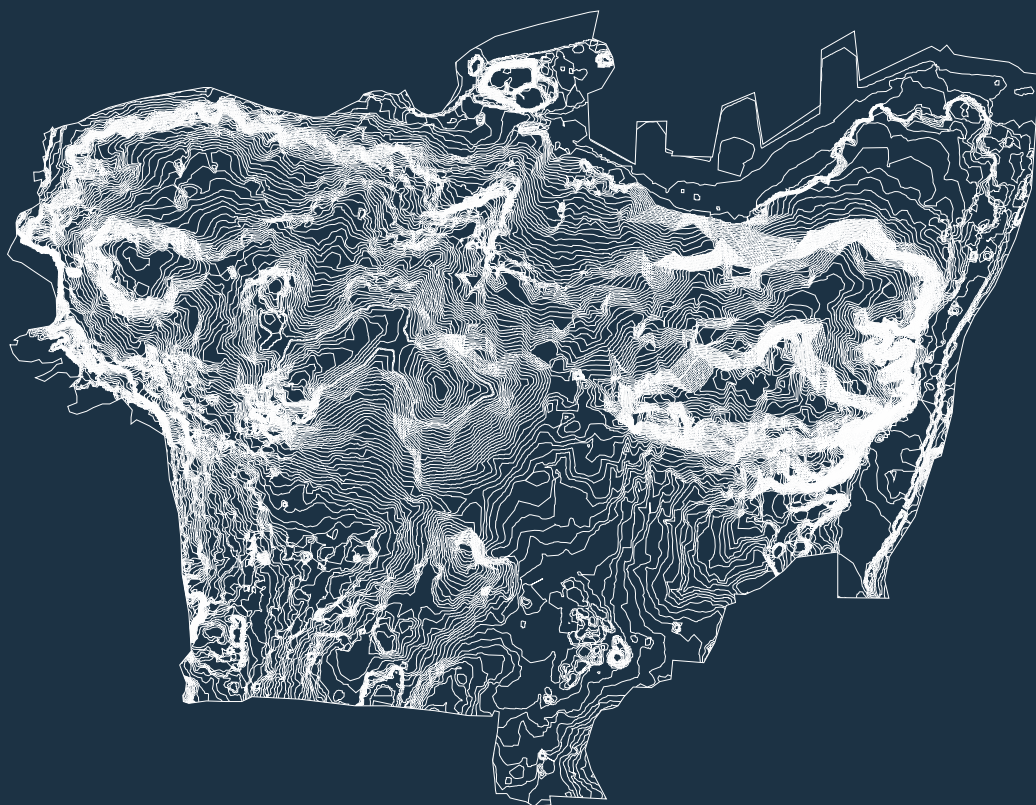




RESEARCH PLAN

Beirut Studio
The Cornucobay



complex studio



complex projects

2021

COMPLEX PROJECTS

Beirut studio

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EDUCATION

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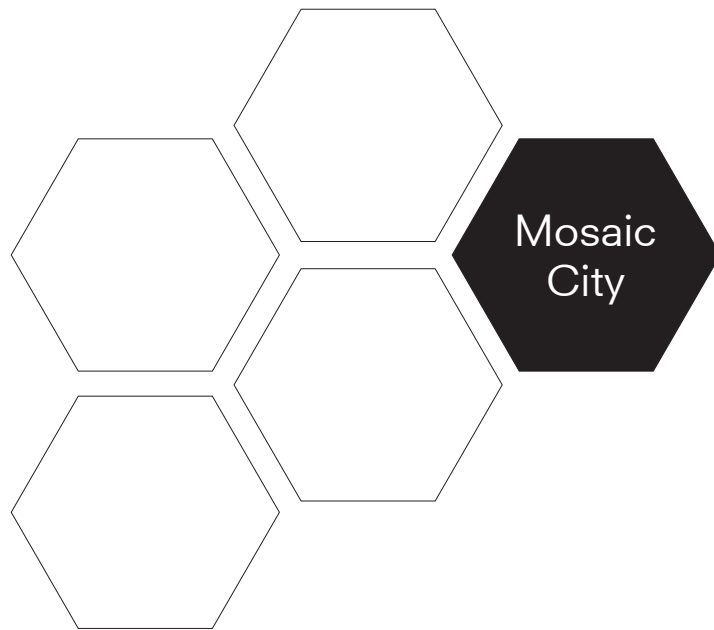


Figure 6.1 Mosaic city diagram by author

6 Education

6.1 Introduction

A mosaic society, a mosaic education

Beirut, the capital of Lebanon, has hosted many empires and civilizations which established a layered and diverse cultural heritage. A key element of Lebanon's identity today is religious and ethnic diversity (Tannous, 1997). By the ages, the politicisation of cultural diversity has created a space of fragmentation, conflict, and complex – physical and non-physical – border conditions. This societal fragmentation was mainly introduced through educational institutions. The majority of these schools have “lend themselves to sectarian biases and rivalry” (Tannous, 1997), perpetuating the socioeconomic disparities. To respond to the future global and local demands, and to facilitate the Lebanese technology advancement, there is an opportunity to rethink urban learning

spaces. As the historically intellectual centre of the Middle East, there is an opportunity for Beirut to be the pioneer of modernizing its school typology, and regain its intellectual reputation.

In this thesis I further clarify the relevance of education as urban activity in Beirut through the observations of its history and how this lead to its current state. This introduction is divided into three sub-chapters.

In the first chapter, *Education and the society*, I explain the relationship between education and society through studies and literatures done by researchers and philosophers. Then I will explain the education-society relationship in Beirut through the lens of the socializing effect. In the second chapter, *Education and the city*, I will present how this education-society relationship is manifested in physical space on an urban scale. The observations of the previous two chapters will then be used as a lens to observe the architectural scale of

education in the last chapter, *Education and the building*.

Education and the society

Education and society are inseparable notions, meaning that the one influences the other, and vice versa. Both these concepts are in constant change. Paulo Freire, one of the great education philosophers, calls this historicity, which means that we are historical beings since we are always in the process of becoming. This indicates the complexity of reality and truth; rather than it being a static phenomenon, it is dynamic (Freire, 2013). Therefore, education must be democratic which facilitates space for (contradictory) dialogues.

In a conventional manner, education is shaped by society. As Freire says, “it’s not systemic education which somehow moulds society, but, on the contrary, society, which according to its particular structure, shapes education in relation to the ends and interests of those who control power in that

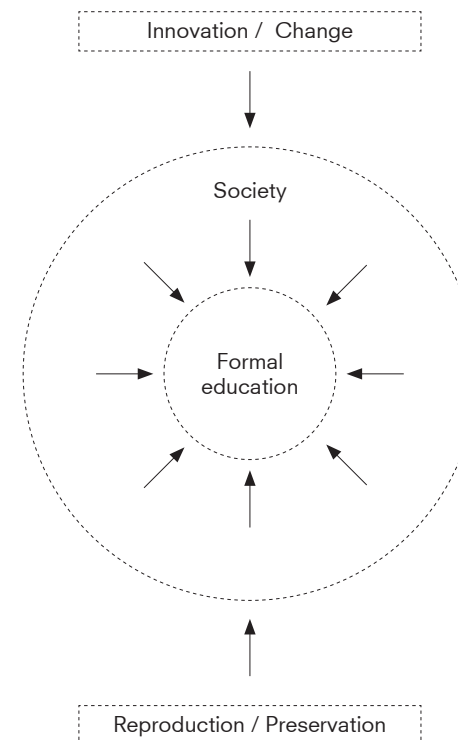
society” (Freire, 1970). Through education, societies are able to preserve and reproduce that same society. This is realized through the production of effective members of society, both in social and economic terms, which in return results in economic growth. This is achieved not only by building human capital, but also through the socializing effect. The term socializing effect stands for the shrinking of social distances between people. This fosters relationship and trust and lowers transactional costs, which ensues economic benefits. Meaning that educational institutions have the ability to build social cohesion (Gradstein & Justman, 2002).

For Beirut, the socializing effect is observable through the various sub-communities living in the city. Rather than education operating as a social glue on national level, it operates on community level. Accordingly resulting in several societal ecosystems, fragmenting the population. This diversity of educational institutions stems from the extensive Lebanese history wherein its openness to foreign communities is evident. The 1926 Constitution, article 10 emphasizes the freedom of private education providers and the protection of the various communities through the possibilities of establishing their own schools. This freedom maintained the fragmented society, further polarizing and isolating educational institutions. According to Abdul-Hamid & Yassine (2020), “the emphasis reflected the strong presence of the private sector led by religious institutions and foreign missionaries before Lebanon’s independence. It also protected the private sector and allowed its development and expansion” (p.39).

In the book Political Economy of Education in Lebanon, the events of societal and educational changes, in the past hundred years, is categorized into six periods. The Ottoman period, the French Mandate, post-independence, post-civil war, contemporary period and the Syrian refugee crisis.

In the Ottoman period, the purpose of

Figure 6.2 Education diagram by author



education was Islamic teaching and the advancement of technology to preserve and gain political superiority (Khuluq, 2005). During that same period, Lebanon witnessed a rise in western Christian missionary schools being established in the country (Gul, 2015).

At the beginning of the French mandate, the Armenians that found refuge in Lebanon, also, over the years, established their own communities with Armenian churches and schools. Within that same period, in 1926 the Constitution allows freedom for private education service providers (Abdul-Hamid & Yassine, 2020). Which resulted in an increase of confessional schools, especially French Catholic.

In accordance with the increasing number of Christian missions, the progressive Islamic institution Makassed, provided alternative education to these Christian missions (Tell, Johanson, Wang, Ali, Mandell, and Ostrander, 2019). This added new types of schools in Beirut.

After independence public education and establishing national universities was essential for the dissemination of anti-colonial ideology. During this time the first national universities were established, which was a great pride for the nation (Sbaiti, 2008).

However, due to tension among the different communities and the lack of nationalism, the country erupted in a civil war. After the civil war, in an attempt to create social cohesion amongst the communities the focus (in the 1994 education reform) was to achieve social oneness through civic and history education. Until now, there is still no national history education due to the still existing disagreements among sects within the responsible committee. Educational institutions still have a lot of freedom in the way they teach history (Abdul-Hamid & Yassine, 2020).

A long history of educational development that resulted in various types of schools.

Public and private. And within the private: secular or non-denominational nationalist schools; schools subsumed under the umbrella of a religio-political community; and schools that promoted French cultural authority but not run by Catholic nuns and priests. Today this results in 527 confessional schools in Lebanon (Centre for Education Research and Development, 2006).

Each of the communities, having their own schools, decides the content of education, resulting in polarized educational institutions and thus a polarized society. However, according to Gradstein and Justman (2002), unified education – which enhances social cohesion – stimulates economic growth. In an environment of cultural complexity like Beirut's, this is a challenge. This space of complex diversity, however, could potentially become an intense and effective network of diverse knowledge exchange. Although social cohesion is more difficult to achieve with multiculturalism, it can become more beneficial as opposed to homogenous societies. Meaning that there is a large potential for a pluralistic city like Beirut to benefit from the advantages of a diverse society in generating knowledge. With globalisation and urbanisation, multiculturalism becomes a general norm

and more urban areas will host this potential of the socializing effect, which makes this research globally relevant, not just for Beirut.

Education and the city

Both the perception and use of urban space in Beirut is dependent on the subject's socio-economic group. The mindscape of Beirutian urban dwellers presents compelling dissimilarities to the physical urban space. In a study done by Sukkarieh (2015), she addresses these urban divisions and how it leads to different perceptions or the urban spaces which in return affects spatial urban activities. The mindscapes of the urban dwellers is constructed from a personal social memory. These social memories are shared with fellow sub-community members, yet are separate from other communities. Despite these divisions, Sukkarieh (2015) emphasizes that these different communities are spatially in connection to each other.

In addition to the mindscapes of urban dwellers based on collective memory, the spatial practices are also highly influenced by physical urban barriers. The mobility of urban dwellers, and their access to public spaces, is hindered by security measures throughout the city [fig 6.4]. Some of

these security measures are arbitrary and subjectively differentiate along the lines of gender, class, race or religious/sectarian belonging (Fawaz, Harb and Gharbieh, 2012). Along formal, organized security, residents of specific communities also take action into their own hand of defending and protecting their neighbourhood from inhabitants of other sects. The intensity of these formal and informal security measures is dependent on national and/or regional political tensions. Fawaz, Harb and Gharbieh (2012), describe how Beirutians know what political tension might be topical based on how much and what kind of security measures are present. Interestingly, in some cases young children benefit from these security measures. Areas with relatively more security guards opens up additional space for children - in a city with scarcity in public spaces and playgrounds - to play. Simultaneously, in many cases young people avoid these areas to avoid the scrutiny of security personnel (Fawaz, Harb and Gharbieh, 2012).

In accordance with mindscapes based on social memory (Sukkarieh, 2015), the type of school (what confession), its location, and its building quality are all in relation to each other. Most rich, western Christian schools



Figure 6.3 History timeline collage by author

Visible Security Mechanisms in Municipal Beirut

Survey conducted between February and July 2009, revised in September 2010

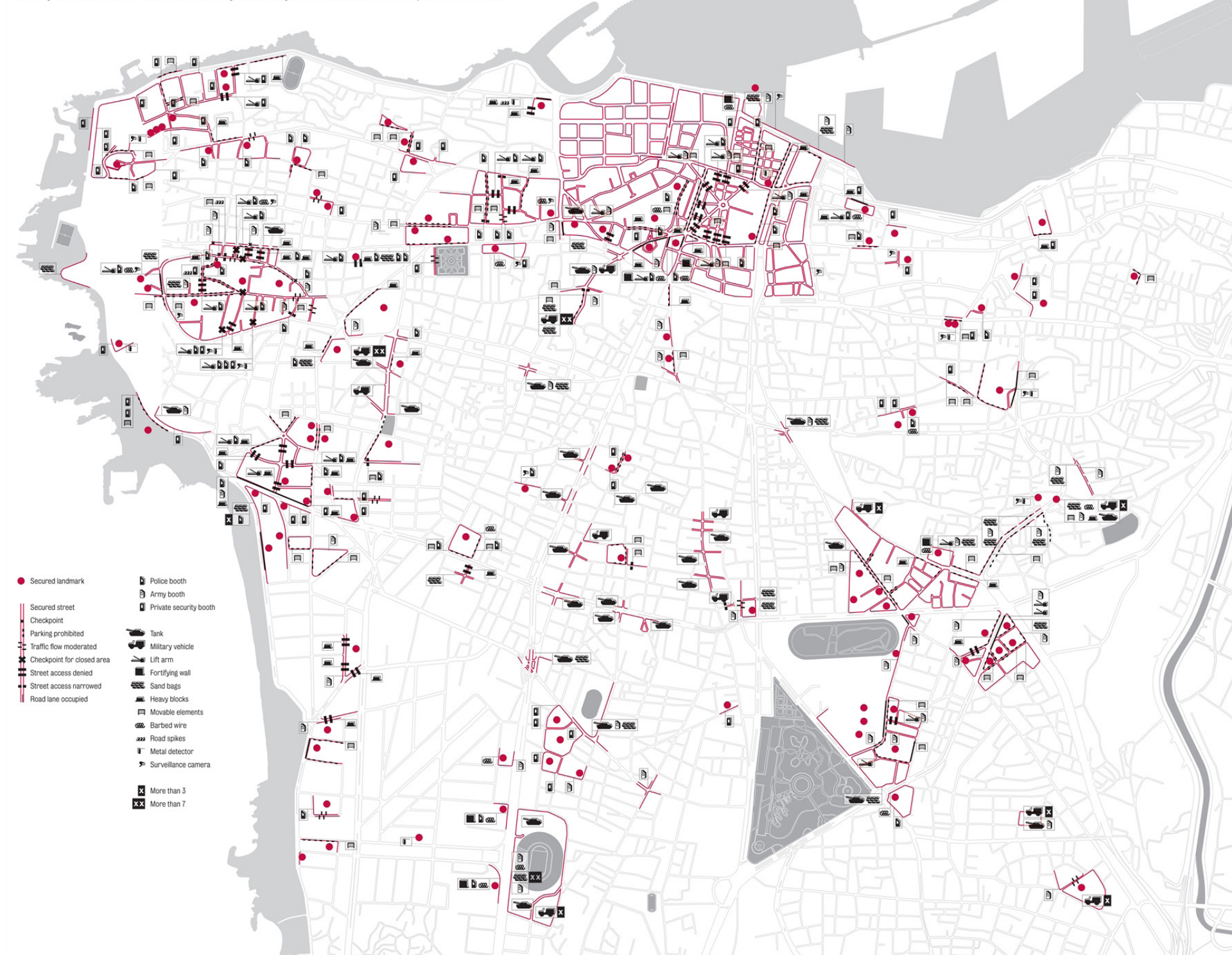


Figure 6.4 Fawaz, M. & Harb, M. & Gharbieh, A. (2012). Security mechanisms in Beirut

are located in the north of Beirut. Whereas public schools or Islamic schools are in higher numbers in the south. This is due to the earlier mentioned urban divisions among socioeconomic and religio-political lines. The distribution of educational spaces follow that same rule.

Correspondingly, school buildings not only create non-physical borders – through socioeconomic fragmentation – but they are manifested in physical borders as well. These educational spaces are introverted, isolated areas in a highly urbanized territory. School territories in Beirut are fenced off for security reasons and limit the access to these spaces (Azzam, 2019). The morphology of these school buildings itself are often inward facing with introverted outdoor spaces. Since most schools facilitate education from preliminary to secondary phase, the school territories are very large. Within these spaces, in addition to formal education, institutions also offer extracurricular activities. Beirut has a scarcity of urban learning spaces outside of school territories. Young people therefore don't meet many peers outside of their school community, since the city doesn't offer other spaces for them. As discussed in chapter 4 Public Spaces, the school territories offer a potential alternative of public spaces for the youth. However, the isolation of these spaces hinder interesting interactions with its urban context.

The lack of public space and free, pedestrian movement in the city, trigger the possibilities of rethinking school territories. Rather than seeing these buildings as objects in a community, they should be seen as objects for the community. By doing so, the interaction between different people can be stimulated. According to researchers, "interaction with diverse out-groups confers benefits from innovation and exploration greater than those that arise from interacting exclusively with a homogeneous in-group" (Stewart, Mccarty and Bryson, 2020, p.1). This asks for an investigation of the threshold conditions that school territories contain. Seeking the balance



Figure 6.5 Security impressions, Google Maps images edited by author

between enclosure, security, openness, and integration.

Education and the building

The morphology of school buildings is a typology that developed through the influence of culture and climate. An often reoccurring spatial organization is the courtyard typology, mostly found in the older Christian schools and sometimes applied to modern school buildings as well. This courtyard typology can be seen as an architectural form that is inward facing and could potentially isolate the building space from its context. One of the main reason why this morphology still exists today in the context of Beirut is its ability to control the climate in the building. In Beirut the daily maximum temperatures exceed the comfort limit between May and August. In addition to these high temperature there is high humidity, thus creating the need for natural cross ventilation. In summer opening buildings to the southwest breeze will offer the much needed thermal comfort (Ragette, 1975). This partly explains the courtyard typology in school- as well as residential buildings. It creates a micro-climate that can be thermally more comfortable than open outdoor spaces by providing protection through shading and ventilation (Taleghani, 2014).

The degree of enclosure in these courtyards buildings determines the extent to which they foster interactions and allow access with its surrounding context. According to Rabbat (2010), not all courtyards are equally enclosed, and not always on all four sides. Meaning that not all courtyard typologies are entirely isolated spaces, an overall enclosure can be suggested without closing off the whole space. However, the school buildings in Beirut – courtyard typology or not – are also enclosed by security fences. This large, fenced threshold spaces between the school building and the city creates an additional barrier for potential smooth flows of people. The decision for highly secured school territories, specifically in Beirut, is aligned with other urban security measures that are

particular for this context. In order to create an open spatial experience for an urban learning space, it is crucial to understand the degree of security that's necessary in Beirut. Looking at the immense security measures that are present in particular areas on urban scale, could influence the necessary security measures on building scale.

Furthermore, the majority schools in Beirut, depending on the wealth of the schools, offer extracurricular activities as well. Historically, schools were community places where civil activities like education, religion and other public functions all took place in one territory. These institutions today still offer after school activities and clubs for children. Although the buildings initially seem monofunctional, in reality they are not. This reflects in the urban scale as well, where the number public libraries, music and sport schools and playgrounds is scarce. These centralized urban learning spaces often allow young people from different communities to meet, but if young people only use the extracurricular activities offered by their school they wont benefit from the advantages independent learning spaces offer. This phenomenon actually adds to the isolation of communities. In an environment of polarized, confessional schools a centralized learning space can be a very interesting addition to the educational landscape of Beirut.

On smaller scale, the class rooms are conventional and teacher centred. According to Dr. Jabbour (2013), the Lebanese hold a traditional view of teaching where the teacher is hierarchically at the top. Teachers hold all knowledge and transmits it to the learners, where the learners assume a passive role in this knowledge transmission. The class room – not only in Lebanon, but globally – is based on this principal (Jabbour, 2013). To facilitate complex interactive learning, spaces need to exceed the banal class room typology, especially considering the shift from teacher-centred to student-centred learning in Lebanon.

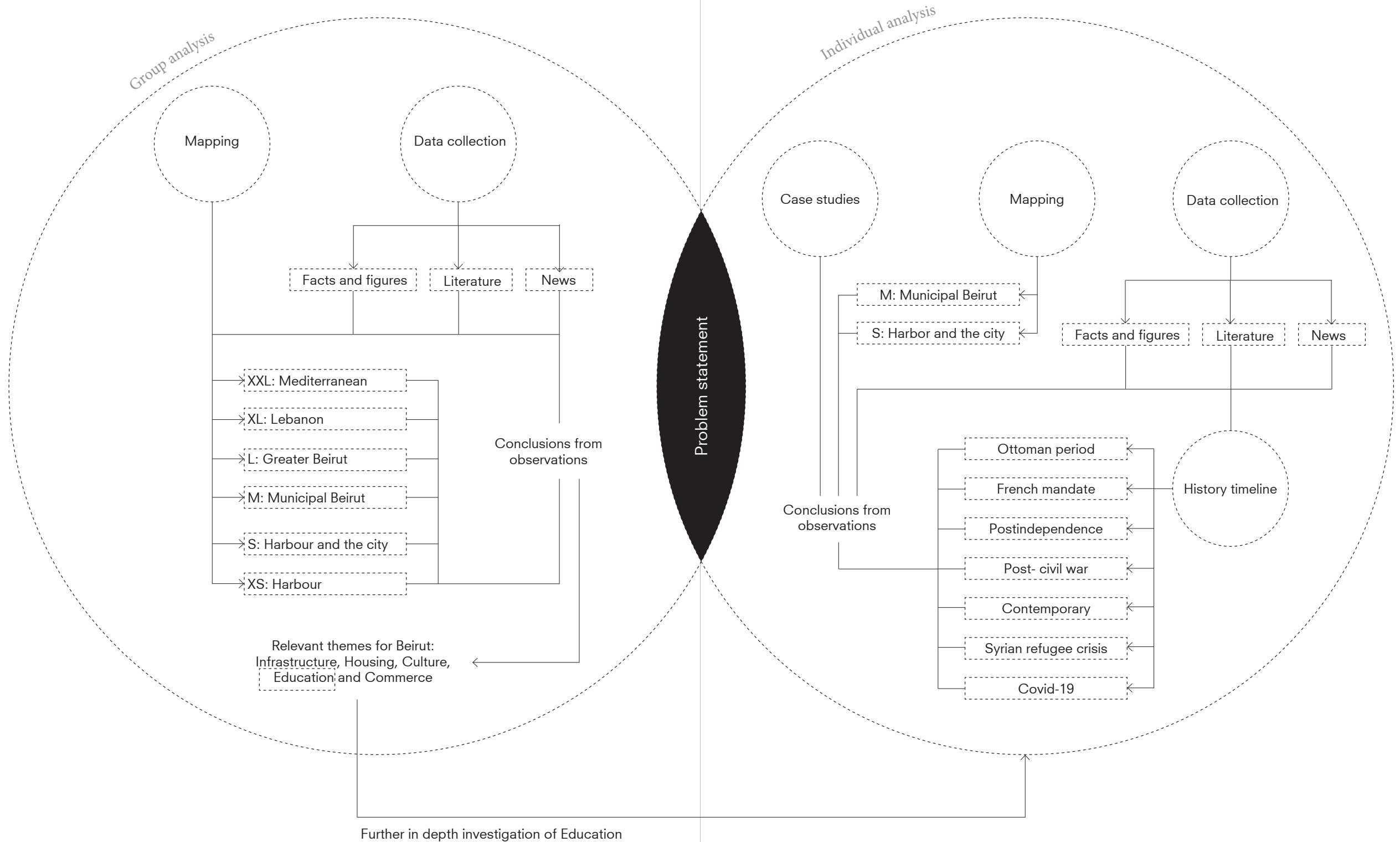


Figure 6.6 Research plan diagram 1 by author (P1-P2)

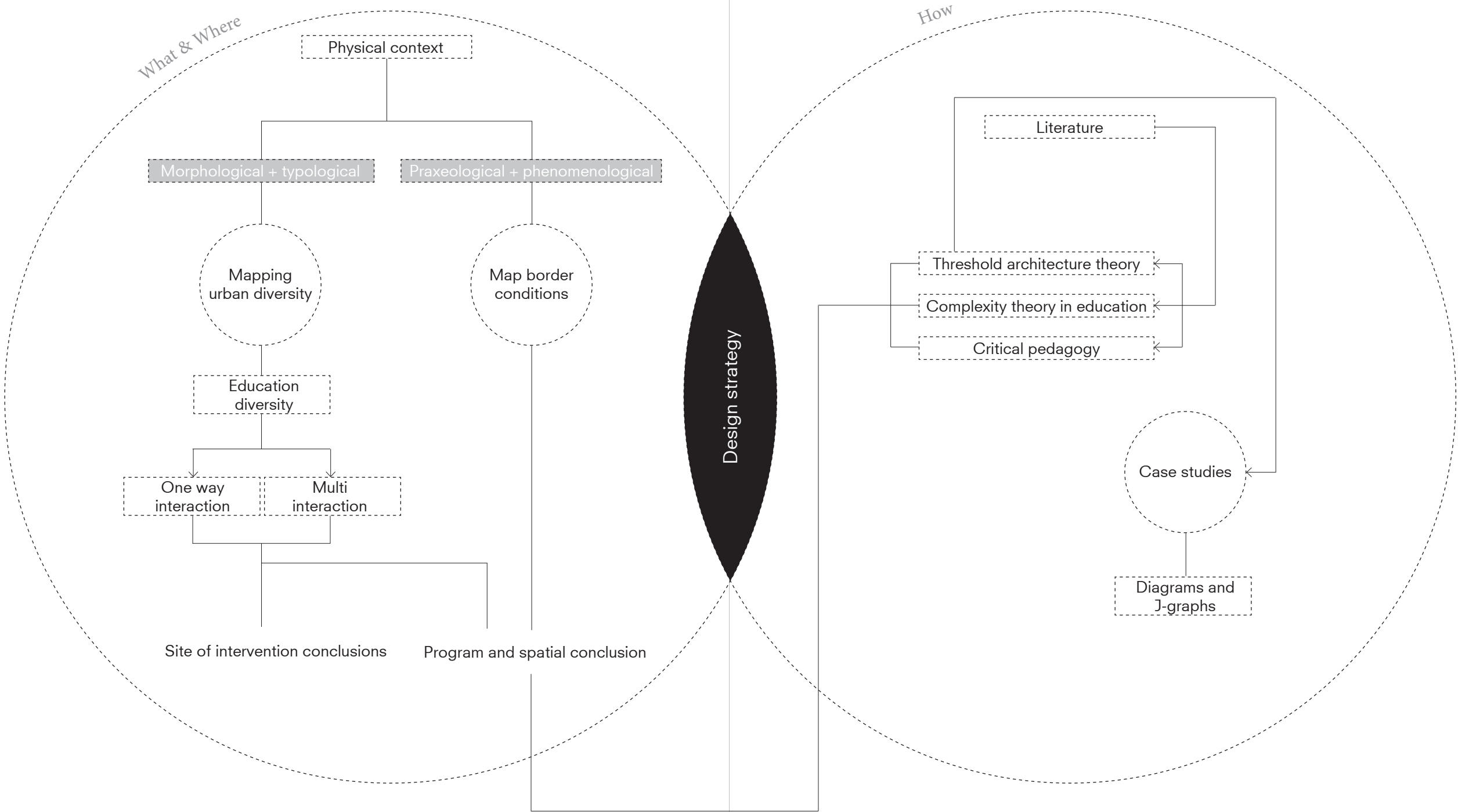


Figure 6.7 Research plan diagram 2 by author (P2-P4)

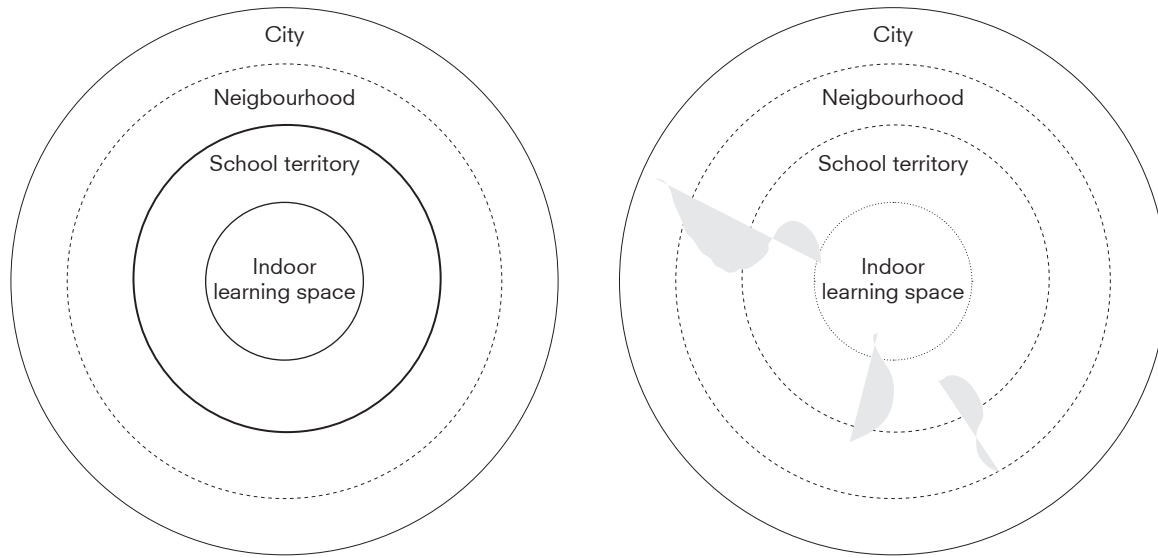


Figure 6.8 School threshold diagram by author

6.2 Problem statement and research questions

Hypothesis

Currently, there exist a gap between the graduates' skills and labour market's demand. Today, the biggest sector in Lebanon is the service sector, however this might shift to a technological sector. According to economists, "Lebanon's comparative advantage no longer lies in services, given the emerging and competing centres in the region, like Dubai. Technology is now the undeniable driving force behind growth and the rise of modern economies" (Karam, 2018).

However, to prepare for this shift, there need to be several educational reforms. Currently the schools in Beirut are teacher-centric, whereas the future will consist of student-centric learning. Some initiatives, like the emergence of STEAM education in Lebanon, aim to introduce children to technology at a young age through interactive and hands-on learning. In summation, the introverted, isolated school buildings, designed as teacher-centric spaces, are decreasing in relevance. With the future in mind, urban

situated school buildings should facilitate smooth space for the flows of people, knowledge, communication, and goods (Havik & Schoonderbeek, 2014).

Research question

As observed, education has a strong relation with society and the city. In urban areas, education is not only through formal education. There is a diversity of learning spaces in the urban realm. This diversity can be further explored and used to facilitate dynamic urban learning space and promote smooth space for flows. This raises the following question:

How does education contribute to the urban diversity of Beirut? And how can this become applicable in an architectural design?

The sub-questions that contribute to the research question are:

How does a system of polarized educational institutions influence the architecture and urban space of public and private schools in Beirut?

How can a student centred, public learning space impact Beirut's social cohesion and what role does it have in the revitalization and reconstruction of the city?

The research questions are also translated into one architectural research question as a framework for the overall research:

How can the threshold spaces within a school building, and between the school and its urban context, facilitate smooth flows of people and knowledge?

6.3 Research framework

Key terms, concepts, and theories

Urban learning, urban diversity, community, interaction.

In the research there are several key concepts. The most important one is the critical examination of threshold spaces. Additionally, the mapping of urban activity diversity in Beirut. The eventual aim is to stage sensitive threshold spaces for student-centred learning spaces, and facilitate diverse educational program.

The research questions all fall under several epistemes. The first question and sub-question, will be in the research framework of architectural typology and morphology, phenomenology and praxeology. Examining the urban diversity of education in Beirut will firstly be done through architectural typology, by simply mapping educational institutions in Beirut. Secondly, by conceptualizing this typology mapping into more meaningful terms, this mapping will be further analysed phenomenologically and praxeologically. Which means, through the understanding of how urban dwellers use and perceive these educational institutions and how that leads to urban activity diversity. By relating these epistemes with each other and understanding the morphological consequences/results, the second half of the main question and the first sub-question can be answered.

The framework for the second sub-question is focused on social studies. Mainly critical pedagogy and complexity theory. These theories explore the impact of society on education and vice versa. Complexity theory in particular, examines the physical spaces as important tools to promote non-linear and dynamic systems of interaction and flows in school design - based on the principles of complexity theory (Uptis, 2004).

Using threshold architecture (Hertzberger) as the main driver and lens for both the analysis and designing, the findings can be translated into specific design strategies which focus on these transition spaces. This research framework relates to the last research question, which works as an umbrella for the overall research.

6.4 Methods and methodology

Toward a problem statement

From the group analysis we continued to research the relevant urban activities that derived from the group analysis. For education, I did this through three actions: Historical analysis, case studies and mapping education (see diagram). Together with actualities, facts and figures, and literature I could fully understand the current state of education, both in physical and non-physical sense.

Toward a strategy

As shown in the diagram on the previous page, I have structured my method into two aims: the exploration of the site of intervention and the examination of suitable programmatic and spatial strategies.

1. Site of intervention strategy

For the exploration of the site of intervention I will use the method of mapping urban diversity. Through it, patterns of educational program in the city can be recognized spatially and potentials can be discovered.

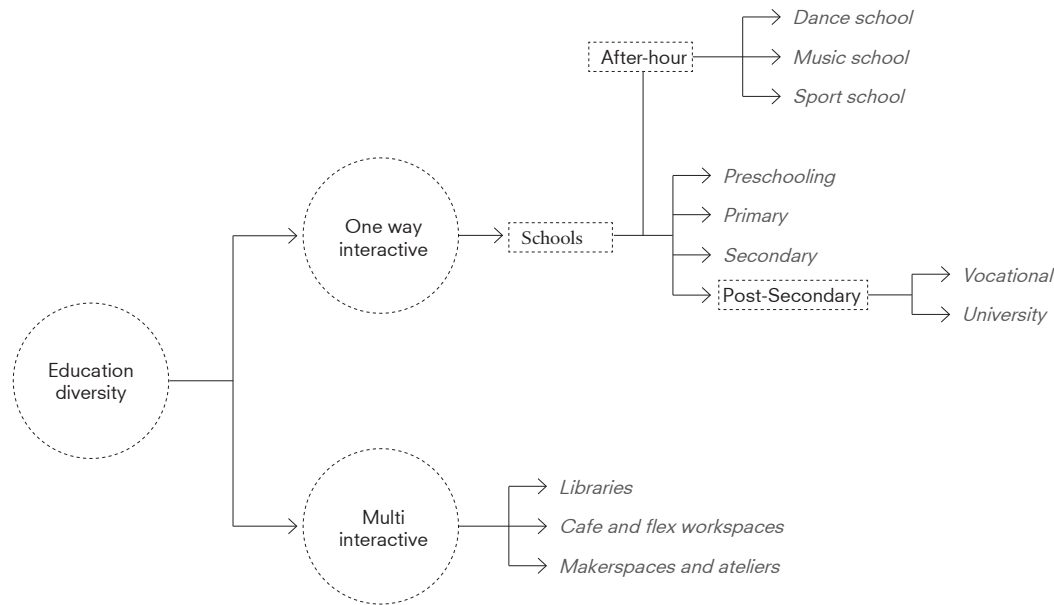


Figure 6.9 Urban diversity layers for education

For this method I have categorized educational urban activity into two main themes: One way interactive and multi interactive education. Considering that these two themes result into different types of urban activities with different types of education-society relationships. One way interactive education (or conventional education) is activity that mainly transmits knowledge and skills through an instructor. An example of this type of educational activity is a school. Multi interactive education is the educational activity where the learner does self-study and depending on where the learner is, interacts passively with other urban dwellers (who are doing the same or another urban activity). An example of this type of activity is a café. These two themes are then subdivided into several typologies (see diagram).

One way interactive education:

- Preschools, Primary, and secondary schools
- Universities and vocational schools
- Dance schools, music schools, workshops

Multi interactive education:

- Libraries

- Cafés and flex workspaces
- Makerspaces and ateliers

The larger university campuses are mapped as one colour, not differentiating between faculty buildings, cafeteria or libraries. In Beirut these campuses are exclusively for students meaning that the diversity within the campus is not relevant on larger scale. Similarly for the differentiation between libraries, canteens or classrooms within school buildings. For assessing whether cafés are used as study and work spaces I used three criteria:

- Availability of plugs and wifi
- Availability of high tables and chairs (not only couches and low salon tables)
- Opening hours during morning and/or afternoon
- Coffee on menu

Once I have mapped the educational urban diversity, each type of educational activity will be mapped on the introvert-extrovert and One way interactive-multi interactive scale (shown in the diagram). Through this, the already existing educational activities, and their physical relationship with the city, can be critically analysed.

The introvert-extrovert scale works as follows. On the y-axis I will graph the degree of openness of the case study. On this axis there are five points in which the case study can be quantified on its extrovert- or introversion. This assessment of openness will be done through J-graphs, a method from Space Syntax [fig 6.10]. The circles represent the spaces. The link between them translates to the access of that space (threshold spaces). The graph starts with a root, which is the starting point, this starting point in my study will always be the outside of the building. Then every space that is directly connected is linked with the root by a line. Every space that is directly accessible from the second row of spaces is also linked by a line, and so on. The number that is given next to the circles represents the 'depth'. This number measures the number of steps required to reach all the other rooms in the building.

The depth will determine where the building will be placed on the extrovert-introvert scale. If the depth of the main learning

spaces is a certain number, that will determine the outcome on the scale:
 $y = -2$ when majority $d =$ between 0 and 1
 $y = -1$ when majority $d = 2$
 $y = 0$ when half of spaces $d = 3$
 $y = 1$ when majority $d =$ more than 4
 $y = 2$ when majority $d =$ more than 4
 To quantify the degree of interaction (one way or multi) I will look at the number of threshold architectural elements directly connected to the particular space that could facilitate outward interaction. This means the number of doors, windows, stairs, balconies etc. The elements that allow visual interaction (windows, etc.) can be derived from architectural drawings and photographs. The elements that allow physical connection as an access element can be found in the J-graph, indicated as lines connecting one circle to another [fig 6.10].
 $x = -2$ when $n = 2$ or lower
 $x = -1$ when $n =$ between 3 and 4
 $x = 0$ when $n = 5$
 $x = 1$ when $n =$ between 6 and 7
 $x = 2$ when $n = 7$ or more

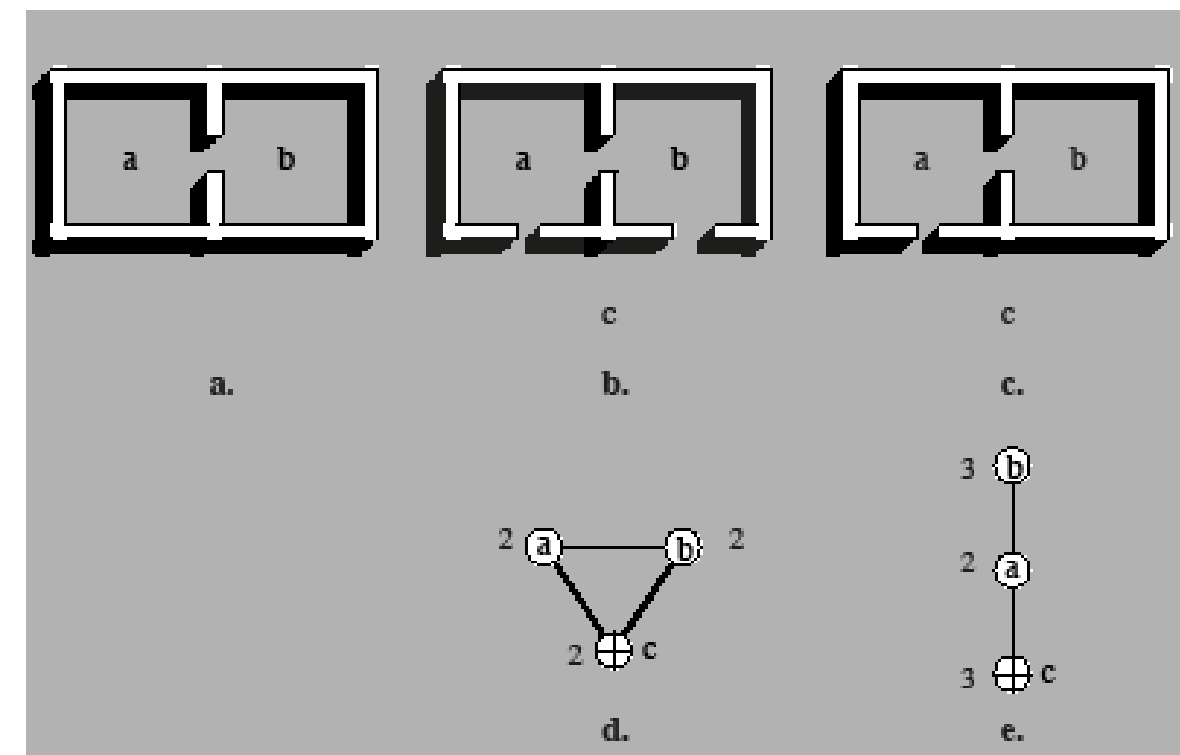


Fig 6.10 Example of J-graphs Bill Hillier (2007) from Space is the machine p. 24

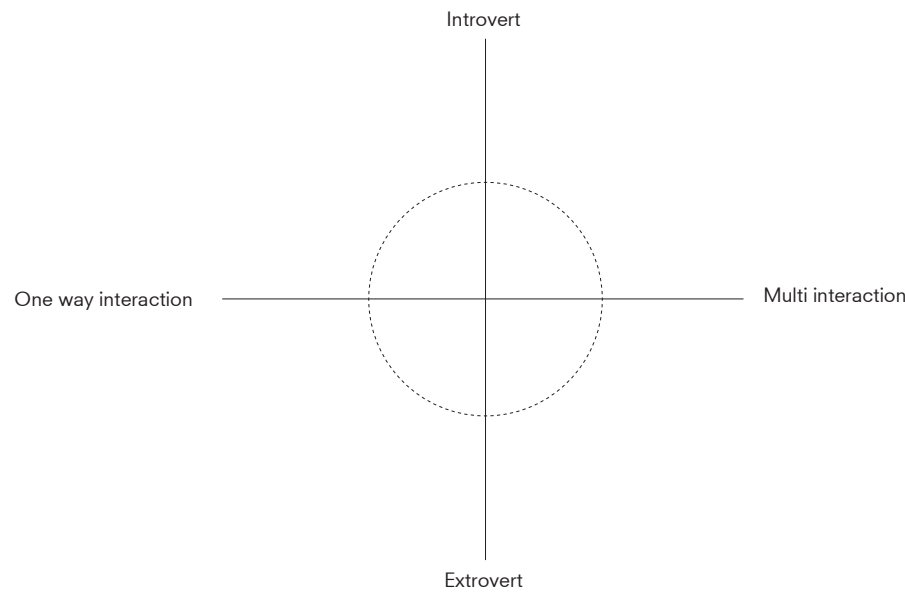


Figure 6.11 Extrovert-introvert scale that will be used for case studies

2. Programmatic and spatial strategy

The mapping of urban diversity and defining the buildings on the mentioned scale, potentially gives preliminary insights on the programmatic strategy for the learning space. It answers the question of how diverse urban learning is. This will be accompanied with case studies by analysing architectural drawings. These case studies will first be done through the lens of morphological and typological episteme. However, to truly understand potential new ways of designing school space, the case studies will also be done through a phenomenological and praxeological lens. This will be done through the use of diagrammatic translations of the case studies and by using Space Syntax's J-graphs (to understand the threshold spaces) and the introvert-extrovert scale.

As a theoretical back bone, literature studies about threshold spaces, complexity theory in school architecture and critical pedagogy will be done. Using threshold spaces as a theoretical research framework both for analyses and the designing.

6.5 Preliminary results

For the urban diversity mapping, two versions are produced. The first version shows all the educational activities as separate layers [fig 6.17]. The second version is a map wherein there has only been categorized into two layers: one way- or multi interaction educational activities [fig 6.16].

Both versions show a higher diversity in the east axis. This is consistent with the collective heat map, meaning that education follows the other urban activities in its behaviour. This eastern strip particularly is higher in its urban diversity due to educational activities which are not schools [fig 6.14 & 15]. These include, cafés, libraries, workshops, ateliers, sport and music schools. With the two versions it's visible how mostly the eastern axis is impacted when the categorization of urban activity layers is differently defined. Which means that within the category of 'multi interactive' education, there is a lot of diversity in the eastern axis [fig 6.15]. The eastern axis is also more educationally diverse near the centre of the three legs. Once more, this is due to the many non-

school educational activities that are found more in the centre and main road of Beirut.

The western axis hosts significantly less educational diversity than the two other legs. Compared to the other urban activities, like commerce and housing, it can be concluded that this axis is a much more commercial, gentrified area. At the end of the axis, we find AUB, which is the most significant educational activity in this axis. In addition to gentrification, this result can also be explained by the building grain of this side of the city. Here, we find a large mall and other larger building blocks which will result in lower diversity in each grid square. These large, commercial buildings take up a big portion of the land in the western axis, resulting in lower educational diversity.

In the southern axis there are two clusters of higher educational diversity. The first, northern, cluster is near the central district and martyr square, with educational facilities like workshops, trainings and libraries. These activities add to the urban diversity. The second cluster, which is more in the south, is at the split of Damascus street. This infrastructure split creates a crossing point of more neighbourhoods than the northern part of the axis - where only two neighbourhoods face each other with a main road passing through. These larger numbers of neighbourhoods coming together could explain the cluster of educational facilities near this crossing point. Meaning that this cluster functions as a sort of centre for these neighbourhoods. This is consistent with the collective urban diversity map, where the diversity is high at the central district of Beirut and at this crossing point, with lower diversity in between the two clusters.

6.6 Preliminary conclusions

From the historical evaluation it was clear that formal education (schools and universities) are very diverse in nature. This diversity is influenced by the socio-political situation of education as well as the neoliberalism which resulted in a division between private and public schools.

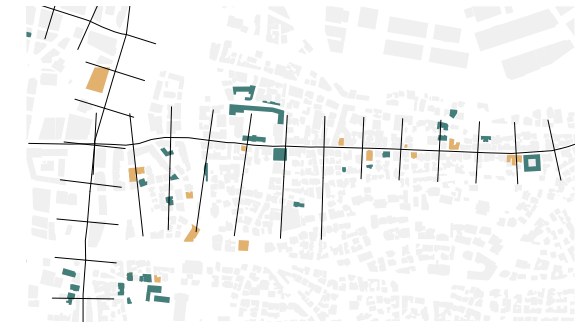


Figure 6.12 Diversity map two categories - east

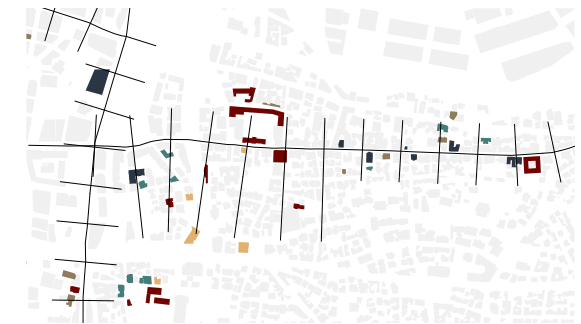


Figure 6.13 Diversity map specified activity layers - east

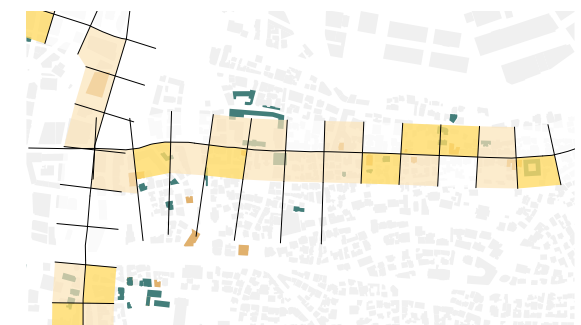


Figure 6.14 Heat map two categories - east

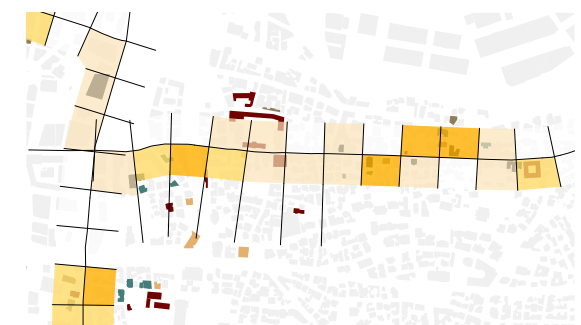


Figure 6.15 Heat map specified activity layers - east

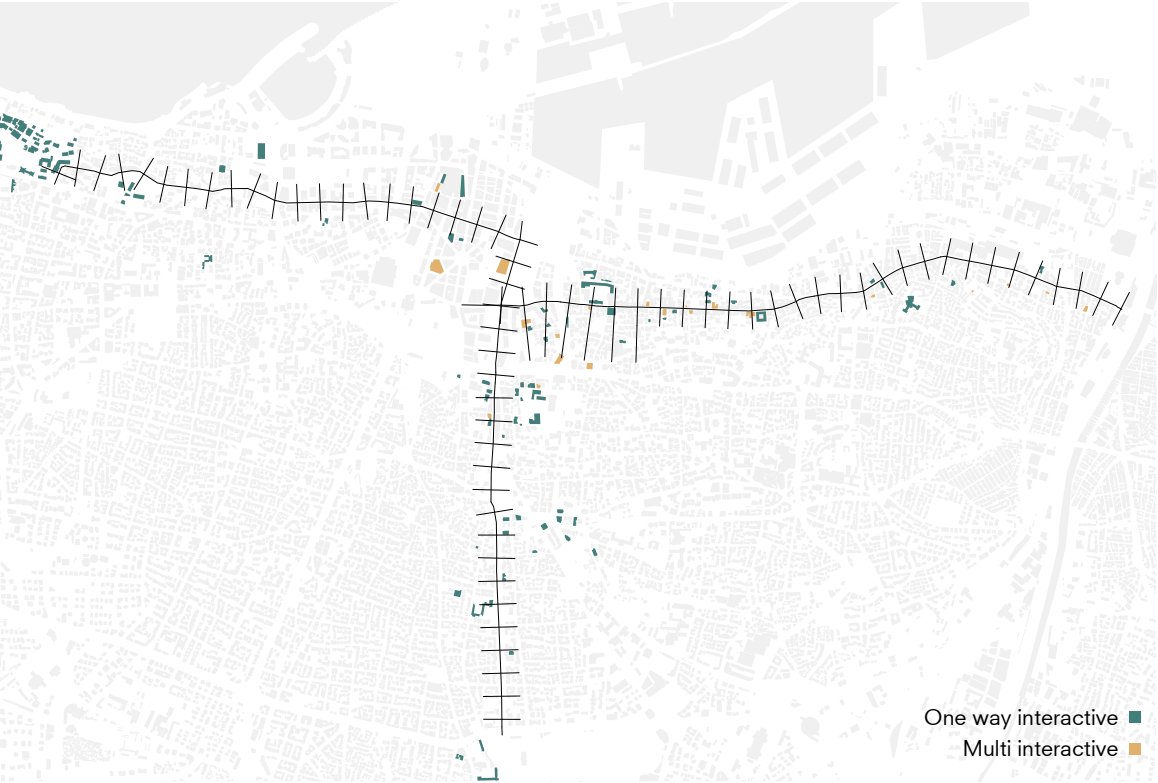


Figure 6.16 Diversity map two categories

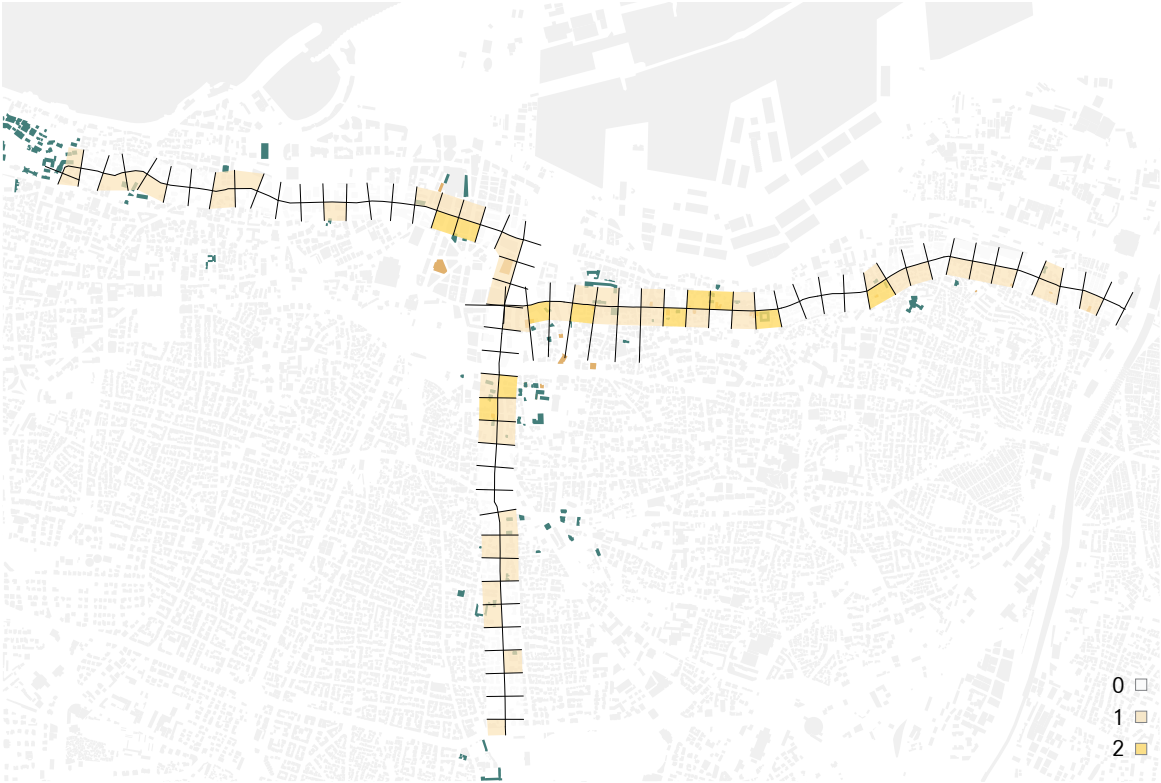


Figure 6.18 Heat map two categories

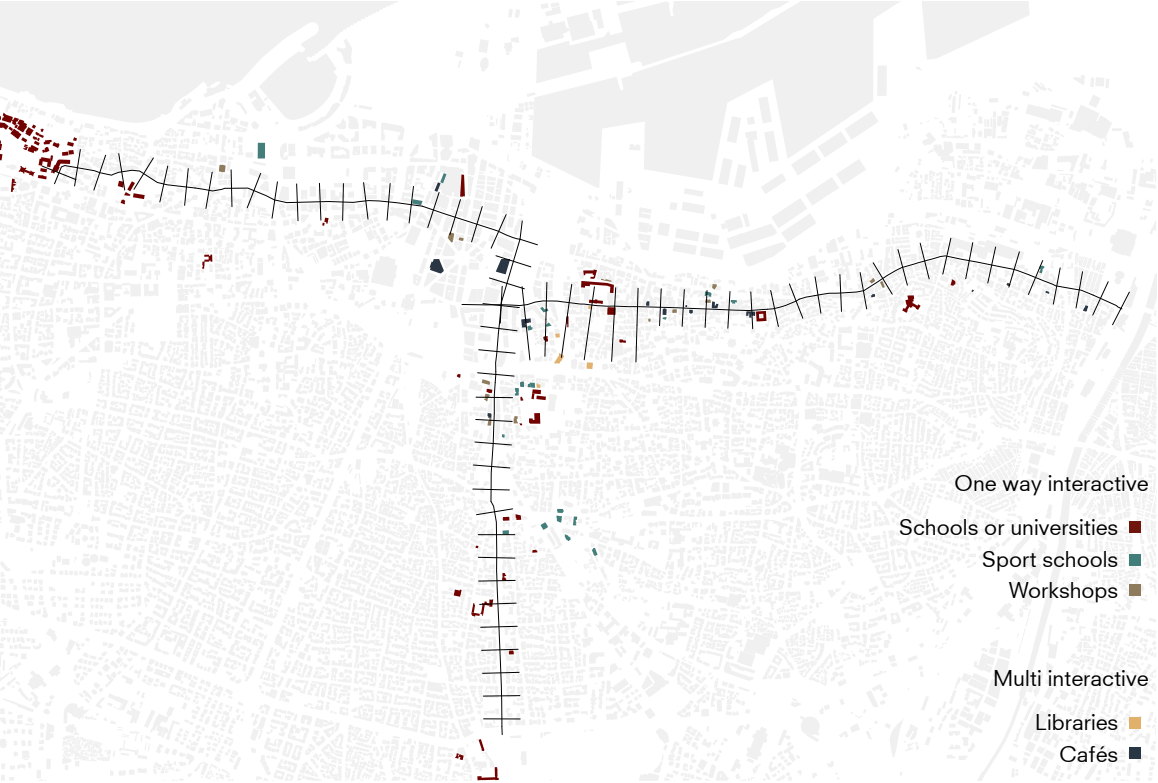


Figure 6.17 Diversity map specified activity layers

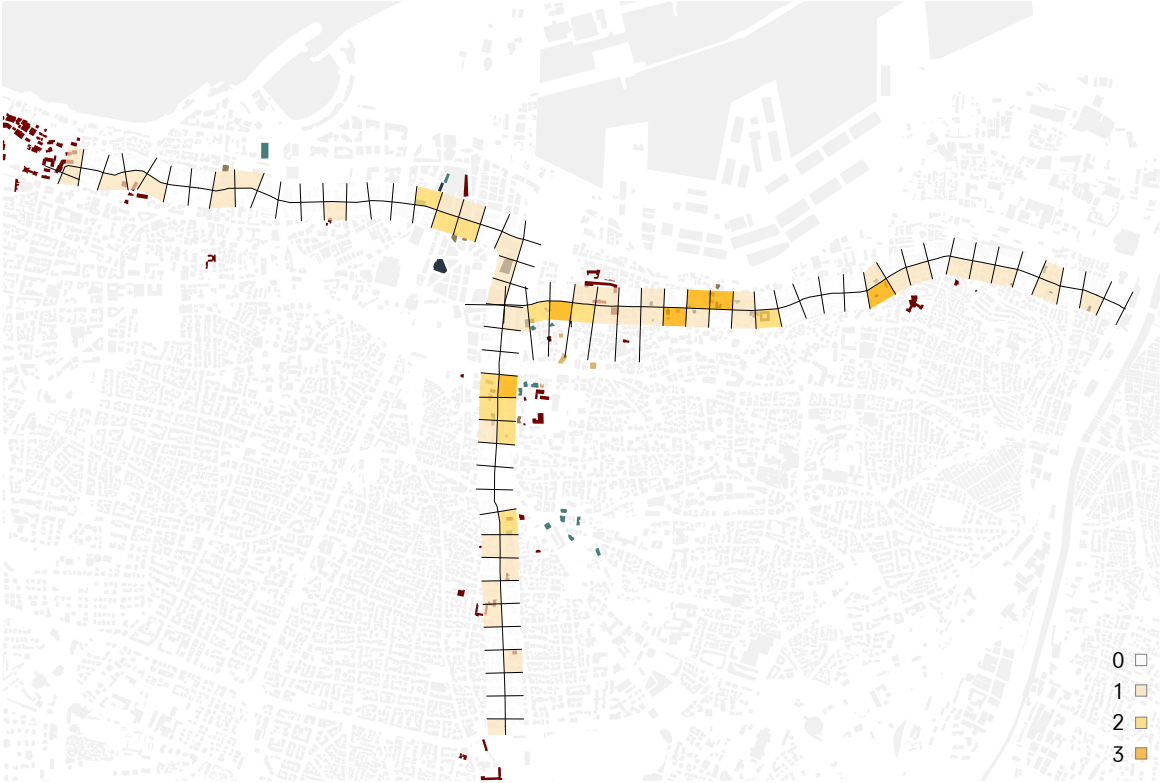


Figure 6.19 Heat map specified activity layers

However, the non-school educational activity is quite limited. One explanation for this can be that the schools themselves already offer extracurricular activities within their institution. Resulting in lower numbers of educational facilities in the city offered independently from schools. This means that young people are isolated in these school territories and are not fully facilitated in the city (especially after school hours).

The diversity of the eastern axis has a great potential to extend its target group to younger people. Throughout the analysis it became clear that most of the non-school activities are used by and meant for adults. Arguably, the educational activities could have been mapped by categorizing it based on target groups, since it's clear that this is an important factor in Beirut. The other axis have a scarcity of diversity in education all together which leaves a potential to add to those axis, both for young people and adults. In general it is clear that targeting young people and children is crucial for the urban diversity in Beirut.

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