Urban Gapscape: Problems and Opportunities in Urban Design
Analysis of Gapspaces Originated by Elevated Railways

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Abstract

This article analyzes the use of elevated urban railways as a contemporary urban development, evaluating such with respect to the problem of permanent barrier effects inside the city created by depressed or embankment railway typologies. Elevated urban railways are examined through discussion of approaches employed in both western and Japanese cities. An analysis of the types of urban interaction formed by Tokyo’s JR Yamanote line, by means of site photographs and schematic rail-section representations at some of its elevated areas, demonstrates how the use of land under this line – gapspace – generates diverse dynamic interactions with the city. In conclusion, the author argues that this potential in elevated railways can be an urban tool to induce or reduce urban barrier effects and enhance and support interactivity when such is desirable.

Keywords: urban gaps; elevated railways; empty areas; density; void

1 Introduction

1.1 Background and Purpose of the research

This article is an attempt to bring to discussion a series of spaces and landscapes generally regarded as having a negative impact on the image of the city. It will search for city components sometimes forgotten under bridges, on the back of main streets or in junctions with train lines. Although such areas often correspond to neglected spaces, so called “no-man’s land” (Lynch, 1960; Koolhaas 1995), the fact is that they are daily references of a landscape surrounding millions of people. This condition of ubiquity in the core of so many cities cannot be left to rest without our concern. Elevated circulation structures have not been entirely overlooked in the past. They have been praised for their importance as visual elements working as urban edges, defining district limits or identifying directions while leaving the ground level free for the city to flow. The spaces under them, although sometimes portrayed as wasteland, are regarded as having a specific role to play in the city (Lynch, 1990).

The problem remains, however, that such places have not been targets of thorough investigation, and even when such has been done, it is mainly from a ‘western’ perspective, where these empty spaces appear mostly as misused or vacant land (Halprin, 1966). This study introduces new elements to the analysis of such areas, since it focuses on their resulting spaces and observes their interaction with the city, whether in cases where they have been adopted into it, or where they have remained physically and functionally segregated from it. One place where such a variety of attitudes can be found is Japan, which contrasts with the western examples mentioned so far and yet has been rarely referred to in the past (Halprin, 1966).

Emptiness, in the shape of these gapscapes – the main feature and concept presented in this article – is not merely a final product of density. Under the concept of gapscapes, it can be granted a new life and role – a potential for new expansions inside the city. Rather than looking beyond these edges, it is urgent that we begin to look at their inside. Only then will we realize how gapscapes can and have been used in their flexibility to absorb urban tension and pressure, improving the quality of our cities.

1.2 Method and scope of the research

This study will begin by explaining the concept and etymology of the words gapscape and gapspace, proceeding later with an analysis of some examples that will help put them in a social and regional context.

To begin with, this contextualization will consist of references from specialists who have referred to the specificity of these spaces or problems related to them. A more precise delimitation of the object of study will be complemented by a regional contextualization, i.e., the presentation of cases of elevated train lines in Paris and Chicago, intended here to work as representative examples of a western approach to the presence of such elements inside the city. Further on, in part 3.5 of this article, a survey of the Japanese case will be presented using the example of the JR Yamanote line in Tokyo.
This study is directed to all those involved in city planning and particularly those dealing with issues and problems related to high-density urban areas.

2 The concept of gapscape and gapspace

In order to clearly define the main concept of this research – gapscapes – it will first be necessary to analyze its meaning in purely etymological terms.

The word gap was chosen to characterize a series of landscapes and spaces that share physical and psychological attributes with the more general English word gap.

Etymologically, a gap represents an empty space or interval. Generally, empty spaces tend to be considered vacant ones, seeming to lack attributes such as function or use; nobody apparently uses an empty space and when someone does, that use confers upon it a new definition as space. In most cases this emptiness will also be related to abandonment or lack of attention towards a specific area, which thereby becomes a waste of space or “waste space” (Lynch, 1990) – almost as if something else should be in its place. If we use the term interval to explain how a gap works, we will discover its intimate relation with a strong feeling of boundary or edge (Lynch, 1960). An interval does not exist as an element per se, it has well-defined limits either in length or time – thus it can be either physical or temporal – and results from a set of elements which share the same context. Once these elements are perceived as having a connection, but there is something breaking continuity between them, we are acknowledging the existence of a gap, in this case as an interruption of continuity. The word gap also expresses more subjective meanings such as lack of understanding or inhibited communication, of which the expression “generation gap” is a good example. Used to express situations when people of different ages or backgrounds fail to understand each other, this latter usage reveals, in a symbolic way, the need to avoid direct confrontation between two or more different parts. The solution for such a situation appears in the shape of a physical distance or silence – a gap – between those parts. We often see this need to evade tension and pressure as a negative attitude, but in fact, by avoiding a clash, all the parts might obtain – given some time and space to grow out of the tension – new solutions for this pressure and tension, the two generators of gaps. Although so far the word gap has been referred to in a metaphoric way, its principles and impact can be applied to cities as well as to people, each with its own specific consequences.

We have so far come to understand the gap as an element originated by tension and pressure, representing a solution to these critical factors in the shape of an interruption in time or space. More specifically, a gapspace is a type of space whose process of formation emerged out the pressure and tension to increase the usage capacity of a geographically limited territory that is unable to expand indefinitely. Increasing density is one way of dealing with this problem of limited space, allowing growth to take place in the same geography. Nevertheless some compromises have to be made – e.g., functions overlaid in the same location but at distinct levels of time or height to allow for growth within this lack of usable space. Some infrastructures exist for this purpose, but often they generate functional separations and spatial interruptions with their surroundings. This is one important characteristic of a gapspace: to spatially interrupt continuity – either temporally, physically or functionally. Gapscapes are consequently the landscapes composed of such spaces.

Because gapspaces and gapscapes are only one of the sub-products of density-increasing processes, their potential to allow a better use of the urban space, by means of physical or temporal overlaying, has been overlooked. However, they might hold the key to finding new opportunities for growth within the very core of our cities.

2.1 Urban gapscapes, “waste spaces”, density and emptiness

Urban gapscapes have been worthy of non-explicit mention in the past. High-density in the city, as an alternative to urban sprawl (Jacobs, 1961)\(^1\); the need to preserve the dichotomy City vs. Countryside as the only real possibility for the survival of both entities (Charboneau, 1969); both are ideas stating that cities can stop consuming more territory if they use their spaces more efficiently. However, these are perspectives on urban density that might lead us into mistakenly taking urban gapscapes as areas to eradicate from the city, since they often correspond to vacant spaces set apart from the urban tissue in processes of urban exclusion. In contrast with this, in recent years terms such as waste space (Lynch, 1990)\(^2\) have made their way into the discussions on the city’s future. From an urban ecological perspective, wasteland areas, abandoned or unused spaces acquired here a relative importance as elements to be preserved, especially rare in areas where urban planning over a territory takes on a totalitarian aspect.

As the importance of such neglected spaces grows, new elements are added to the discussion. One of them is the argument defending the preservation of some empty areas inside the city and under pressure from urban development for their value as historically important “no-man’s land” (Koolhaas, 1995)\(^3\). Here, an unoccupied area of a city is promoted to the status of cultural heritage, allowing its physical character as urban void to coexist with its cultural character as monument. We now return to the starting point of this study: the recognition of these areas as important elements for the city. The next step is to carefully select and use their potential for the benefit of our cities.

2.2 A case study of Elevated Railways and Highways

If we transpose the previous line of thought to the
specific case of the empty areas left along and under so many railway and highway infrastructures, we quickly understand how contemporary cities have come to cultivate gapspaces, in processes of physical and functional segregation between these structures and the existing urban tissue. This sort of attitude is derived essentially from functionalist concerns, which in the first decades of the twentieth century influenced the urban planning community into systematically separating, by all possible means, heavy circulation from the street level – and consequently from the original urban tissue. This would assure better environmental conditions but abruptly destroy a tradition of proximity that cities and structures such as railways had come to establish since the early industrial period. These principles, which followed the boom of the railway network, continue to be put into practice today. The character of exclusivity in which railways and highways operate has greatly contributed to their present physical isolation from the city. The more the need for speed increased, the less highway and railway structures were allowed to have direct contact with the surface of the city – their territories became fenced, walled or detached from the street level by means of artificial depressions, underground tunnels, or elevated structures. The consumption of wide areas of land for protection repelled the urban tissue from approaching these areas as in past railway cases, thus creating a type of gapscape that has no capacity to interact with the city. Safety regulations and laws regarding protection areas from the visual and physical impact of these structures – the creation of noise and air pollution protection areas – further emphasized the problem by increasing their distance – gap – from the city.

The question of what to do with the open spaces resulting from the construction of highways and railways has already attracted some attention in the past (Halprin, 1966). These were however sporadic criticisms of the land-waste philosophy used when building such structures. In other cases critical efforts were directed merely to the design of the highways themselves, and thus still treated them as isolated objects (Appleyard, Lynch, and Myer, 1964). Such offerings contributed little to the understanding of how these spaces could interact more efficiently with urban areas.

Highway and railway gapspaces represent both our present condition as mobile urban beings and our incapacity to deal with this condition. “With the planning of bridges and roads, the digging of tunnels, the development of rail companies and highways, it’s about perfecting the territory in order to increase the speed of the physical dislocation of people and goods” (Virilio, 1995). These thoughts on the need for speed and its consequences on the geography of a territory show us how we have built a society that depends on the presence of these high-speed circulation structures for its survival but fails to accept it in our cities. Our mixed feelings of admiration and repulsion towards the technological achievements they represent is clearly visible in the many empty spaces that could generate a whole new range of urban relations, functions and uses.

This research will complement previous studies in the sense that it analyses the landscapes – gapspaces – resulting from the structures, without focusing merely on the structures themselves. By focusing on the specific typology of gapspaces that have originated under elevated railways, with examples from different urban approaches in different cities, it will show how facing the gap – whether by filling it in or preserving it as empty space – is an essential step towards creating dynamic interactions and new opportunities for growth inside the city.

3 The Western and Japanese approaches to elevated railways

3.1 The Chicago “El”

In the period that followed the 1871 Great Fire in Chicago, while the city was recovering from the destruction, circulation solutions for the downtown developing areas were needed so as to bring an increasingly larger number of people into the center of the city without requiring the acquisition of extra portions of high-priced land for road infrastructure. In order to achieve such a goal, the solution was to create a railway line that would run over the existing streets without consuming more land. Despite difficulties in negotiating property rights with landowners along the line’s projected path, the imminent celebration of the 400th anniversary of America’s discovery at the Columbian Exposition (to be held in 1893) made it a matter of political urgency, as this event was expected to bring about a large influx of people into the city.

The construction of the “El” would thus become a reality by 1892. For the population, the close contact between railway structure, commerce and street life was its biggest advantage, stimulated by passages directly connecting the elevated platforms of the “El” to the department stores along it without requiring street level access (Moffatt, 1995). In this case, spaces under the line were mostly devoted to traffic, thereby effectively eliminating any other function for the space under the line. Although people interact functionally with the line, this happens only at station areas.

3.2 Paris: New solutions

In Paris, we have another example of urban interaction with elevated railways, which is relevant since it demonstrates some awareness towards the rehabilitation of the gapspaces under such structures. A viaduct composed of sixty arches in brick and steel, originally supporting an old railway deactivated in the 1960’s, was made a target of renovation in 1990 by a collaboration between Semaest (a local arts and crafts association) and architect Patrick Berger (Bertrand, 2000). Running for about two and a half miles from close to the New Bastille Opera house, along Daumesnil Avenue and towards
Vincennes, the old structure became the Viaduct des Artes, the spaces inside the sixty arches, subjected to renovation, becoming workshops for designers, artists and craftsmen. The upper part of the structure where previously the trains ran is now a green promenade for pedestrians (Simon, 1997). This interesting effort of urban renovation resulted in a productive use and functional integration of the structure into the city. However, it reflects a discriminative western view towards the spaces under such viaducts, which have to wait until there is no railway running above them to become full participants in the city.

3.3 Filling the Gap: The Japanese example

By contrast, Japan is a case where attitudes towards these areas change when the need for space inside the city dictates that the spaces under train lines be used for functions other than mere storage of construction materials or as parking lots.

As with many other countries, Japan saw the awakening of the railroad era at the end of the nineteenth century – four decades after the first train line in England – with the construction of the first railway line in 1872 connecting Shinbashi and Sakuragicho stations, thus linking the capital Tokyo to Yokohama (Hirooka, 2000). Soon these circulation structures would become a common sight, as they added new metal rails, tunnels, girded bridges, ramparts and other new works of engineering to the landscape. The first elevated urban railways over brick arch structures appeared in Japan in 1906 (Goto, 2001), with some examples from this period still remaining intact in Tokyo, close to stations such as Ueno (1883) and Yurakucho (1910). Throughout the twentieth century various structures would emerge in the spaces below the Yamanote and other train lines, which served as junctions with the urban tissue. These were often lively areas of a commercial character, their functions extending far beyond storage or parking. This pattern of agglomeration under elevated train lines would continue as the viaducts themselves developed into new shapes and evolved according to new technical demands. The Great Kanto Earthquake (1923) brought about a shift from brick to concrete as construction material, with important consequences in terms of the elevated rail’s structure (Goto, 2001). Because reinforced-concrete structures do not require arches to sustain rail-span between pillars, the contact surface with the ground level becomes smaller and the volume of usable space below the line larger. Also contributing to this need to prevent, as much as possible, direct contact of the railroads with the ground were issues such as expropriation costs and the development of high-speed transportation – the case of the Shinkansen – in central city areas, with design demands such as long straight-lined sections and wide curve radiuses incompatible with pre-existing constructions (Koyama, 1997). These factors of economic and technical importance further emphasized the pattern of incompatibility between railroads and the original topography of the city. The combination of these factors led to the option of elevated railway sections inside many Japanese cities. It is also in Japan that the owners of such plots of land – railway companies or their subsidiary institutions devoted to real estate operations – would come to regard them as one more source of revenue, by renting the spaces below the lines to other entities. This kind of operation was not limited to the rental of parking spaces; the array of functions and urban formations under the elevated tracks types spans from informal occupation types (fig.2. left) to the case of the Eki Biru (fig.2. right), large-scale development projects which use train stations as anchor points to a series of service and commercial activities. Eki Biru structures develop not only under the tracks, but especially in high-rise construction typologies serving department stores, amusement facilities, hotels and office buildings. They have the merit of connecting the rail network to the city from the stations, using accessibility to stimulate economic growth and promote urban centrality.

But it is not only these large-scale operations that have a positive impact on the city. The Eki Biru are only punctual events along the train lines. Along other elevated sections of the railways, other occupations of gapspaces have created their own merits. Their smaller scale allows them to blend in with the urban tissue, surrounding streets and neighborhoods. These trends exist in the contemporary Japanese cityscape and reflect an interest in adapting and acting with the gapspaces under elevated lines.

Fig.2. Informal and Institutional occupation of gapspaces. Left: informal occupation of a gapspace under the Tokyo Toyoko line by container-offices, Shibuya district, Tokyo. Right: Institutional occupation at station points: Shibuya station. Here we see Ginza line entering a large-scale complex encompassing different train and subway lines and their stations. Connections between them are articulated through both horizontal and vertical circulation mechanisms such as passageways, escalators and elevators. The gapspaces between the different levels below and above the lines are wrapped in together by a package-like architecture of high-rise structures and their emptiness injected with department stores, amusement facilities and hotels. This is the principle of the Eki Biru complex, a case that shows, in exemplary fashion, how Japan has found ways to fill gaps with new urban possibilities.
3.4 Gapspaces, barrier effects, permeability and patterns of interaction with the city

To have a better understanding of how the city and gapspaces relate, it is necessary to identify barrier and permeability effects induced by the previously mentioned examples of railway and highway infrastructure in the city. These effects are particularly important at the street level since their presence often creates fragmentation lines in urban continuity. Due to their character of exclusivity and restricted access – only for the use of cars or rolling stock – these examples of circulation infrastructure are in most cases fenced or walled-in, shutting off all contact with their surrounding areas. Halprin characterizes the general physical and visual impact of different highway implantations on their adjacent surroundings (Halprin, 1966). In one of these types, the at-grade highway, the circulation lanes are built at the same level of the surrounding areas (figs. 3. and 5. case 1). To punctually cross over them, bridges, tunnels or crossover solutions for pedestrians are required, creating strong physical and psychological barrier effects. Also similar in this way are road or railway depressed or embankment solutions (cases 2 and 3 on figs. 3. and 5.). These require even wider areas of exclusivity due to the buffering on the edges (Halprin, 1966), and even if new engineering solutions such as geosynthetic-reinforced embankment structures have reduced the need for buffering slopes and the consumption of space (Koyama, 1997), they still

Fig.3. Railways, highways and gapscapes-1.
Drawings 1 to 3 depict at-grade, depressed and embankment solutions for highways or railways. Their character of exclusivity generally induces the appearance of gaps associated to barrier effects in the continuity of the urban tissue.

Fig.4. Railways, highways and gapscapes-2.
The case of the elevated railway or highways – drawings 4a and 4b – illustrates how this typology can exist inside the city as a mere gap generator (4a) or also as an element which allows the city to interact with those gaps – opening the possibility for the city to grow, using the open spaces under it (4b).

Fig.5. Railways, highways, permeability and interactivity between gapscapes and the city.
Drawings 1 to 4b show how permeability does not necessarily correspond to full interaction between city and rail or highways. At-grade (1), depressed (2) and embankment solutions (3) can be permeable at the street level but don’t induce any interaction other than the passage of people or cars. By contrast, elevated viaducts (4a and 4b) offer both permeability and functional interactivity if some of the gaps under them are used for commercial or any other purpose that involves non-restricted access.

represent strong breaks in the continuity of the urban tissue. The last typology (cases 4a and 4b on figs. 4. and 5.) is the elevated type. By comparison with the previously mentioned cases, its gapspaces have an interesting potential that can be explored. As previously mentioned, the elevated viaduct is a typology, which although not completely innocuous in terms of visual
impact—particularly at trackside areas—reveals interesting relationships with the street level, mainly when the viaducts are not built over pre-existing roads.

These relations can appear in certain locations in the shape of linear urban formations under the direct influence of the viaducts’ height and orientation. Instead of mere empty gaps between these structures and the ground level, what we have is the generation of urban interactions with the object bridge and a consequent spread of this relation not only under the bridge itself but along the trackside city areas. Even when the open spaces under the elevated railways are simply left vacant, if they are not access-restricted they can also be used for extra passages, small playgrounds, and so forth. (case 4b on figs. 4. and 5.).

The ability to offer all these possibilities of use and interaction is an important characteristic of the gapspaces under elevated railways. In the following paragraphs, using the case study of Tokyo and the trackside areas along the JR Yamanote loop line, we will discover how this interaction is taking place in the Japanese city.

3.5 Survey method: case study of JR Yamanote line

This survey was performed between February 2001 and December 2002 along the JR Yamanote loop line in the center of Tokyo. Data was gathered through direct observation of the selected sites, at which time photographs were taken. In addition, sketchbooks containing maps of the sites were employed, over which drawings and written descriptions of the locations were added. The study was initiated at Shibuya station and proceeded in a clockwise direction (towards Shinjuku station) including not only the Yamanote line itself but also nearby line crossings (e.g. Yamanote with Sobu JR lines at Akihabara station) and junction areas with other train lines such as the Tokyu Toyoko line at Shibuya station, the JR Tokaido Shinkansen line at Tokyo station and the Yurakuchou and JR Tohoku Joetsu Shinkansen lines at Kanda station (fig. 6.). The selected sites correspond to elevated line sections that have had enough time since their construction to establish specific urban relationships with their surrounding areas (fig. 6.). Each site (line section) appears as representative of a gapspace typology (fig. 7. A1 to E3), to avoid repetition of cases within the same category. Each category shows a type of physical occupation found along the line and correspondent patterns of interaction (indicated by a circle where interaction takes place and with a cross in cases where no interaction occurs). These diagrams allow us to recognize both urban permeability and accessibility to the spaces under the lines (indicated by the arrows) as well as interaction variations, conditions that confirm the theory in which elevated railways can absorb different occupations under themselves, thus increasing the usage potential of their gapspaces.

The following schemes (fig. 7) start with the example of an embankment (section A1), which as previously mentioned induces mere physical barrier effects and allows for no interactivity with the street level. The following five cases (sections A2 to B3) show occupation by single units, i.e., cases where the line width above them allows space for only one function-unit occupation per section, with either one-sided access (section A2) or in some cases double-sided access (section A3), allowing more interaction with the city on both sides of the line. Section A3 clearly shows how filling the emptiness of the gapspaces under a train line can be more than a mere creation of barriers at the street level. Contrary to section A1, the physical occupation of these gapspaces invites pedestrians by offering free access and interaction through the activities provided at the street level (offices or small shops).

Sections B1 to B3 do not imply any construction but simply the fencing of gapspaces. They show how visual permeability does not necessarily correspond to actual physical permeability, accessibility or to effective interaction within these areas. In fact, the most common case is still the existence under a viaduct of many unoccupied sections that are entrance restricted (section B2). These are generally cases of parking lots or spaces for storage of construction materials enclosed by wire fences; wide areas with only some punctual entrances (small entrance gate at section B1 and open parking at B3) but no pass-through access options (weak physical permeability). Other situations show wider areas under viaducts as a consequence of line junctions such as the JR Keihin Tohoku, Tokyu Toyoko, JR Sobu, JR Tokaido Shinkansen and JR Tohoku Shinkansen lines running alongside the Yamanote line, also in elevated viaducts. These wider gapspaces (sections C1, C2, E1, E2 and E3) tend to generate more complex patterns of occupation and interaction. Double or multiple function-unit section typologies of gapspace occupation will often create the need for access between them through streets under the viaduct (sections C1 and C2). As a result, any of these units will have an interaction with the space under the viaduct through the covered street, creating the feeling of an arcade inside gapspaces. Benefits in terms of urban life are tremendous since they revitalize portions of the city that if merely left to storing activities would act like physical obstacles to the circulation of people and result in areas with no potential to be absorbed by the city.

Sections D1 to E3 represent a specific situation where passages cross the spaces under an elevated line, leaving these spaces open. Such crossings can be mere tunnels, which offer no interactivity with the pedestrians (section D1), but in other cases, their location is important enough to attract a shop or convenience store, becoming a functional anchor and attracting people in the surroundings areas (sections D2 and D3). This group of typologies has in common a remarkable level of circulation permeability and accessibility. Again it should be noted that such features are not necessarily fruitful in terms of interactivity with the street level. It can mean that these are simply pass-through locations—places
where pedestrians neither stop nor stay (tunnel at section D1 and narrow alley between shops at D4). If we associate these open sections with commercial activities and spaces for exclusive pedestrian use we can induce the creation of small plazas or crossings under the bridges (sections D3, D4 and D5), thereby enabling a dynamic cycle of attraction and interaction with the gapspaces.

The last three examples (sections E1 to E3) represent more complex combinations between voids and the occupation of gapspaces under elevated train lines. The more these small types associate and agglomerate, the more they will blend with the surrounding urban tissue, attracting people and generating intricate connections with the city, exchanges which stimulate urban continuity even inside gapspaces.

The results of this survey show that gapspaces under elevated railways can be used in many different ways, creating a wide variety of urban typologies such as arcade streets (fig. 7. C1, C2, E1, E2), small plaza-like spaces (D3) and linear urban formations along the spaces under bridges. One other result shows that, as opposed to other structural solutions for railways or highways (fig. 3. and 5.), the elevated type is more efficient in terms of circulation permeability, as it allows us to avoid long interruptions between the two sides of the lines. This aspect shows how when building a railway or highway structure inside the city, other environmental aspects beyond sound or pollution reduction have to be taken in consideration: i.e., reduction of urban fragmentation and efficient usage of space in the center of the city.

Another result shows how storage and parking, important usages of gapspaces (fig. 7. B1, B2, B3) are only a fraction of the many possible solutions for these areas. The variety of typologies discovered (fig. 7. A1 to E3) by analyzing Tokyo’s JR Yamanote line, allows us to understand the fact that gapspaces offer multiple choices for use and therefore should be a target of careful planning as much as other parts of the city.
4 Conclusions

This article has revealed emptiness, through the concept of gapscapes and gapspaces, as a product of density and pressure. Adapting this principle to the areas under elevated train lines, we have seen how the pressure to allow for a flow of people and goods at ever increasing speeds and numbers has led to processes of functional segregation and detachment inside the city, originating sudden breaks in urban continuity – gaps – where physical emptiness prohibits the city from proximal growth. However, in some cities this emptiness has not become a final product. As pressures mount over territories limited by a lack of available space, different qualities of gapspaces (originated by different typologies of highway or railway implantations such as at-grade, depressed, embankment or elevated ones) have shown distinct capacities to respond. In contrast to the other types of railway and highway implantations, the particular case of gapspaces under elevated railways shows how these areas still have a role to play in the city not as rigid interruptions but as malleable gaps, a blend of both empty and filled spaces. Various activities take place inside the gapscapes, which maintain the power to attract people and to create and sustain urban life. Beyond their mere visual impact on the city, elevated railway structures have been proven, through this survey of various gapscapes under the JR Yamanote line in Tokyo, to be good choices of implementation for railways or highways in the urban tissue, allowing permeability when passing-through purposes are required, interactivity in the areas under the elevated bridges, or, in other cases, plain emptiness. Their potential to respond to such distinct needs makes them territories to acknowledge and consider in the contemporary context of urban growth that most world cities are facing. The power of a territory to adapt rapidly when put under pressure is an asset discovered in this article and proven by the study case of gapspaces under elevated railways.

Further developments of this research will focus on other physical (such as spaces under elevated highways) but also temporal gapscapes and gapspaces whose morphology, functions and potential contribution for the sustainability of our cities remain unidentified.

Notes

1 “In The Death and Life of Great American Cities”, Jane Jacobs reveals her perspective on the mistake of suburban expansions in America, calling for a reflection on what she feels is a “need for concentration”.  
2 Kevin Lynch describes how cities are filled with “waste spaces”. Examples of such spaces appear along train lines or under elevated highways. Although Lynch looks at waste from an ecological approach, i.e., revealing potential uses and forms of life taking place in those locations, his perspective on such urban spaces does not deepen their potential to any more than marginal uses like storage and dumping, or shelters for the homeless. In fact, we are left with the feeling that the insertion of such junction areas in the city will always create situations of underuse or waste. For Lynch, although these urban leftovers are interesting elements, they are still wasteland, voids where homeless find shelter or where children find an abandoned space to play and explore.  
3 For Rem Koolhaas “preserving emptiness” in the shape of voids or empty spaces should sometimes be regarded as an urban approach, particularly when a symbolic value of a gapscape is at stake. By mentioning the Berlin Wall and the possibilities that could be created from its preservation – not of the object “Wall” but of the no-man’s land area along it – thus maintaining the gap in the shape of an interrupted Berlin (the East and West side), he acknowledged the political dimension of this urban gap, its symbolic character and status as monument (in this case a reminder of war and its consequences). This is the stage when a landscape of gaps – gapscape – acquires dimensions of political manifesto.

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