructive solutions, compatible with the existing structures. They propose passive technologies (using the advantages coming from natural sources, like solar radiation, natural ventilation, natural light, drainage system which use gravity for moving water, etc.) and arrange for flexible functional areas that can easily suit, over time, the different inhabitants' lifestyles. The reversibility of living, or the flexible use of spaces and architectures, may be a strategy that increasingly responds to the contemporary process of urban and territorial adaptation. If the building transformations have shown its effectiveness with successful examples, the intervention on urban or territorial spaces is more complex, especially when it concerns immigration or emergency. In those cases, the strategy must face with undefined temporalities, and disadvantaged users (Anzalone, 2008).

The constant search for flexibility, both in the living space and in the urban space, is historically linked to the culture of nomadism, but at the same time, it also responds to the natural change in the functional cycle of architecture. The study and dissemination of modular components are increasingly fostering the culture of removable and temporary houses, and they promote the concept of transitory architecture and temporary settlements. It is important to study light modular elements, which are transportable, and easy to assemble, on one side, and new criteria of 'liveability of spaces', from the other side (Anzalone, 2008). These typologies are characterized by a short using life and habitability and they are interpreted in terms of 'hospitality'. On the international scene, design and technical solutions that introduce the requirement of variability in the architectural configurations, are increasingly wide spreading. These 'light and contained' architectures concretize the possibility of obtaining an extra space, even if temporary, and they can introduce complexity and wealth in the standardized spaces of the suburbs (Marini, 2008). Often these are micro-architectures conceived as open and flexible devices, based on 'dry' assembly of simple, light and modular components, which can produce adaptable and incremental spatial configurations, in order to accommodate changes in the use of space over time (Perriccioli, 2016). The need to develop accommodation models for refugees can become an opportunity to reinterpreting the architecture. The rooftop architecture or the parasite architecture can become an instrument for reinterpreting the city and answer to the lack of house for refugees or poor people.

Open building approach

The examples proposed so far concern temporary architectures. Disassembly the houses is not the only possibility. The open building approach makes the building structure and systems permanent, changing only the internal partitions when users change, according to their necessity or desire (Akcan, 2018). An example is the Ökohaus district in Berlin by Otto Frei[17]. Frei designed a community of eighteen families, pioneers of an innovative collective project that, starting from a common structure, allows future inhabitants to take an active role in designing their houses. The houses, in Frei's project idea, is a mobile and flexible element, able to be replaced or reconfigured itself when the inhabitants change. Fray's experimentation calls back the theories and design experiences of the Dutch architect Habraken. Habraken (1974), through his 'supports', images the architecture as an unfinished structure that finds its morphological and formal identity only after a participatory design process, which includes final users. The 'support' is configured as a structural grid, that holds the variable parts: the

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[17] http://www.the-offbeats.com/articles/building-together-the-okohaus-frei-otto-collective-improvisation/ (last view October 2019)

'infill' made up by industrial components. The architect, therefore, has to plan the process and to define an abacus of possible options that the user can choose. The variable parts are industrially produced. However, the logic of normalization of the building industry would lead to an excessive standardization of the architecture. But, the potential of mass customization in contemporary production allows today to overcome this defect (Akcan, 2018). In fact, the theoretical assumption at the base of mass customization in architecture is to guarantee a series of personalization possibilities among which the user can choose (Noguchi, 2009). The basic structure is permanent (the support), and the internal residences (the infill) are usable spaces for a given period.

This approach, although interesting and innovative, does not produce qualitative results. It remains at the theoretical phase and few practical experiments exist, with low social impact feedback. But it can be a good start point for revising housing design for refugees and migrants with a mid-term vision.

A considerable part of the costs in residential architecture is spent on the structure and connection to the water, electricity and sewer infrastructures. In the case of open building this investment is made only once, the internal partitions and finishes, the most perishable parts of the architecture, vary. The configuration of the interior spaces can thereforefollow the changing in people needs, and the changing in migrants flow dimension. The idea of progressive and incremental housing solutions, it is a good answer for a not clear and defined situation, like the migrants' flow is (100 Resilient city report, 2016). But it needs further research and more practical implementations for finding innovative ways of developing.

Conclusion

The city's capacity to embrace immigrants and create good conditions for more inclusive and booming society goes through the innovation of accommodation strategies. The paper aimed to investigate the opportunities given by innovative building designs and district renewal projects concerning accommodation models for migrants. We argue that the urban and architectonic solutions analysed and compared in the paper can increase the quality of migrant strategies and policies within European cities, opening new paths of improving inclusiveness, integration and healthy living solutions, with mid-term and long-term ambition, avoiding the emergency state of action. All best practices discussed here have a potential high impact on the city, both under a physical and governance point of view. They are interesting for innovating urban spatial planning and architecture design.

For the physical point of view, the use of industrialized building systems is fundamental. The reasons are intuitive: lower costs, speed in building phase, re-usability, but also the possibility to control the environmental impact and the performance of each component. The availability of digital design tools, new industrial production techniques and technologies also guarantee high production efficiency. The use of modular and industrialized systems to build temporary houses becomes a way to promote a more flexible and customizable way to live. Most of the industrialized building systems allow a certain level of customization.

For a governance point of view, immigrants are often not involved in city planning and construction processes. By imposing the mandatory residences to asylum seekers there is the risk to hinder the integration process, so it is important to activate inclusion and participation strategies. As UNHCR assert in its *Emergency handbook* (2015a), all inhabitants must be involved in the construction of their own house, with appropriate techniques and organizational support. This strategy ensures that dwellings meet their specific users' needs and generate a

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sense of ownership, as well as self-reliance.

In urban areas, self-building is probably not the easiest solution, but it is necessary to incentivize an inclusive design approach to promote the participation and involvement of future inhabitants in the configuration of their living space. The solution could be to design flexible homes that allow levels of customization to end-users. Houses that use light and flexible building systems allows end-users to change and adapt the space according to their own needs. Customization thus becomes a form of participation and incentive it as well. Among the strategies identified, the one that most moves in this direction is the open building approach.

Future research

Starting from the strategies above it would be interesting, for us, to study and compare a series of constructive systems in the international scene. We selected some industrial construction systems, depending on their technological innovation characteristics: lightness, flexibility, transformability, transferability. All the building systems, selected, have a level of customization. The best ways to pursue it is to make each component modular. By choosing which components can be customized, is possible to check the number of possible combinations. The analysis of those construction systems starts from a redesign phase (using BIM software), that allows us to define all components and materials used, in order to verify the system degree of customization and to understand which components can be changed, in accordance with user's needs.

Starting from a given industrial construction system selected for the comparison, the personalization of the building could take place at programmatic and design level considering the users, the number of future inhabitants and the context. The construction system must be reversible, taking into account the deconstruction phase. A system designed in this way can be disassembled easily, without damaging the components, in order to reuse it. In this way, the inhabitants will be able to customize the residences in accordance with their needs, taking advantage of potentially flexible spaces.

Conflicts of Interest

The authors declare no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

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