

Introducing Building-Typology in the Decision-Making Process: a Strategy of Adaptive Reuse for Refugees in Turin

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Keywords: Immigration, vacant buildings, building-typology, decision-making, regeneration.

Abstract: This study puts the architect's technical knowledge within a great horizon, that of the 21st-century migrant crisis. Today, in the local Turinese dimension there are two defined "crisis" conditions. On the one hand, the continuous and growing flow of people coming from countries of international conflict creates a mass of "new inhabitants", with housing and welfare needs. On the other hand, the economic crisis and the change in production systems have left the city running real "urban voids".

The purpose is to detect the optimum typology of vacant building located in Turin which can best accommodate the refugees. By typological understanding, the study will explore the finest strategy to adopt, on the one hand for the newcomers, without orienting them in random structures, on the other hand for the Turin territory, through a holistic approach of regeneration and revitalization of discontinuous areas.

To be able to accomplish the purpose, the study introduces the functional and formal building-typology in decision-making through a scientific method. This method, based on a multi-criteria mathematical model, was extracted from an article written by scholars from the University of Lisbon. Through the results of the study, it is clear that not all the vacant buildings are favorable for the maximization of the inclusion of migrants in the urban context. Study of building type becomes important in order to meet the common requirements of immigrants. Certain typologies are more adequate than others to host refugees and to catalyze a regeneration process of the city.

1. Introduction

This research strives to enhance the study of immigration and its implications at an urban and architectural level within the city. Today, we are facing the biggest refugee crisis and migration since the Second World War. Over the past year, more than 60 million people have been forced to flee their homes. Desperate conditions have forced the whole world to move. States must significantly increase the number of refugee resettlement places and divide equally in this effort' (Ban Ki-moon, 2016). The largest migration is taking place now, between 2007 and 2050 the cities will absorb 3.1 billion people. The unprecedented number of migrants and refugees on the move has put new pressure on the cities that are mobilizing to respond to the increase in popu-

lation. Europe has 27 million migrants out of 490 million inhabitants. Today the phenomenon is amplified and made inevitable by the ongoing humanitarian crises: a global emergency, due to the conflicts that upset the Middle East, Asia and Africa. A phenomenon that according to the International Organization for Migration will not stop before 2050, when the world population, today of almost 8 billion, will settle on 9-10 billion people. “The whole issue of migration allows us to rethink how cities should be (what they should look like). Never before has there been such a time when there is such a large-scale demand for how we build our cities and the whole world. For architects and urban planners, I think it’s one of the greatest moments to get busy” (Kimmelman, 2016).

The city of Turin faces the arrival of immigrants every day, however the existing reception and assistance system is a set of isolated spheres, which are unable to communicate with each other. From the interview with the experts about the real functioning of the management of the immigrant and refugee issue in Turin, it is clear that there are lacks and inefficiencies regarding the present reception and accommodation facilities in legal and spatial level which give rise to rough urban conflicts. The existing accommodation centers are not enough to respond neither quantitatively nor qualitatively the demand of incoming requests. Moreover, the long bureaucracy slows down the overall procedure and the consequence is that immigrants are sent casually where there are places available, without orienting them in structures appropriate to each condition to that single case, to that family with specific and different needs. According to the analysis of the Italian reception system, three main issues emerge which require primary intervention for the improvement of the system. These can be listed as; the need to increase available places for accommodation, the need of a better structuring of the choice of living spaces for the new inhabitant, the need to differentiate actual spatial and social necessity by case-by-case assessment. The need therefore arises to point out the weaknesses of the current system, to highlight the profitable aspects of the existing network. It is within this chaotic and unmanageable landscape that, in the academic sphere, architects and urban planners question how, today, our cities can intertwine and absorb these great flows of people, without falling into ghettoizing and bankruptcy solutions acting on architectural and urban scale.

In the mean time, in this day and age, the city of Turin occurs as a vigorous post-industrial city. Starting from the 1970s, the “Fiat City” with its industrial foundations began to collapse and the city experienced the transition from Fordist to the post-Fordist model. The economic crisis and the change in production systems crisis hit the entire city leading to the total abandonment of major plants, leaving real urban voids in the urban fabric (Governa *et al.*, 2009). In this context, Turin is facing the challenge in defining the future of these urban voids on the way of becoming to a vibrant 21st-century city. Regeneration and reuse of the abandoned areas along with the building on it, is becoming a relevant strategy for building the future development of the city. In particular, ‘adaptive re-use’, the reuse of existing physical asset with a new purpose has become a significant and effective strategy for building sustainable communities.

In the light of the facts, this research aims at solving several aspects simultaneously. On the one hand it proposes the inclusion in the local context of hospitality centers that look at the different situations of the new inhabitants, at that individual case, at that family with specific needs, without orienting them in random structures but planning their placement in the urban space. On the other hand, the idea is to start a process of regeneration, recovery and revitalization of abandoned areas in the urban fabric. Innovation lies in connecting the two aspects, cities and new inhabitants, and in developing the capacity to make decisions that make full use of the opportunities existing in the territory and create additional value for the city itself. Nevertheless, where should start such initiative is a fundamental decision

to make in order to avoid plausible urban conflicts in advance. In this regard, this study attempts to experiment a new perspective with the intent of proposing a practical solution for the crisis. Hence it aspires to assist decision makers for overcoming the crisis through a well framed strategy. The purpose is to detect the optimum typology of vacant building located in Turin which can best accommodate the refugees. This study will classify building typologies in the city of Turin by identifying the similarities in spatial properties along with geographical characters of city's abandoned assets. By typological understanding, the study will explore the finest strategy to adopt, on the one hand for the newcomers, without orienting them in random structures, on the other hand for the Turin territory, through a holistic approach of regeneration and revitalization of discontinuous areas. To be able to accomplish the purpose, the study introduces the functional and formal building-typology in decision-making through a scientific method.

2. Methodology

The scientific approach described here is that of multi-criteria analysis, a scientific method that provides concrete support to the decision maker in the presence of multiple, often conflicting, objectives to be considered simultaneously. The advantage in the whole process is the achievement of a result that is consistent with multiple objectives and values, despite the complexity (Ferretti, 2012). For this study, in specific, the applied methodology was carried out starting from the article Costa AS, Figueira JR, Borbinha J., "A Multiple Criteria Nominal Classification Method Based on the Concepts of Similarity and Dissimilarity", which developed with the support of professors Lami IM (Polytechnic University of Turin), Greco S. (University of Catania), Figueira JR, Borbinha J. (University of Lisbon) and of Dr. Costa AS (University of Lisbon) who, in collaboration with the authors of the research have taken care of the calculation aspects of the method. It is noted that the integration of this method with an urban problem stands as an innovative approach since hitherto it has not been put in practice in the field of urban policy.

This method, at first, requires selection, identification and definition of three aspects of the decision problem which are respectively actions, categories and criterions:

1. The actions are the "decision objects", in the present case, the 22 dismissed buildings present in the city of Turin characterized by different typological and geographical features.
2. The categories, "conceived to receive actions", are the 3 types of immigrants defined through an analysis of bureaucratic documents and semi-structured interviews with relevant actors.
3. The criterions, are established starting from the spatial and social needs of immigrants for the overall objective. They serve as an intermediary to define the performance of the actions in correspondence to the categories.

Through the interaction of these three aspects the goal is to find which building or buildings among all the listed actions can host in a more appropriate way each group of immigrants. Such tool in the decision-making process assists in taking into account several aspects simultaneously, nevertheless accommodativeness of a building type at first, with intent to adopt the most efficient course of action for a plausible intervention. The aim, in addition, is to contribute to the possible evolution of a building typology in the course of its transformation during a crisis situation.

2.1. *Selection of the actions*

The city of Turin hosts a wealthy number of buildings and abandoned areas, artifacts that are in a state of neglect and underuse, of public and private property. These buildings which are mainly industrial buildings, military barracks and hospitals, can potentially cover the needs of residences and services for immigrants which today grows as a serious problem. Through the recovery, reuse and reactivation of Turin's abandoned assets (disused or under used public, private, urban buildings), it is proposed to make them available to the territorial communities, generating a positive social impact. The selection of the dismissed buildings started from the analysis of the Urban Transformation Areas of the currently in force Master plan of the city of Turin (Aree Urbane di Trasformazione del PRG) in an attempt to understand the areas that are awaiting to accommodate series of interventions. In this context, twenty-two buildings were selected through a judgmental operation by the authors which is done through series actions: analyses of the Urban Transformation Areas defined by the Turin's present Master plan, morphological reading of the building and its context, building's ability to offer adequate space for the type of intervention proposed, its integration within the existing urban fabric of the city of Turin. All the selected buildings possess different spatial characteristics being a model of a dominant type and they are inserted in distinct urban fabrics of the city, nevertheless, they all satisfy the preconditions determined for the selection. The selected buildings are followings: Ex fonderia e smalterie ballada, Ex magazzino di artiglieria e difesa chimica, Ex casa di cura Bernini, Ex magazzino militare, Magazzino del genio militare, Caserma dogali poi alessandro la Marmora, Ex diatto automobili ed ex snia, Ex stabilimento metzger poi dreher, Ex birrificio metzger, Astanteria martini poi ospedale einaudi, Officine grandi motori, Ex fonderie nebiolo torino, Edificio in via bologna, Edificio in lungo dora voghera, Ex osi – ghia, Ex stabilimento venchi poi opificio militare, Caserma amione ex stabilimento scat, Cascina fossata, Ex ospedale maria Adelaide, Ex area buon pastore, Ex clinica san paolo, Ogr.

2.2. *Identification of the categories*

Defining immigration as a structured and repetitive process allows us to consider the “collective on the move” in an objective way. To outline this collective, we start from the definition of its rights. The formal documents define rights labeling the immigrant with a status, accordingly the needs derives from limitation leaded by the status. By retracing the journey of an immigrant in Italy, the necessary bureaucratic steps that allow him to be equated with an Italian citizen becomes very clear. Before the recognition of the status, an immigrant goes through a period of ‘in between’ time, in which his rights as a citizen are not guaranteed and the use of space, access to housing and work are unstable. Through a study of a real case, a simulation can be built, a story of what happened to a small collective and what will predictably happen tomorrow to other subjects. Therefore, the identification of statuses is established through an analysis of a real case of a Syrian family, composed of five members, gathered in Italy over three years. Eventually the number of migrants is fitted into three categories of new inhabitants in three different statuses. Each status differs by means of rights that they have access within the city. As a consequence, their needs during the ‘in between’ time vary one from another. The three identified statuses are as following:

- The asylum seeker: is the individual immigrant who intends to present or who has already completed the request for international protection at the Immigration Office after his

- arrival in the city. From the moment the request is presented, up to the granting of an interview with the Territorial Commission, which will issue the judgment, a period of time ranging from 2 months to 12 months may pass. The asylum seeker is denied the possibility of traveling and the possibility of requesting family reunification. At a spatial level it is important to orient the applicant in a well-integrated collective structure within the city center, close to the Police Headquarters, Prefecture, where he must go often, and give him an easy access to the of public transport net.
- The refugee: according to the Geneva Refugee Convention (UNHCR, 2011), enjoys the same rights guaranteed to Italian citizens in matters of religious freedom, elementary education, access to the courts and legal assistance etc. The refugee can apply for family reunification for the spouse, minor children, older children and parents. This legal status is valid for 5 years, after which the refugee may obtain Italian citizenship. Those who obtain refugee status are surely have right to stay in the city for at least five years. The spatial need of getting out of a collective dimension and enter a structure where more individuality, autonomy and privacy can be guaranteed arises. The buildings used for this kind of spatial requirement are conceived with single or double rooms with the supply of some common services.
 - The family reunification member: is considered as refugee's family member who arrives in Italy through the reunification procedure. This legal status is valid for minimum 2 years and holds the same rights of a refugee status. The reunified member strictly linked to the refugee who applies for reunification. In fact, involvement of this status is brings along the consideration of needs for a family and no longer a single person. The needs of a family unit are different from those of the asylum seeker and the refugee. At a spatial level, it is of primary importance to be able to establish their self permanently in the city having a possibility to live in their own apartment and maintaining the guarantee of assistance for training and integration into the world of work.

2.3. Definition of the criterions

The criteria constitute the operational translation of the objectives which make them measurable in order to able to compare the actions. In this specific application, the multiple criteria through which the choice must be made are strictly linked on the one hand, to the objective of integrating immigrants into the existing network of associations in the territory, and on the other to the objective of including them in the more appropriate structure at the formal typological level. In total, twelve criterions have been defined among which they can be divided into two main clusters depending on the nature of criterions. The first cluster is consisting of four criterions with spatial-typological nature and they express the need to take into account the correspondence of a dominant building type and the current physical state of the building. The second cluster is consisting of eight criterions with geographical nature and they express the need to take into account the geo-location of buildings with respect the network of services already existing in the urban fabric of Turin. These criteria were then minimized or maximized according to the needs of immigrants with different status and the criteria importance was assessed by the implementation of the method of cards (Figueira and Roy, 2002). The defined criterions are followings: Correspondence to the building typology A, Correspondence to the building typology B, Correspondence to the building typology C, Level of degradation, Distance from Police Headquarters, Distance from Prefecture, Public transportation, Distance from bureaucratic service, Distance from psychology service, Dis-

tance from education service, Distance from integration service, Distance from job placement service.

3. Spatial-Typological Criteria

3.1. *Identification of Building Types*

Typology is related to the classification of all sorts of objects depending on their similarity in the properties such as; form, character, trend, size, and hierarchy (Frank and Schneekloth, 1994). The understanding of type of architecture/building is an important part of this work. A building type more specifically is an abstract delineation of a group of buildings that possess similar formal properties. Any specific building can be traced back to the type since it stands as an exemplar of a cluster. The formal properties of a building type are intrinsically formed as a response to a need, an accomplished solution to a design problem, under certain conditions and period and accordingly are uniform in large geographic areas (Scheer, 2017). The relation between single element intended as building typology with the overall city is strong since the type of architecture/building are seen as the generators of the entire city (Muratori, 1959). Typological thinking, hence, become an instrument which not only enable the in-depth understanding of basic characters but supports reflections and perspectives about transformations. At this point of the research, first, three main ideal building types which could host best the immigrant groups are constructed. Later, each existing dismissed building in the city of Turin is associated to (at least one, maximum three) previously constructed ideal building types through the analysis of similarities in spatial properties determined by buildings former function. Three main ideal types are constructed from a study of recent successful case studies in European level that attempt to host and fulfill the needs of refugees in the best way. They are all housing projects based on reconversion and adaptive use coming from Germany. Finally, three ideal types are drawn after an in-depth study of floor plans and sections of the following projects: Refugee Accommodation Project in Munich (Type A), Light-Frame Construction Hall Emergency Program Project in Munich (Type B) and Permanent Housing for Refugees Project in Wedel (Type C).

Type A

This type is based on the plan of 'Refugee Accommodation Project' in Munich. This building typology can accommodate a large number of people in a collective dimension. The overall spaces are characterized by a low level of privacy. There are no individual rooms and the structure offers dormitories for 5-10 people for the sleeping area and common areas for other services such as: bathrooms, canteen, recreation rooms, classrooms for educational activities. The spaces are mainly flexible and open and the different areas are separated through light partitions. Ex-industrial and military buildings are suitably associated to this building typology.

Type B

This type is based on the plan of 'Light-Frame Construction Hall Emergency Program Project' in Munich. This building typology can accommodate a large number of people and is a mixed solution composed of collective and private spaces that is characterized by a high level of privacy. The structure offers single or double bedrooms, meanwhile, the living area is provided

in a shared dimension. Common services continue to be the canteen and recreation areas, in addition to a series of shared services such as study rooms, kitchens and laundries. Internal distribution has little possibility of modification. Ex-hospitals and military barracks are suitably associated to this building typology. Its use is mainly foreseen for the second phase of permanence, a transition phase, in the city of Turin, defined as resilience placement. The stay can vary from 6 months to 2 years depending on the level of integration of the immigrant.

Type C

This type is based on the project of 'Permanent Housing for Refugees Project' in Wedel. This building typology can accommodate a small number of people which needs a high level of privacy. The structure offers private apartments as living spaces with a total privacy. At the same time, common areas such as recreational areas and meeting rooms for the apartments continue to be shared, as well as laundry services, depending on the current needs. The interior configuration of the single apartments may vary according to the sort and number of family members. Assistance buildings, institutional building complexes, farmhouses and again some ex-industrial buildings are suitably associated to this building typology.

3.2. Geographical Criteria

Building typology-based criteria attempt to satisfy the fundamental spatial needs of the specified group of users, nevertheless they are inadequate alone. For a better integration of new comers into existing ecosystem, social and economic needs are necessary to be satisfied. This exigency requires a reflection on larger urban scale and an understanding of the pattern of what already exist in the city. Therefore, previous set of criteria are accompanied by location based geographical criteria since the location of a structure within the existing city network is considered as a determinant aspect for the social and economic efficiency of the intervention. Buildings are inserted in the existing urban fabric and their position in the urban scale and the relation with the city in which they are embedded have a significant contribution in their evolving meaning and value. In the light of these considerations, eight criteria have been identified. They represent the accessibility in terms of distance to certain fundamental key transit points and services, within the city of Turin, frequented from the arrival to the settlement of the immigrants. For each criteria, the specific location or locations of the existing service have been mapped and the distance between them with each dismissed building is calculated quantitatively through a metric scale ranging from 250m to 1500m.

Distance from Immigration Office

The Immigration Office is an operational body where the main bureaucratic procedures are performed: the request for international protection, the residence permit and the request to be included in a reception system. It is a crucial point in the process of obtaining refugee status, a place where the asylum seeker must go several times to complete and receive the necessary documentation.

Distance from the Prefecture

The prefecture is an office where an immigrant must go to obtain documents such as identity cards, social security numbers, health cards and citizenship for refugees.

Accessibility to public transportation network

The presence of a good connection with the public transport network is preferable for an immigrant to guarantee his mobility in the city, considering that he would not have the guarantee of being able to use a personal car. Refugees and family members with the recognized status are better suited to using the public transport network since they have lived in the city longer than newcomers and their mobility in the city is more articulated. This criterion describes each building in relation to the Turin public transport network, which includes buses and the underground.

Distance from bureaucratic procedures assistance

Assistance with bureaucratic procedures is designed to help understand the phases of the asylum request and the necessary documents. This service is offered by associations present in the city as well as in the information office of the Police Headquarters. This service is essential in the initial phase from the arrival in the city for the migrant who does not know the functioning of the Italian reception system.

Distance from psychological assistance

The psychological assistance has the function of helping the immigrants to overcome some traumas that they may have suffered in abandoning their country of origin and in making a trip often full of unexpected events and difficulties. Many associations offer these services, including specific services for minors or women, of a welfare and medical nature. Also this service acquires a lot of importance in the first phase of arrival in the city.

Distance from educational and training activities

The educational and training services are specifically defined to guarantee immigrants the learning of some necessary skills for their integration into the new arrival society. It is a service offered by numerous associations in the city that offer Italian language courses, extra-curricular activities, civil education and laboratories of various kinds. It is a service that requires long-term attendance, suitable for all types of status based on needs.

Distance from integration services

The integration service is guaranteed to offer immigrants assistance in the process of integration and social inclusion. These activities can be in the form of laboratories, cultural activities, recreational events or meetings of various kinds. This service acquires greater importance in the second phase of reception.

Distance from job placement assistance

The job placement service guarantees an immigrant support in the search for a stable job and in its insertion in the working world. This service is guaranteed by some associations that operate in the Turin area with activities such as internships, orientation programs and construction of a professional profile. This service must be taken into particular consideration for those who

have obtained refugee status and have the right to work and establish themselves in the world of work.

4. Analysis/Results

After the conclusion of selection of the actions, identification of the categories and definition of the criteria, following steps are pursued for the application of the multi-criteria analysis. First, each action (buildings) is assigned a value that defines its 'performance' based on typological and geographical attributes. Value is given by making use of the most appropriate (quantitative or qualitative) scale. Next, at least one best possible condition (reference action) is assumed for each category (new inhabitant) compared to the needs of the new inhabitant. Finally, after the construction of the mathematical functions with the elements and values described above following results are obtained.

Two buildings are corresponding for all the three type of users, four of them are corresponding to two type of users, ten of them are corresponding to only one type of user, and finally six building were not assigned at all. The overall result confirms that; Typology A is intended for the first reception phase, called "recovery placement", which offers a bed and services for a short period of time, as an emergency solution that can vary from a period of 1 to 6 months depending on the condition of the asylum seeker. The potential user of this type of space is in fact the asylum seeker, who has just arrived in the city, who needs a place to stay temporarily, in the waiting period for the recognition of the status, in which he does not have the possibility or the right to work and participate to city life. Typology B is corresponding to the users those who have already obtained refugee status and a residence permit for asylum; refugees with the status recognized pending acceptance of the reunion of a family member; asylum seekers who have exceeded 6 months of initial waiting to have the recognized status and need a greater level of privacy; asylum seekers who come with the family. Typology C is foreseeing users which are families with the residence permit for asylum and the members reunited with family reunification.

Starting from the obtained results two main assessments are made along with the detection of the best buildings to intervene. First, two buildings which have been detected suitable for all the three type of users are Ex Hospital of Maria Adelaide and Ex Warehouse of Artillery and Chemical Defense. First one belongs to only typology B cluster and latter to both typologies A and B. Accordingly, typology B seems to satisfy better the needs of different kind of users being offering a layout that stand as a compromise with flexible and mix-use spaces. Secondly, some buildings that belongs to all the typology clusters (A,B,C) results as 'not assigned' for any kind of user. Therefore, it is not granted that a building which can correspond to any kind of typology can necessarily respond the need of users. In conclusion, overall results illustrate that the building typology is significant and has a decisive influence in the matching, yet, it is not exclusive and it gain ground if accompanied by the geographical feature, thus, the position in the urban fabric.

5. Discussion/Conclusion

The city of Turin has been chosen as theoretical model to experiment a tool that can be used and redefined in many cities that are nowadays facing migration flows, trying to respond to the

increasing accommodation request. In the end, the research shows that an urban issue has to be faced by a typological point of view in order to intervene through a unitary management but differentiated case by case. The strengths of the strategy decision-making lie in having categorized the new inhabitants and in having made the choice of living spaces less casual. Through the results of the study, it is clear that not all the vacant buildings are favorable for the maximization of the inclusion of migrants in the urban context. Study of building type becomes important in order to meet the common requirements of immigrants. Certain typologies are more adequate than others to host refugees and to catalyze a regeneration process of the city.

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