

# **DESIGNING BOUNDARIES**

Could we use the inherent physical, ecological, cultural and economic properties of boundaries in designing architecture?

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# ABSTRACT

‘A border is a real or imaginary line that separates two things’<sup>[1]</sup>.

As such, it has played a key role in the preparation of geographical maps. A ‘border’ is a permeable ‘boundary’. Both of them have a fundamental role in creating architectural experience.

This thesis investigates how both borders and boundaries are more than just lines that differentiate regions; they can also be considered as important architectural components at a building scale. The different properties of a boundary are investigated in the construction of a politically generated design project situated in Marseille.



Figure Int.1 'A border is a real or imaginary line that separates two things

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# INTRODUCTION



∞ This thesis questions the ideologies embedded within a boundary as a space itself, which allows for an experience of transition from one place to another. Consequently, a boundary can become not just a line, but a spatial event for individuals crossing it. Studying the ideologies embedded within a boundary in different fields—ranging from physical to symbolic—helps build an understanding of its value beyond that of a purely restricting object surrogate for the purposed occasion. Instead, we can learn about its architectural role, which will enable us to experience its unique character in a spatial form.

This proposal in Marseille and its associated hierarchy initiates the examination of how different forms of boundaries and political ideology can join together and manifest themselves in spatial rhetoric.

The investigation will be divided into two parts:

Part 1 is a theoretical investigation that use different fields to develop theories of borders and boundaries. It also contains a description of a speculative project that utilises the route of illegal drug trading as

shown in the French Connection<sup>[2]</sup>, a real event in the 1970s with the purpose of exploring new perspectives on borders. The focus is on accessing boundaries and the critical spatial moment passing through the threshold. This will provide a key understanding that can then be tested in Part Two with reference to the design project.

In Part 2, the design project is an urban park and pomegranate factory, which is sited in Marseille; it utilises the port city location to establish an overarching line of inquiry that highlights the concerns of the political stability of pomegranate fields in Afghanistan. The New York stock market is taken as a speculative project (Figure int.2) designed by Asymptote in 1998 as a reference, and converts numerical data into experiential spaces, allowing visitors to 'occupy' data whenever they try to access a park facility. Boundaries portray the political conditions via the amount of production of pomegranate products, with a resultant sense of restriction or liberation.



Figure Int. 2 Asymptote Architecture NYSE Virtual Trading Wall









# PART 1

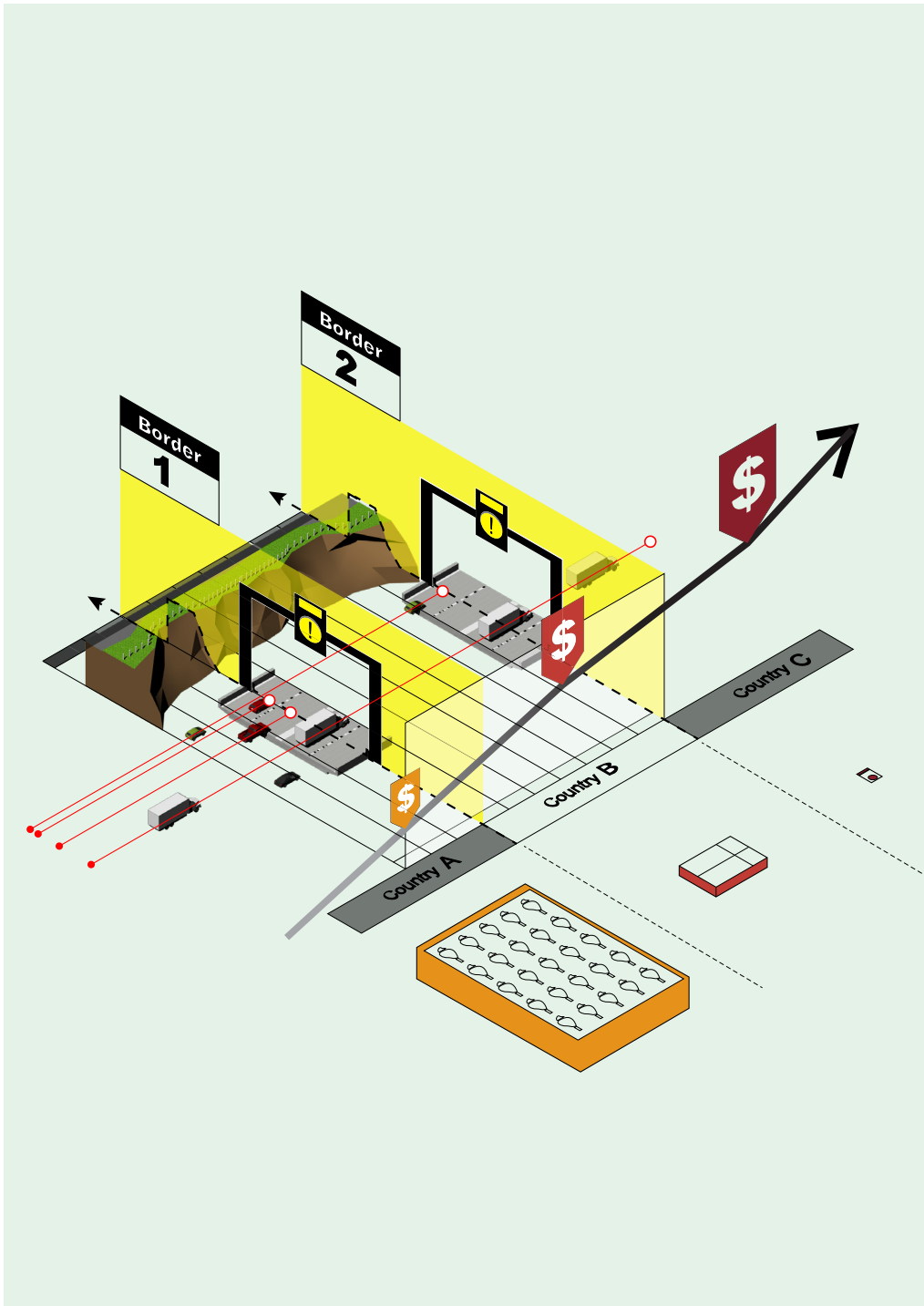
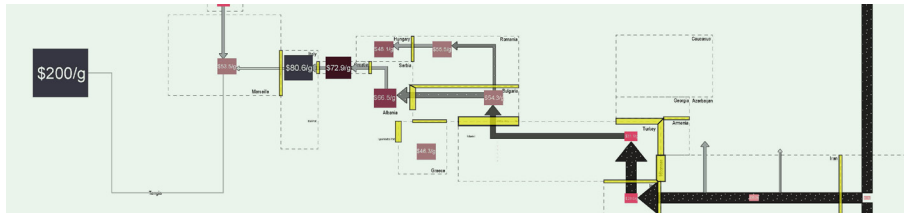


Figure 1.1 Border changes the price and physical state of opium



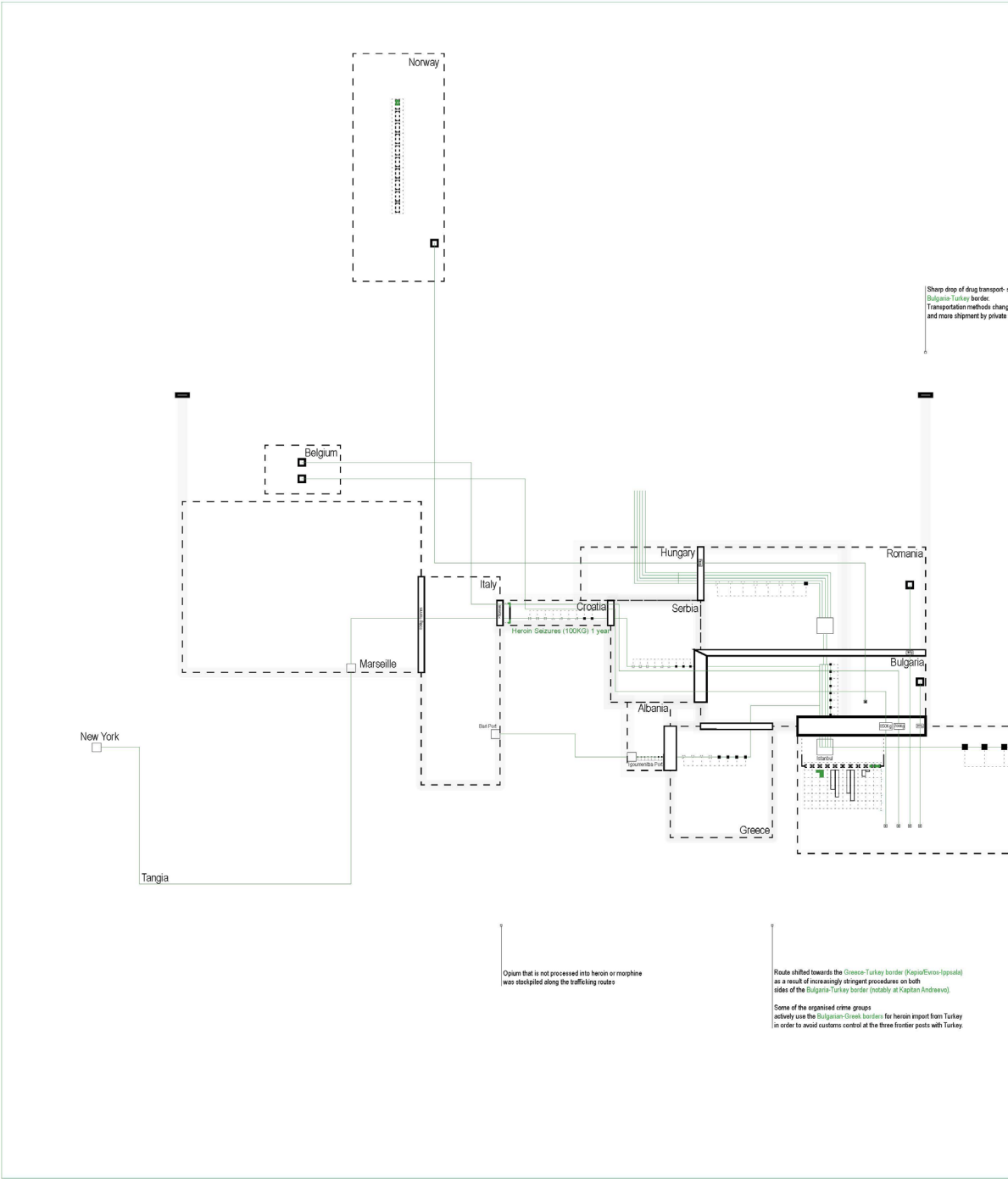
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## INITIAL RESEARCH



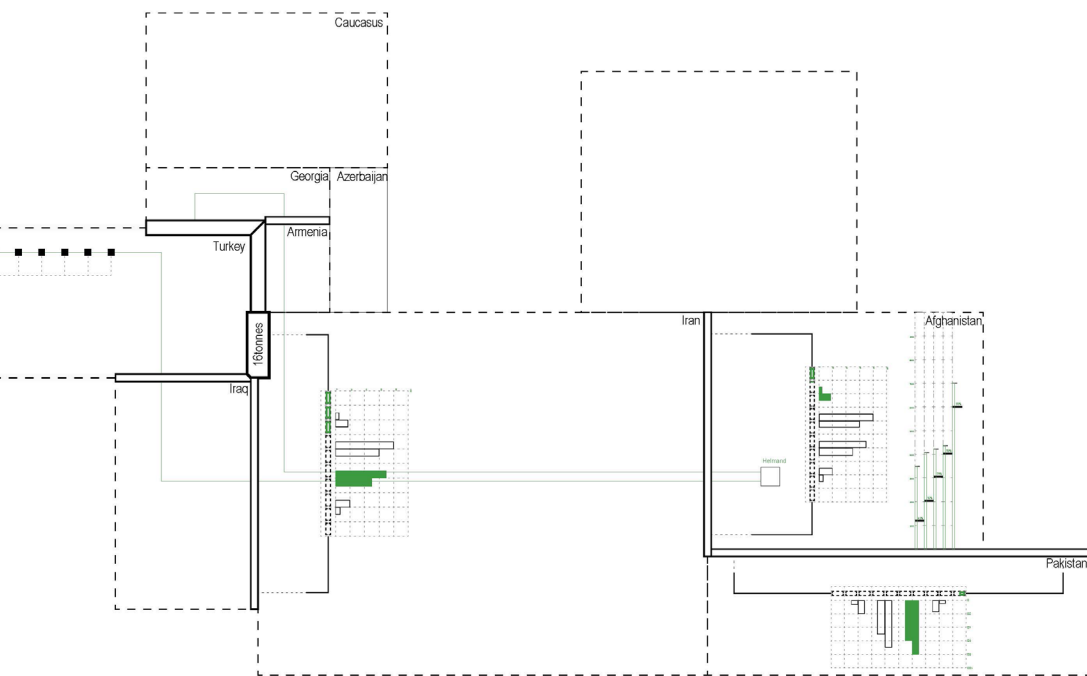
‘Border’: The theme of this thesis is inspired by initial research of the French Connection<sup>[3]</sup>, a scheme that happened in the 1970s in Marseille, in which heroin was smuggled from Turkey to France, and then to the U.S. Opium trade also involves crossing numerous borders. A mapping exercise is done to mark the opium trafficking routes and unofficial border crossing points throughout the journey, which is from Afghanistan to Marseille. It is mapped and illustrated in a way that the statistics on the heroin or opium seizures can be shown on the border line and directed to the countries involved.

The terms ‘border’ and ‘boundary’ are often used in a similar way. However, at the beginning of this project, the idea of a border is first explored as a line indicating the territory of a nation. Since it is important to have a trafficking route in order to show where the drugs have travelled to and from, I have set up a drawing of a map (Figure 1.2) with the idea of a border as a ‘fixed’ line, both on the map and on the ground<sup>[4]</sup>, which separates different nations and jurisdictions<sup>[5]</sup>.



strengthening of the  
ed by decreasing use of lorries  
vehicles.

Strengthening of border controls between Turkey and Iran  
a sub route through Iraq have emerged.  
Another way is through Georgia and Armenia traffickers may  
opt to travel through the Caucasus to reach Europe.



Heroin enters Europe primarily by two major land routes

'Balkan route' through Turkey, and, since the mid-1990s,

Northern 'Silk route', which leaves northern Afghanistan through Central Asia and on to  
Russia

Figure 1.2 Mapping on drug trafficking route

I constructed the drawing according to my initial interpretation and understanding of the idea of borders. With a single line, a rectangle is drawn to represent each country (Figure 1.3); the size of the rectangle is drawn in proportion to the country's actual physical size and geographical location. From a spatial planner's perspective, the usage and interpretation of 'border' is a result of the modern state system, since it involves regulating cross-border movement and is one of the spatial expressions of the given legal order.

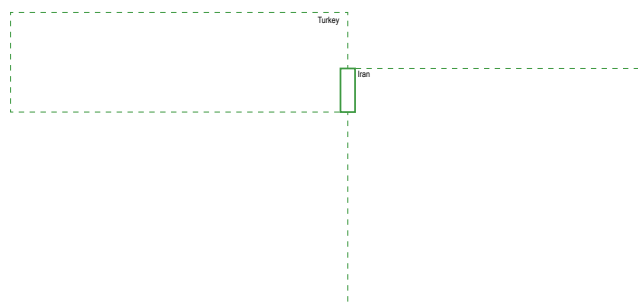


Figure 1.3

Between the single line rectangles, there is often a narrow rectangle with thick lines in place. It is my indication of the border that separates the two nations. The width of the border is different depending on its location. My intention was to reflect the strength of the borders; the thickness of each border is based on the security level of the country and the numbers of drug seizures reported there by the European Monitoring Centre for Drugs. The thicker the border, the harder it is to cross, because the more boundaries there are, the more functions

are imposed on it<sup>[6]</sup>. The function here is referring to border control as a political boundary, a junction between two socio-political bodies<sup>[7]</sup>; each has its internal harmony, compactness, external separateness and individuality<sup>[8]</sup>. Within a political boundary, which is organised by international law, socio-political forces exist to limit the internal political powers<sup>[9]</sup>. When geographical borders affect the price of any product, an economic boundary is involved. For example, the price of opiate increases or decreases depending on the location in which it is sold, causing vast differences in the prices of the same product. After opiate arrives in Bulgaria, it splits into two routes (Figure 1.4): the next countries in the two different trafficking routes are Romania and Albania.

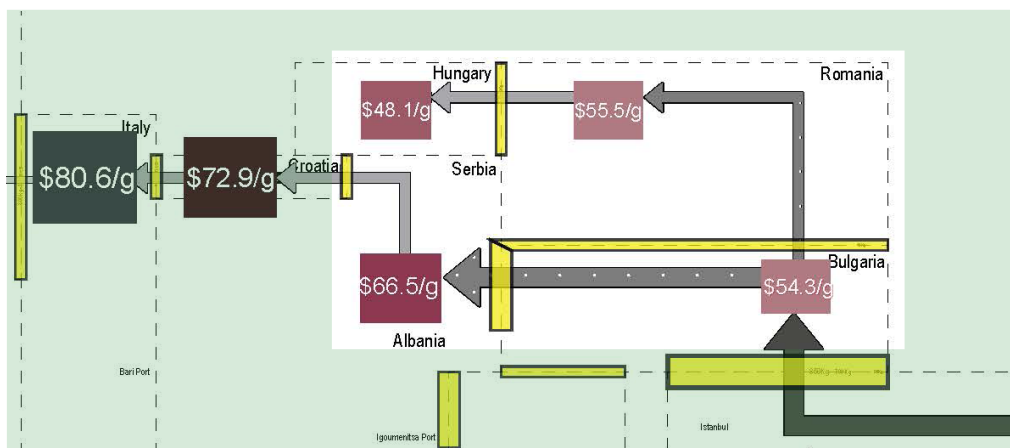


Figure 1.4 Price of opiate in Romania and Albania

The selling price of the opiate in Romania is \$55.5 per gram, while in Albania, it is \$66.5 per gram. Such a major price difference is significant, affected mainly by the differing demand and supply levels

in each country. Not only do these supply levels reflect the border conditions in Romania and Albania, they also demonstrate the socio-economic situations there. In this sense, an economic boundary is a symbolic boundary and can be seen in building scales.

According to the EU Drug markets report, Turkey seized the largest quantities of heroin in the world in 2010 (27 tonnes), smuggled from Iran. As a result, I indicated the border between Iran and Turkey using a thick rectangle (Figure 1.5). The rectangle itself reflects the relationship between neighbouring groups; yet, as Ancel a French geopolitician has suggested, a border should not only be studied as a single independent element of landscape; it should be considered in context as well<sup>[10]</sup>. For example, a higher number of heroin seizures in Turkey reflects the fact that it has a stronger security level than some other countries.

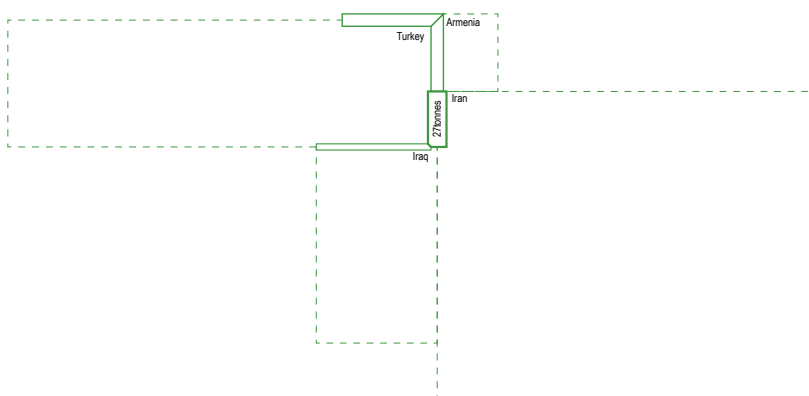


Figure 1.5

After the re-interpretation of the border relations in the drawing, my perspective on crossing the border focused on the critical moment when drugs pass through the threshold of a country and the effects that this action makes on the market value and the physical state of the drug. (For instance, the market price inflates as opium crosses a strong border. On the other hand, turning opium into opiate or heroin has to be done in a country with a weak security level.) Realistically, it is the existence of the border that changes the state and value of the product. Metaphorically, I perceive this idea as an architectural space. This initial study demonstrated to me that it is possible to conceive of a border or boundary as an element that has a certain level of thickness.



Figure 1.5 A guard watches a borderline



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## **UNDERLYING CONCEPTS OF 'BORDER' AND 'BOUNDARY'**

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In the following section, I will introduce various authors from different fields and examine their individual ways of perceiving the theme of this thesis.

The authors that I have selected are professionals and range from a spatial planner, a geographer, a social anthropologist and an architect to a mathematician. Through their unique perspectives and knowledge of their backgrounds, we are able to understand the concept of 'boundary' at different levels and angles, such as physical, metaphorical and mathematical.

Although the experts have different interpretations of the same theme, they all share common features between principles. Therefore it is important to consider each aspect's connotations and its relationship to the context to fully understand the purposes of different types of boundaries.

## Beatrix Haselsberger

Beatrix Haselsberger, a senior researcher at the Department of Spatial Planning, Vienna University of Technology, suggests that there are different types of boundaries: geopolitical, sociocultural, economic and biophysical. She has analysed borders as a comprised of and overlapping sets<sup>[11]</sup> (Figure 1.6). This accords with the purpose of spatial planning which 'gives geographical expression to the economic, social, cultural and ecological policies of society'<sup>[12]</sup>.

In the ecological sense, Haselsberger states that typography is regarded as a kind of natural and rigid boundary which forms the region of the nation. She explains further by looking at the structure of the word 'boundary' itself. She identifies the word as derived from 'bound' as well as from 'bonnarium' [a piece of land with fixed limits]<sup>[13]</sup>. The fixed limits referred to are elements of the natural typography.

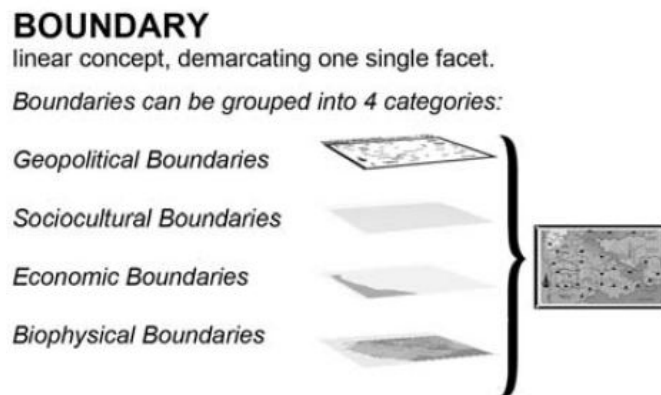


Figure 1.6-Haselsberger's diagram on 'Interrelationship of the border, boundary and frontier edge concepts.'

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## **Ladis K. D. Kristof**

Similarly, Kristof, an American geographer analysed boundary in its physical features of the earth and its atmosphere. His approach in defining the natural boundary was very scientific. He employed the law of gravity to explain the role of water in the realm of natural boundaries, as the fact that water seeks its lowest point is a physical law that exists in the natural world, is self-enforcing and cannot be broken<sup>[14]</sup>.

However based on his definition of a natural boundary, he suggested that boundary between nations is a man-made geographical occurrence<sup>[15]</sup> which does not exist in nature itself. He clarifies with the example of desert and forest zones, which are considered to be natural boundaries between nations political boundaries between nations may be fixed by humans, but they are not created by them.

He pointed out the terms 'boundary' and 'frontier' are often used interchangeably; however, there are slight differences between them. He first assessed the term 'frontier' in its historical usage. The term is derived from the word 'front' and emerged in the fourteenth century from the Latin 'frons'<sup>[16]</sup>. In the sense of a state, Kristof present the idea of 'frontier' as a strategic zone which lies at the outer layer of the core revolving around a centripetal force. Here, I have further studied the word 'front' and, according to the Oxford Dictionary, it is explicitly defined as the side or part of an object that presents itself to view<sup>[17]</sup>.

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It is important to note that the view is not perceived individually but is in relation to another's position. However, he also suggested that one must not lose sight of the orientation of the frontier as an integrating factor and zone of transition, acting as a supporting factor to a centripetal force. It has a strategic meaning which is outer-oriented. In general, it is seen as less of a legal or political concept than a phenomenon of 'the facts of life'.

Unlike a boundary, a frontier has an integrating, rather than separating, property and is seen as a phenomenon of life<sup>[18]</sup>. The analysis of 'frontier' as a transitional outer layer controlled by the centripetal force formed at the core is transferrable to building architecture and will be investigated in Part 2.

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## Ranulph Glanville

The translation of boundary in architecture is not just a separation of space by wall or door, but according to Glanville's Zero Space theory<sup>[19]</sup>, it exists as a space by itself. Glanville has explored the nature of boundaries in a fundamental and philosophical manner. He noted that the creation of boundary is to separate outside and inside. In architecture, elements like wall and roof gives the same intention of separating outside and inside. However, Glanville explained walls are not simple dividers; they all would have qualities of their own. Glanville has explored the concept of architecture and space through ancient culture. He took a typical Greek Temple as an example to prove that it is hard to determine where inside stops and outside begins. This accord with the Greek architecture, many walls are made into purposely and particularly rich 'zones'. He pointed out that the area in front of the temple is dedicated to create the separation (Figure 1.7); this space is raised above the ground and aligned to the same level as the core temple.



Figure 1.7 Greek temple

He then introduces the Maya concept of Zero Space<sup>[20]</sup>. Maya civilization was a Mesoamerican civilization who has built their civilization upon art, architecture, and mathematics and astronomical system. In Maya architecture, mathematics and space are tied closely together. Spatial experience likes inside/outside and solid/ void are described in a similar way; the Maya temple would have 3 spaces: the inside as negative space, outside as positive space and there is a Zero space (Figure 1.8, 1.9). The notion of Zero space allows for there to be a space of distinction between the inside, the wall in the Zero space are deliberately constructed to 1 meter thick. The intention is that when you step into this space and you know you are going from the outside to inside and most importantly this space has a distinctive character of its own.

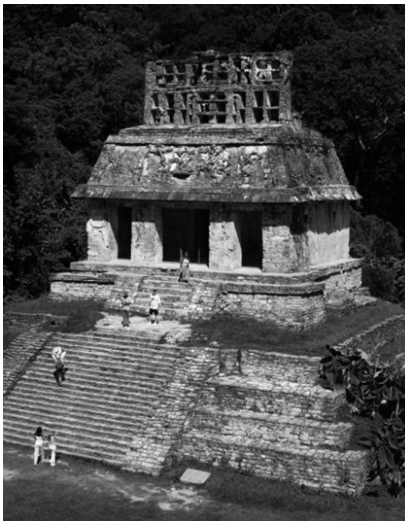


Figure 1.8 Maya temple

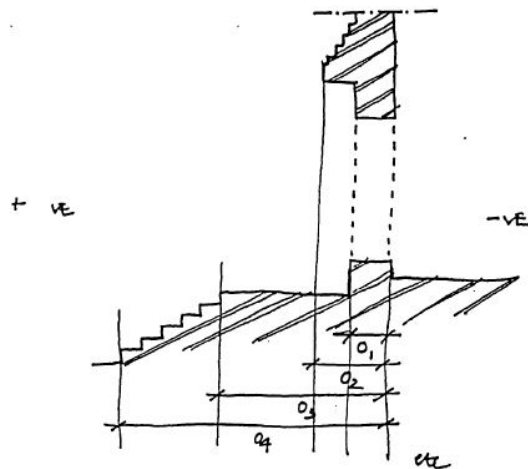


Figure 1.9 Glaville's Diagram on Maya temple demonstrating Zero Space

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He also employed George Spencer Brown's theory of the Laws of Form<sup>[21]</sup> where the discussion has gone from the physical level to the mathematical and metaphorical level. He refined the idea of the character of the wall in architectural terms is strengthened if we also look at the space it makes. So the wall is not seen as its own thickness but in the Greek temple's case (Figure 1.10, 1.11) the columns, plinth and steps have all contributed to the making of the separation of inside and outside. Glanville re-look into the Greek temple and analyse it in the Zero space perspective. The extent of Zero space is seen from the base of the steps to the opening in the wall and not just the first wall people meet.



Figure 1.10

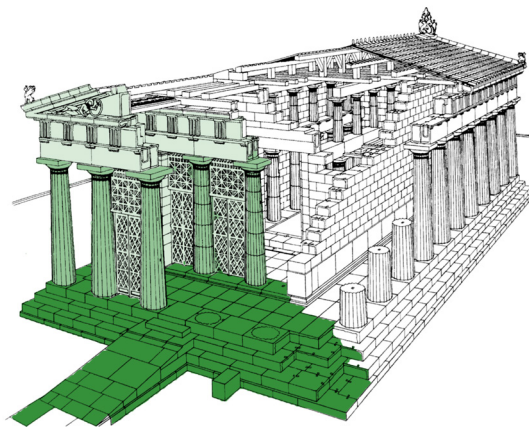


Figure 1.11 Area contributed to the separation of inside and outside

I use this definition of boundary as a space itself to form a separation between outside and inside to explored and investigate in the artificial boundary section of the architectural design project in part 2.

## Suzette A. Haughton

A boundary not only can be described not only physically but also as artificial and symbolic. Haughton is a lecturer in Political Science Department of Government, University of West Indies. Her educational background and interest in security studies has brought her to consider boundaries in the notion of security and assess the safety issue within the nation itself and in respect to neighbouring countries.

She takes the US-Caribbean border as a case study and analyses what defines the separation between a nation and a region. She first considered the ocean as a barrier between the two places but later she argues that the actual separation is the security border and is an artificial boundary established by social or political agents<sup>[22]</sup> which cut across the natural landscape. Apart from security differences, boundaries could also be in the form of national ethnic, religious or linguistic boundaries.



Figure 1.12 Map showing location of US and Caribbean



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## Michele Lamont and Virag Molnar

Michele Lamont and Virag Molnar are both professors of sociology. Together they have set out to explore the idea of boundaries at the social psychological level within human society. In 'The Study of Boundaries in the Social Sciences', they include a discussion on the distinction between symbolic and social boundaries. They suggest that a symbolic boundary has the role of representing a particular political boundary, whereas a social boundary delineates real differences between two bodies. They note the distinction but also highlight the link between the two: the idea of symbolic boundaries has to be widely agreed upon and can take on a constraining character and pattern social interaction. Examples of widely agreed symbolic boundaries included in the article are social class and racial segregation.



Figure 1.13 Racial segregation on bus in the 60s

The two authors agree with Cynthia Fuchs Epstein's idea that symbolic boundaries separate people into groups and generate feelings of similarity and group membership and articulate the problems of such a concept, such as unequal access to and distribution of resources and social opportunities. Symbolic boundaries can be conceptual; therefore, this separation becomes an essential medium through which people acquire status and monopolize resources in a community<sup>[23]</sup>.

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## **Anthony P Cohen**

Within the idea of symbolic boundaries, cultural boundaries are an inevitable separation that happens in a society. Here, the cultural boundary is looked at from the social science point of view and focuses on the self-consciousness of the individual within the boundary. Anthony P. Cohen is a professor of social anthropology; he suggests that boundaries are zones for reflection: on who one is, and who others are<sup>[24]</sup>. He articulates Kondo's work on the Japanese culture and explains this two-way cultural action is asserted by the society and influences the image a person then projects. Cohen refers to the image as 'cultural identity' and the action and representation as 'ethnicity.'

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## **Simon Harrison**

Furthermore, Harrison, who is also a social anthropologist, has examined the nature of the boundedness of cultural repertoires and how ethnic groups define themselves and understand ethnicity. He devised a more phenomenological expression on the cultural practices of a group. He suggests that a group expresses its identity by means of practices and symbols, such as modes of dress, ritual and religious belief. He points out that cultural boundary can be viewed as demarcations between symbolic practices with which particular collectives seek to differentiate themselves from others. By all means, one would need to first recognise their cultural identity, and the identification process is an internal one. To work, there must be a two-way recognition in order for an externally objectified collective identity to emerge. We cannot understand cultural boundaries without coming to terms with the discourse they enclose.

Consider, for instance, gender segregation in Muslim culture. Family and community exercise strict control over girls' behaviour. Females have less freedom in public and must constrain their behaviour in comparison with males.



Figure 1.14 Female Muslims at school

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The cultural notion of gender division is seen in the family too. Here, at the household level, a person's role in a family is paired to his or her gender. Females, in the role of housewives and mothers are responsible for managing the household, while males, as the core of the family, provide and lead. At the personal level, females cannot leave their homes without hair coverings (Figure 1.14). Architecturally, large traditional houses will often have a complex double structure that allows men to visit each other without running any risk of meeting the women of the family.

Or consider the London pubs of the Victorian Era. To the mid-1960s, a pub would be split into separate bars, such as the Public Bar, Saloon Bar, Ladies Bar and a Tap Room or a Jug & Bottle. There are features within the bar which differentiate one to another. For example, the Public Bar is more plainly furnished compared to the Saloon Bar. Lounge originally, the hotel residents' sitting room, is a superior saloon bar, often with waiter service and with no sale of draught beer. Tap Room would be a public bar, sometimes a room reserved for playing games, without counter service. Jug & Bottle will be a place for the purchase of drinks for consumption "off the premises".

Drinkers are categorised in different classes according to their social identity and they would naturally enter the different bar. This natural phenomenon is a motive concept and has certainly to do with the

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experiences and the way of access in different bars. The entry to the upper class bar will be exclusion as it is an access to a specific class circle. For instance a Saloon bar is mostly for the white collar and their wife, it is access through a separate door from the streets outside (Figure 1.15).



Figure 1.15 Saloon bar entrance

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Whereas a public bar is generally for working class men.

The choice of separation from the drinker is to do with a collective identity where Lamont has pointed out the formation of self-worth concept is constituted by dialectic interplay of processes of internal and external definition<sup>[25]</sup>. Realistically, drinker would have to go through a self-identification process<sup>[26]</sup> and make their choices on bar to enter. They would need to differentiate themselves from others by drawing on criteria of community and externally recognised by people in the bar for an objectified collective identity.

Apart from the entry point which draws the socio-economic boundary between people, the interior and overall experience is contributed to that. The interior of a saloon bar is usually a spacious reception room in a private mansion. It would be separated by mahogany and coloured glass screens (Figure 1.16).



Figure 1.16 Mahogany in a saloon bar

TAP ROOM PRICE LIST			
FOR			
BEVERLEYS BEERS			
MILD - -	1/-	per pint	
	6d.	per half pint	
TRINITY BITTER	1/3	per pint	
	7½d.	per half pint	
GOLDEN EAGLE	9½d.	per small bottle	
OLD WARRIOR	11d.	" "	
OCTOBER, 1949			

Figure 1.17 Price list in Public bar

CONCERT & SMOKE ROOM			
PRICE LIST			
FOR			
BEVERLEYS BEERS			
MILD - -	1/1	per pint	
	6½d.	per half pint	
TRINITY BITTER	1/4	per pint	
	8d.	per half pint	
GOLDEN EAGLE	10d.	per small bottle	
OLD WARRIOR	11½d.	" "	
OCTOBER, 1949			

Figure 1.18 Price list in Saloon bar

Most importantly, the price of the drinks in different bar will be different. The price is higher in one place is because the price can afford to be higher and would still not affect the amount of demand in the market. As you may see the price of beer in the public bar (Figure 1.17) will be 10 or even 20 per cent cheaper than the same beer in the saloon (Figure 1.18). In another words drinkers are willing to pay for the exact same product even there is a cheaper option. The reason is that the interior and a separation to a lower class are the experience which drinkers are willing to pay and that has make up the price differences of the same drinks in different bars. For instance, in the saloon bar there are spacious seating area and a counter for serving.

To sum up, price, services and interior has drawn up the socio-economic boundaries between bars and for drinkers it is a show of identity and social class. It is a process of self-identification for user and objectified collective identity for the others<sup>[27]</sup>.

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## Georg Simmel

In this sense, according to the sociologist Georg Simmel, he stated that without boundaries, social and cultural activity would have no form<sup>[28]</sup>. In a specific culture, human would have certain behaviour and it would influence the the way they occupy a space and the spatial organisation in the architecture.

This definition of a cultural boundary, a segregation in space between female Muslims and the public due to the privacy needs is explored and transferred into the architectural design in part 2. In addition, social boundary is drawn between different pure seeds tasting room, it is differentiate by the experience of that is provided to the user by the architecture. This spatial experience as a driver for design is explained in part2.











# PART 2



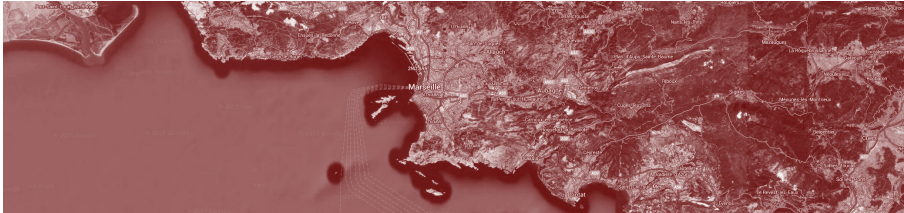


Figure 2.1 Pomegranate factory being burnt down in Afghanistan

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## BACKGROUND OF THE PROJECT

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When tracing the origin of Heroin you will almost inevitably find that Afghanistan is the source. Afghanistan's economy is highly dependent on opium farming, which has funded the insurgents fighting NATO forces and corrupted the government. Foreign countries like the U.S. and UK have promoted pomegranate farming to replace the opium fields. However, a pomegranate factory in Afghanistan could not sustain itself due to the instability of political issues and lack of government infrastructure. There are several examples of pomegranate factories being burnt down by the Taliban due to the surge of farmers converting to the pomegranate industry. Therefore, the project seeks to utilise Marseille's port city location and assist the pomegranate trade the same way it did the opium trade in the French Connection. It is seen as an opportunity to change the image of Marseille as a drug city.

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In the design project, the nature of different boundaries are explored, which are associated with different elements of the urban park. The 'boundaries' act as an architectural element in different parts of the park such that not only is the border a mark to a park region but also aims to respond spatially and calibrate the value of the pomegranate products and farming situation in Afghanistan. The scheme also rethinks the ways of access, separation and experience that each could provide in order to draw awareness to the political issues.

This proposal in Marseille and its associated hierarchy initiates the examination of how the different boundaries and political ideologies can join together and manifest into spatial rhetoric. In the following sections, different boundary conditions will be demonstrated in the spatial form, and the correlation between different boundary principles and their contexts will be established.

The proposal aims to act as a calibrator where the 'boundaries' mediate between park facilities and pomegranate production lines. These three elements merge to form the architecture. The idea is to reveal the political issues in Afghanistan and address a moralistic statement to the public—that is, the privilege of enjoying the public facilities is exchanged for the constant fight of replacing opium farming.

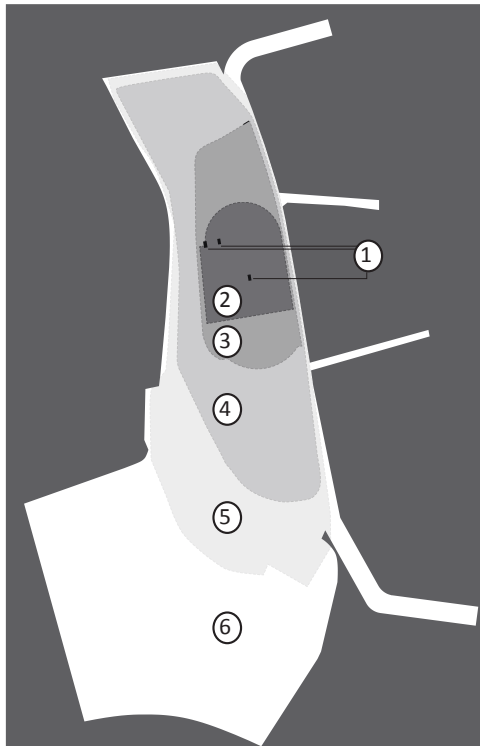


Figure 2.2

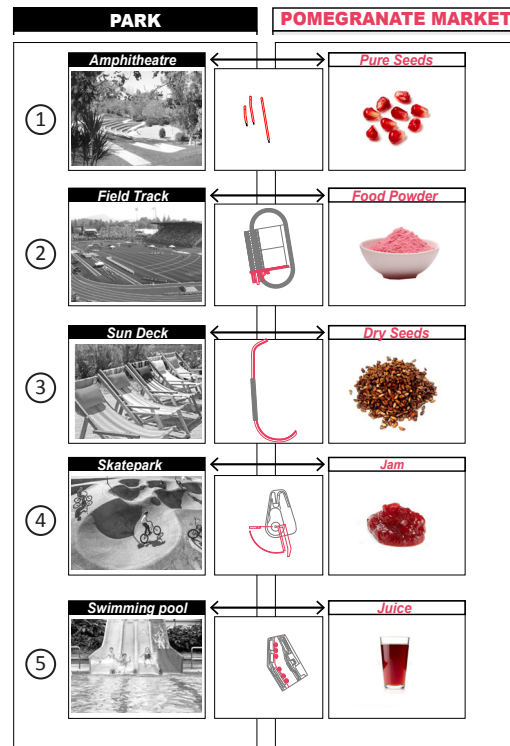


Figure 2.3

In general, the park can be zoned into five layers shown in Figure 2.2. The locations of the major facilities are in different zones determined by the purity and market value of the product. Each major park facility has an entry point, and the ways of access are different from one to the other (Figure 2.4). This means that users may need to cross more boundaries to get to the products with higher market value, i.e. the pure seeds.

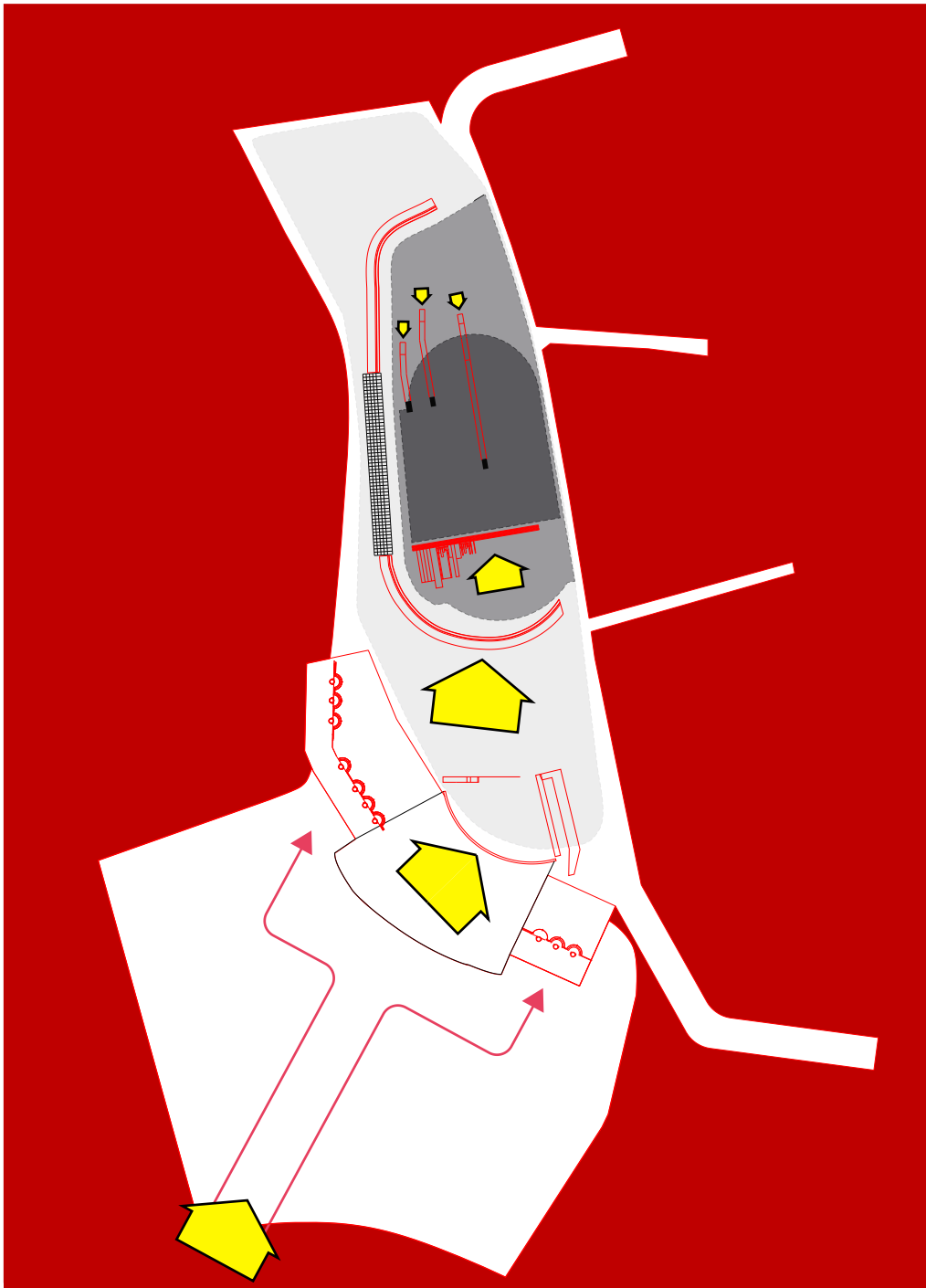


Figure 2.4 Entry point of each zone



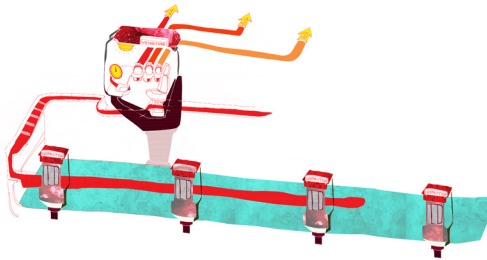


Figure 2.5

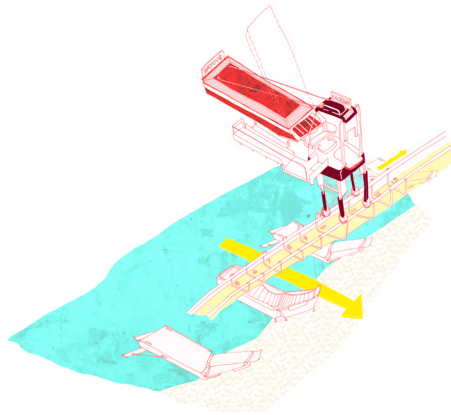


Figure 2.6

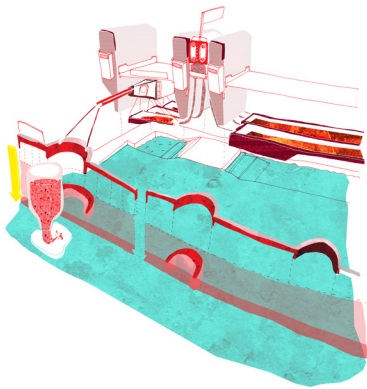


Figure 2.7

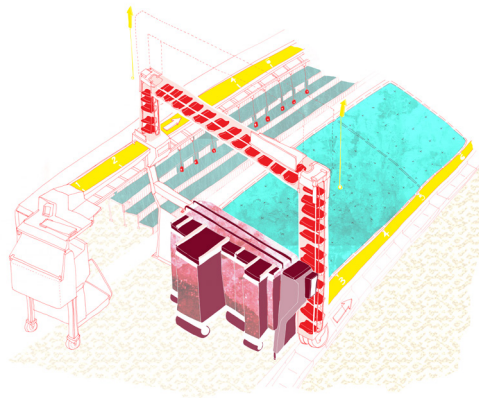
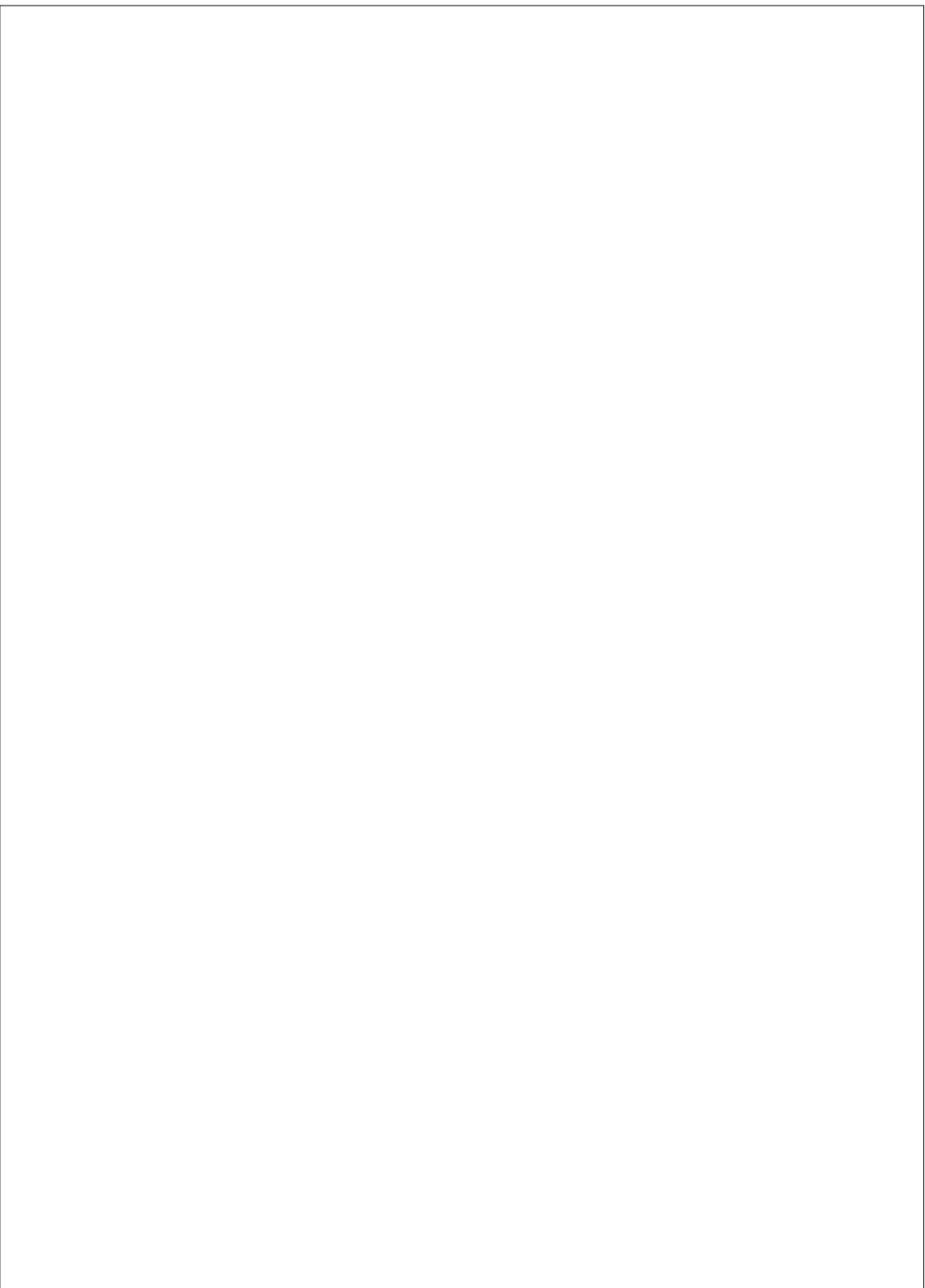


Figure 2.8



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As discussed earlier in part one, analogically, the architectural elements, such as the wall, ceiling, floor and window, act as borders. They work together as a boundary to form the division of regions. The operation of the artificial boundary is closely linked to the pomegranate supply and production. The idea of placing pomegranate production lines as boundaries between park facilities reflects the quantitative data of supply and production. It defines the enclosure and distinction as a traditional architectural form to secure and defend. Heidegger says that 'a boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its presenting'<sup>[29]</sup>

The overall scheme is explored as a system with a series of boundaries. The superimposition of the architectural interventions of boundaries and urban park facilities of the proposals is dictated by the implied market value of pomegranate. It is intentionally positioned in a way that the market value of pomegranate products is registered by the visitors while crossing. Here, an inevitable hierarchy in the park facilities determines the value of pomegranate products, which is reflected in the compositional order, ingress route and amount of boundaries visitors have to cross.



Figure 2.10 Site Context

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## DESIGN EXERCISE 1 : WAY OF INGRESS - PUBLIC ACCESS

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### SYMBOLIC BOUNDARY

### CULTURAL FRONTIER

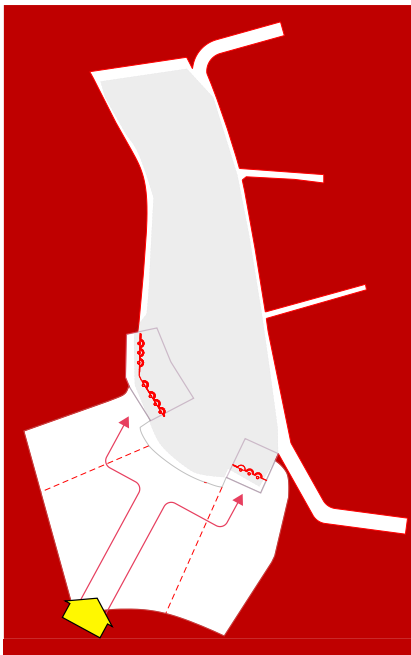


Figure 2.11

This project is built as an extension to the urban renewal master plan, incorporating into the green belt. In relation to the renewal master plan, Parc Francois Billoux is sited at the north edge, connecting the proposal to the master plan. Parc Francois Billoux became the entry point that gave access to the scheme from the redeveloping area and port. Most importantly, it merges the city centre with the proposal. This is, in fact, the first boundary/portal visitors would enter.

Principles of cultural boundary and frontier have been spatially manifested in the space between Parc Francois Billoux and the pool. The existing park became the entry





Figure 2.12 Lotus pond



Figure 2.13 Pomegranate tree

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region, are planted in the outer layer. These trees were chosen for the public area because (1) they are a reminder to the political agenda behind the scheme and (2) the average height of a pomegranate tree is about six feet, which is around the height of a man. The idea is that the park can stay visible, and activities in the park can be seen from the street. The east is a more enclosed route leading from the street to the private pool. It is primarily for female Muslims. Here, a lotus flower is planted at the start of the route because, in the Islamic culture, the Lotus represents energy and is used often. It acts as a subtle sign for the female Muslim swimmers.

The use of tree screens and the symbolic flower are found within the organisation and layout. The flowers are planted in long strips of rectangular pools, which are in straight lines with gaps in between so that, if one missed the subtle sign at the start of the route and ended up in the central public area, he or she can still diffuse themselves through the gaps. The choice of path demonstrates adapting to the environment through cognitive categorization. The path near the indoor swimming pool is lined with tall trees full of leaves in most seasons such that it creates an opaque surface around the indoor pool to provide a more enclosed environment to its users.

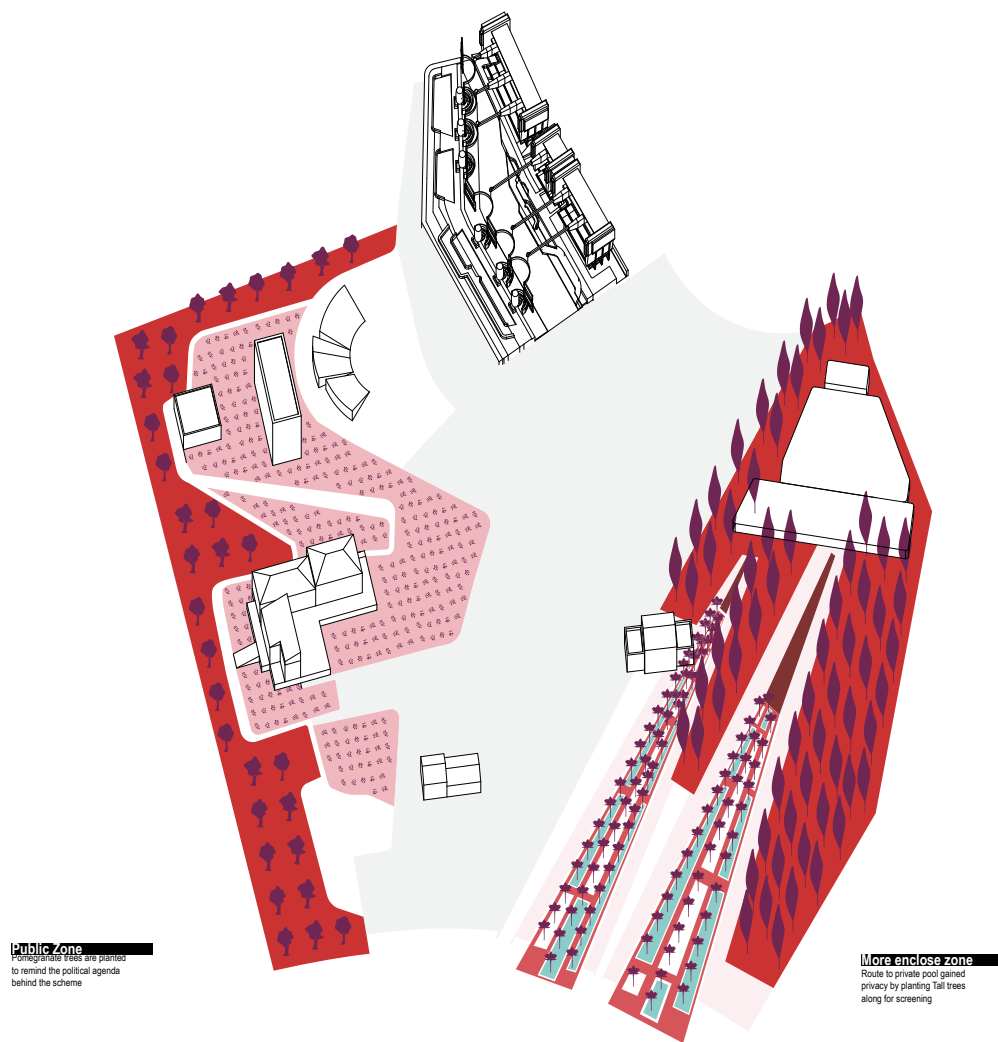


Figure 2.14 Plants used in the zone



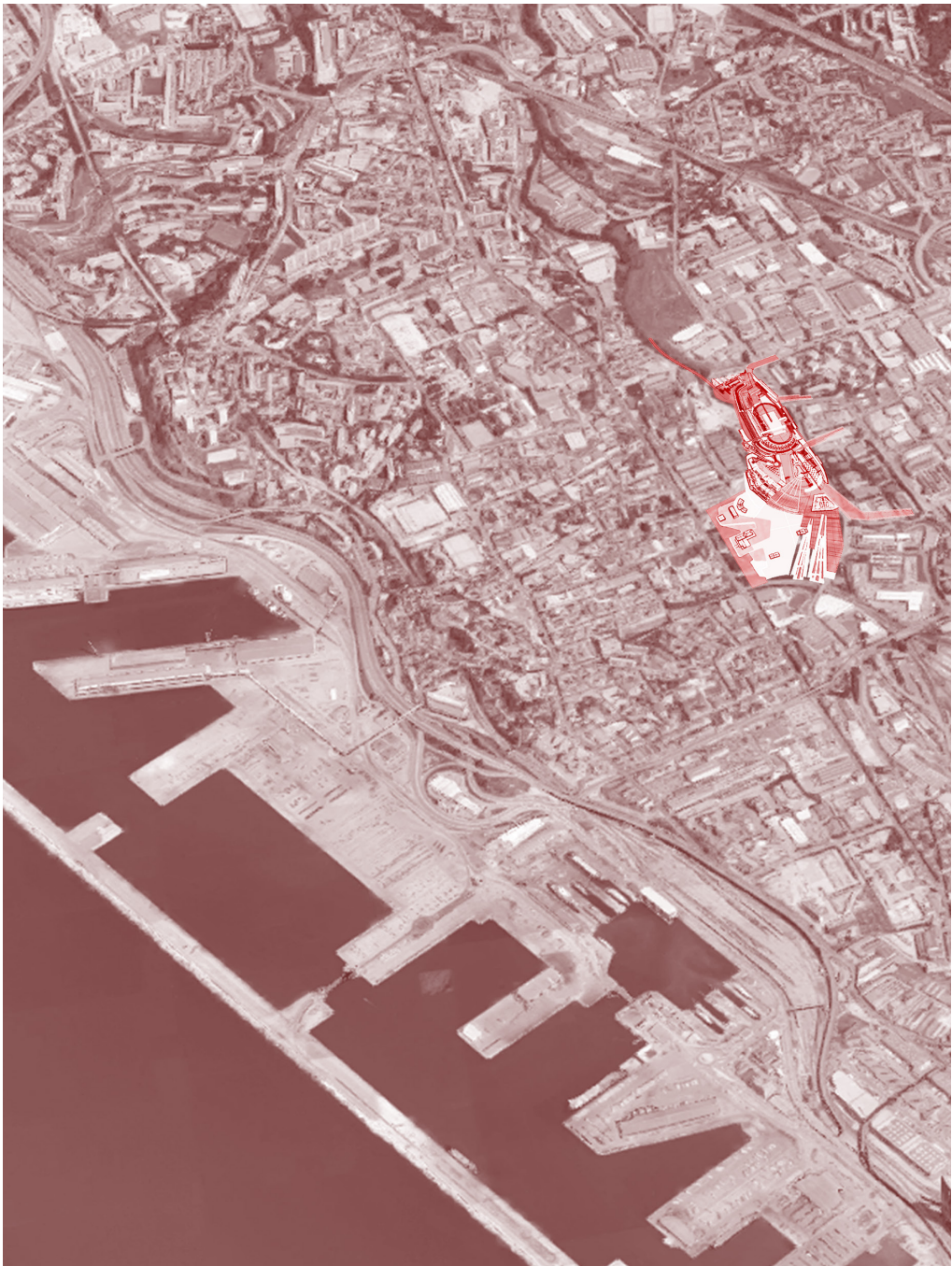


Figure 2.15 Ariel view of the scheme in context

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## DESIGN EXERCISE 2: WAY OF EGRESS- PAVING DIFFERENTIATION

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### PHYSICAL BOUNDARY

### PAVING MATERIAL

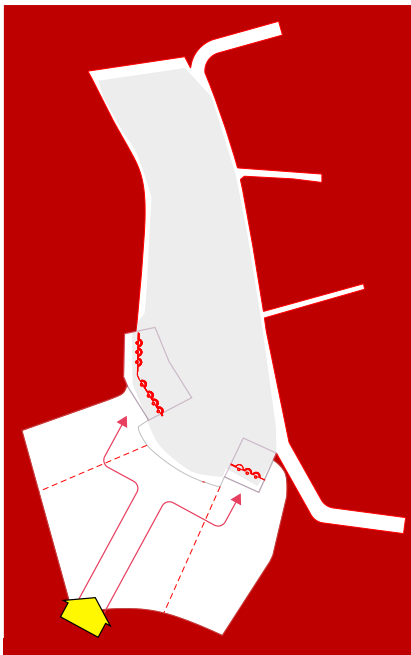


Figure 2.16

Sandwiched by two highways, A7 and A55 are the major land connections of Marseille to the rest of Europe. While Boulevard Lavoisier and the Avenue des Aygalades connect to the A7, the main loading bay for imported pomegranates is located to the north of the site.

The project proposes a new export location for pomegranate product sourcing from Afghanistan. Earlier in project one, a border is defined as having an effect on adjusting the market value of heroin, which depends on the strengths of the border. Here, in the design, the pomegranate production lines are the borders - for analogy, the physical state of the fruit is converted from

one to the other (for instance, pure seeds to jam). The product egress route is a separate route within the system. The four products are the pomegranate juice, jam, seeds and powder. These products are produced in the scheme and distributed locally via the extended market located to the east of the scheme. Since parts of the boundaries in each region are the production line for different products, they are dispersed in different parts of the site (Figure 2.16-2.19).

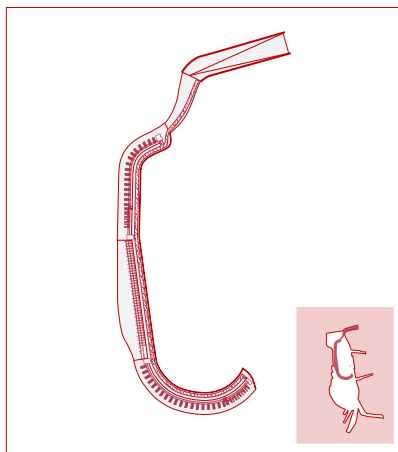


Figure 2.17 Dry seeds zone

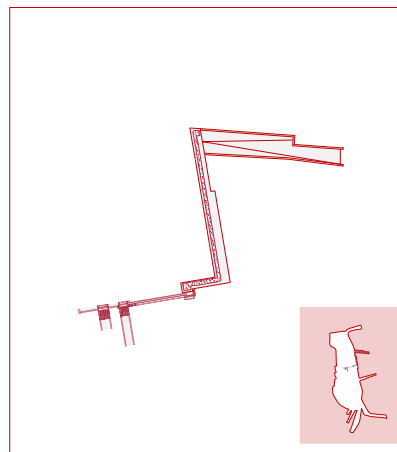


Figure 2.18 Food powder zone

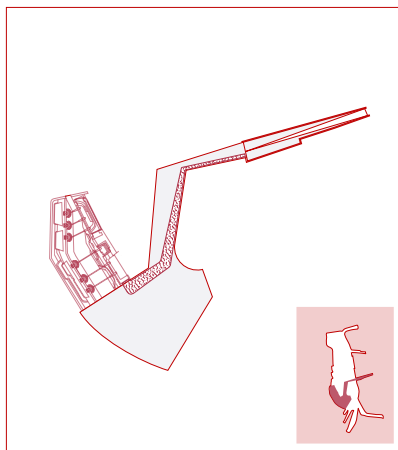


Figure 2.19 Juice zone

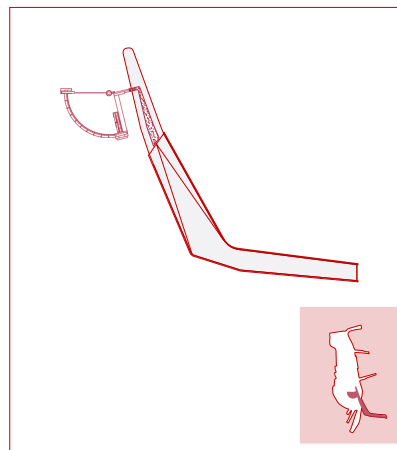


Figure 2.20 Jam zone



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To export the product to the local markets, small vans are used. To differentiate the transporting path and the pedestrian path across the park, a boundary definition for the subdivision of outdoor space is needed. However, this definition is just for clarification - it need not be a rigid boundary but a more subtle sign for the user to notice. A change in the paving material is used here. Cobble is used for light vehicular traffic (Figure 2.20) as it is rougher and does not wear off easily. Gravel is used for pedestrian pavement (Figure 2.21), as it is smoother to walk on in comparison. There are brass studs to highlight the point of change.



Figure 2.21 Gravel

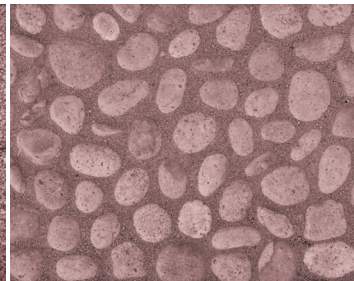


Figure 2.22 Cobble

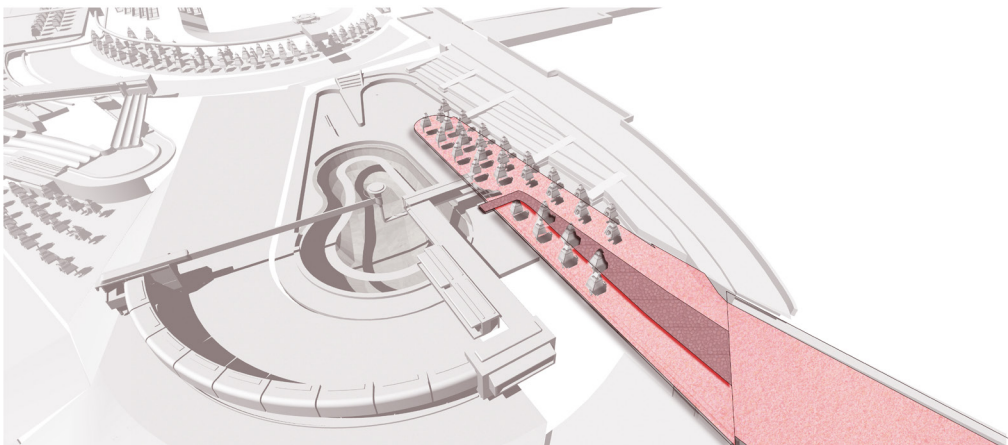


Figure 2.23 View on pavement in the Jam zone

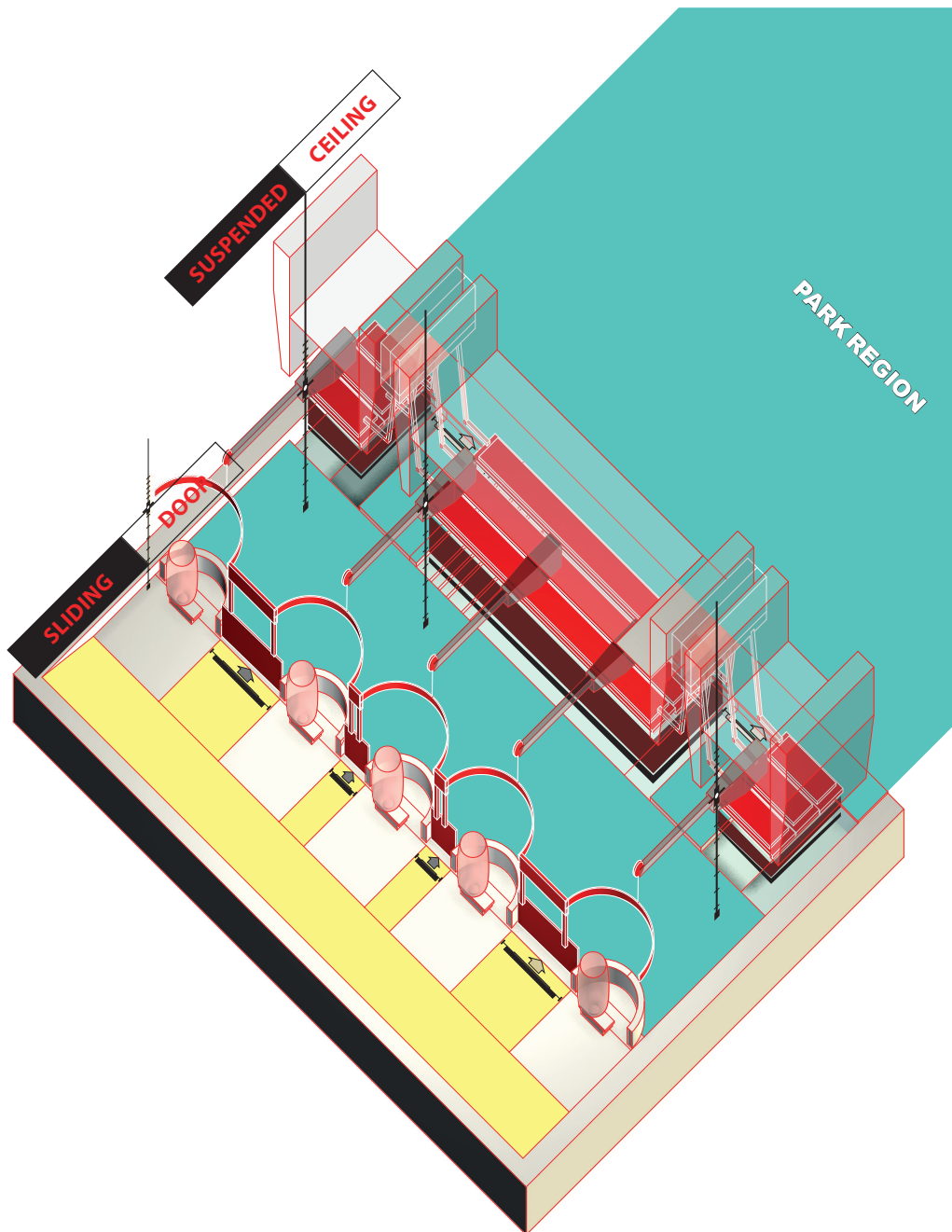


Figure 2.24 Seesaw gate



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## DESIGN EXERCISE 3: ACCESS TO SWIMMING POOL

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### ARTIFICIAL BOUNDARY

### SEESAW GATE

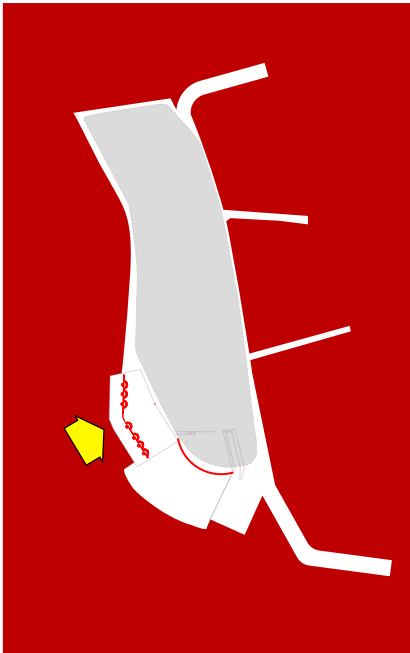


Figure 2.25

Swimming pool is the first leisure facilities after crossing the existing park. The boundary between the swimming pool and the park is a water gate run in see-saw system.

The definition of a 'Thick Border' is demonstrated here. Earlier in part1, I have defined the term in a socio political angle, where the boundary is a meeting place of two socio political bodies with its internal harmony and individuality. Here, in a physical sense, I have identified the boundary as a meeting place of two different medium. Each has a distinct physical property. They are identified as the water and land. Together they contribute to the construction of the physical separation where boundary

is formed. Referencing Glaville's Zero space<sup>19</sup>, the boundary is not only directing to the gate only, it includes the whole system from the opening to the suspended juice ceiling above the small pools. The suspend ceiling is the filter for the juice after the seeds are being pressed. It is connected to the gate via the lever. The suspended juice ceiling span across the small pools giving physical limitation from above and form the territory and space for the swimming pool (Figure 2.26,2.27).

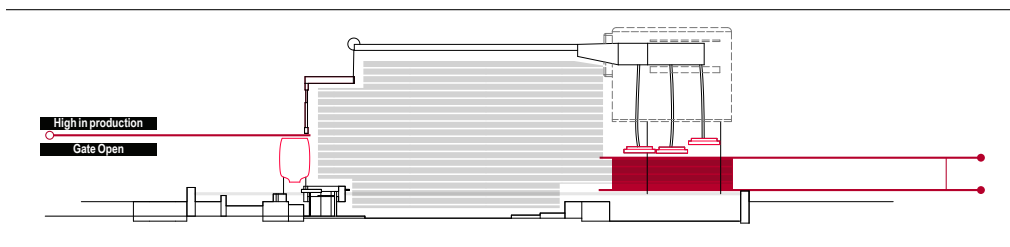


Figure 2.26 Section on water gate system (Open)

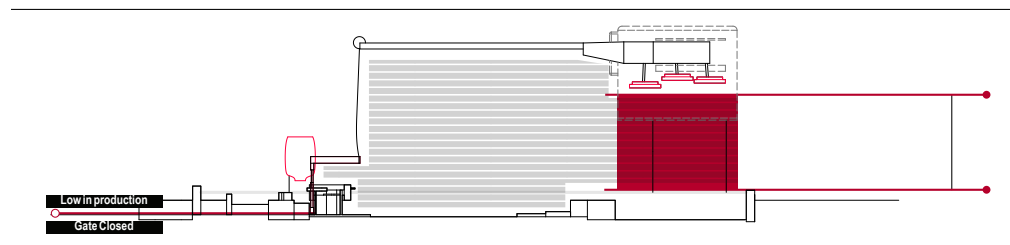
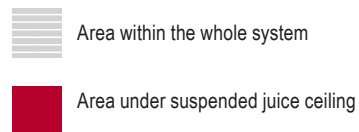


Figure 2.27 Section on water gate system (Closed)



The supply of the Afghan pomegranate is reflected on the amount of production in juice and that would determine the accessibility for visitors. When there are pomegranate supplies from Afghanistan, the weight from the juice will trigger the gate to open for public access via the see saw system. On the other hand when there is no supply, the gate would drop down and shut the swimming pool.

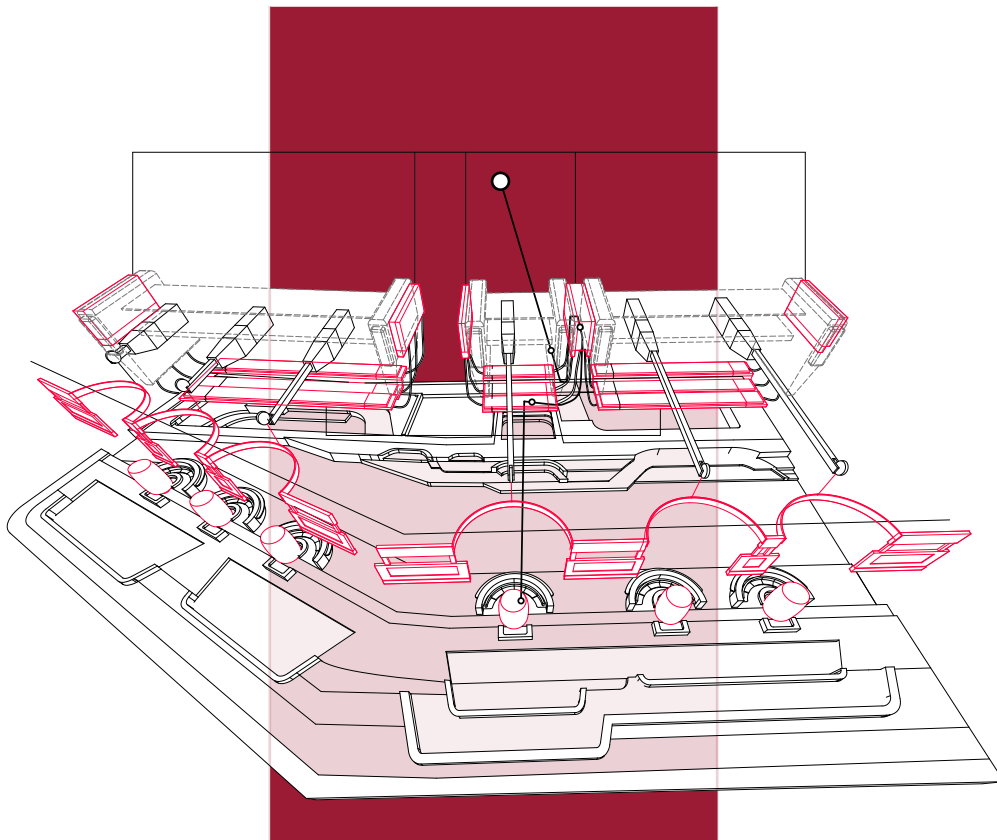


Figure 2.28 View on Water gate



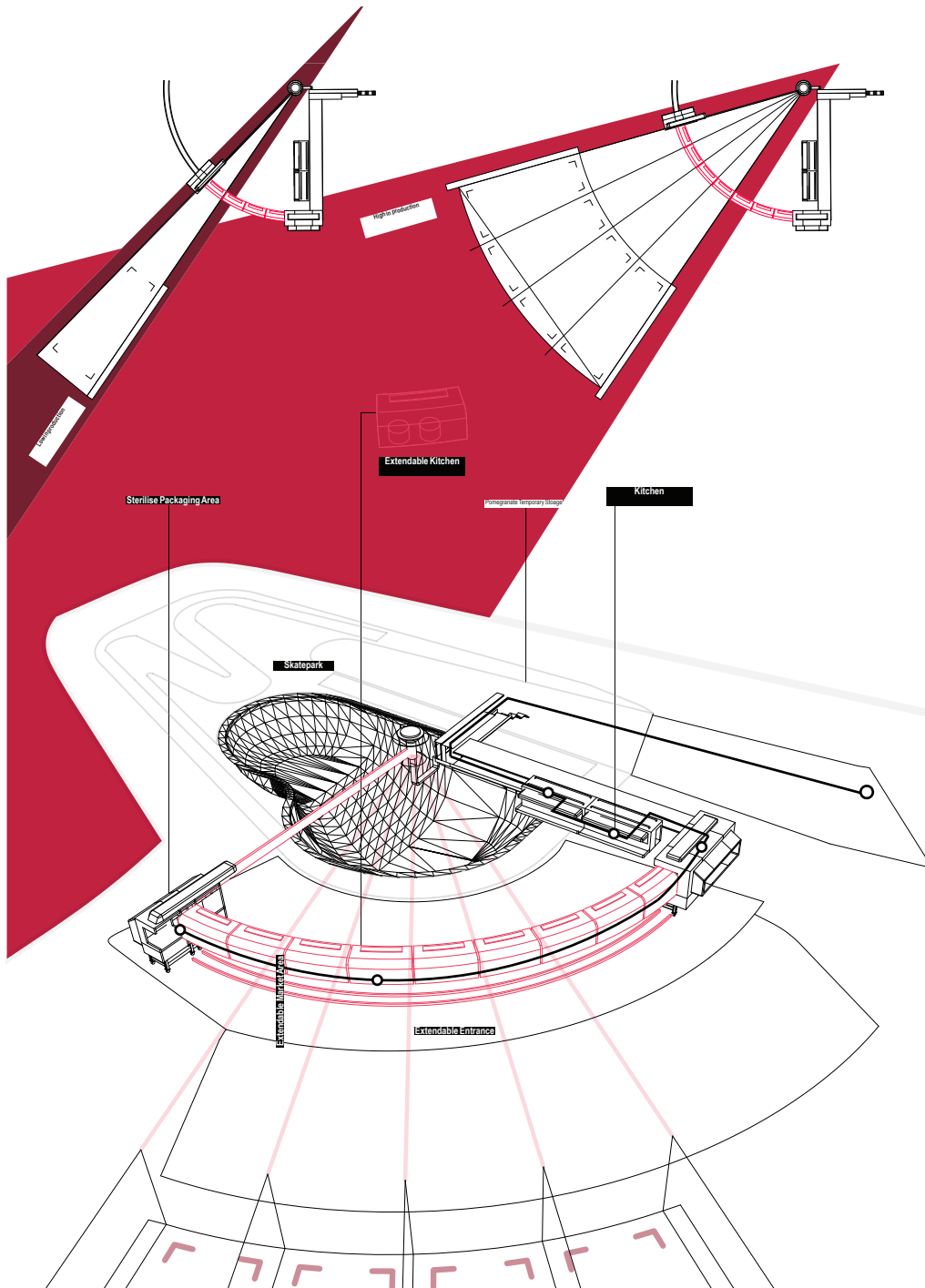


Figure 2.29 Expendable gate

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## DESIGN EXERCISE 4: ACCESS TO SKATE PARK

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### ARTIFICIAL BOUNDARY

### EXPENDABLE GATE

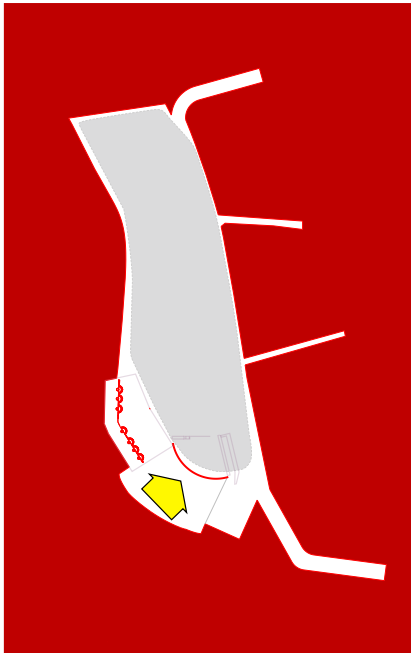


Figure 2.30

For non-swimmers, visitors would cross Parc Francois Billoux and meet the skate park. The skate park is associated with the jam production line where the width of the opening is adjustable according to the amount of production. It extends from the Preparation hub to the Packaging pod. The extendable property is featured in the kitchen place elevated from the ground. As Glaville would interpret the extent of Zero space in the Greek temple is seen from the base of the steps to the opening in the wall, here the boundary is the space underneath the kitchen between the two hubs.

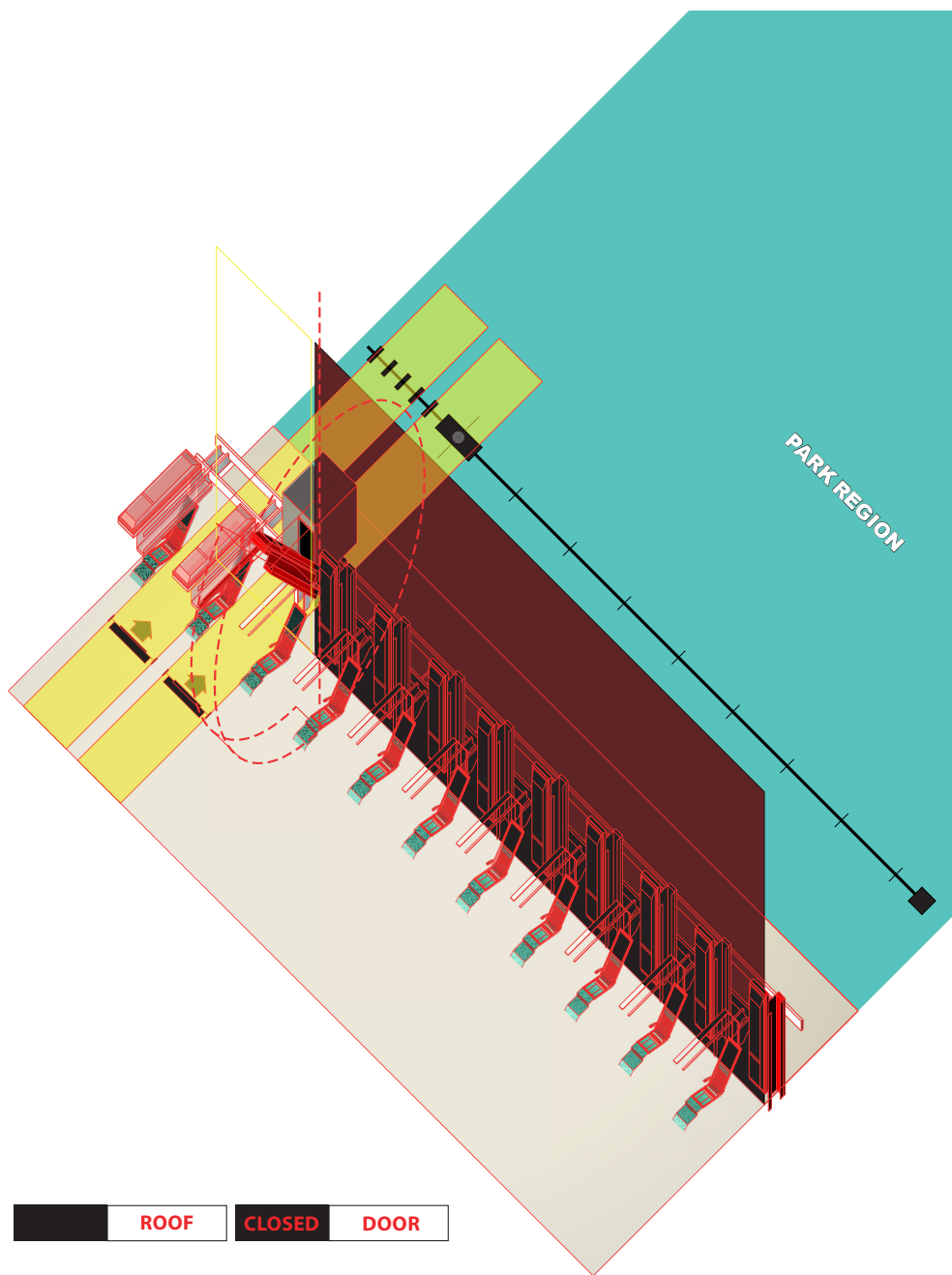


Figure 2.31 Flipping gate

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## DESIGN EXERCISE 5: ACCESS TO FOOTBALL STADIUM

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### ARTIFICIAL BOUNDARY

### FLIPPING GATE

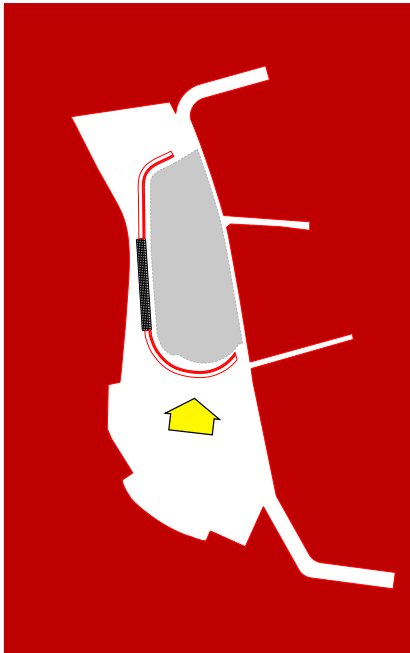


Figure 2.32

After crossing the swimming pool or skate park, the dry seeds production line is reached before entering football stadium. It forms a boundary and wrapped round the auditorium and football court with two main entry points, one at North the other at South. The entrance can be interpreted as a multi- openings gate; it also functions as a line of sundecks in the open air. The idea to occupy the boundary as a leisure space is to provide a viewing platform for the users even they did not granted access to the facilities behind.

Even though the opening allow in and out, a boundary can be seen

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having two sides as it separates two regions. In the production of Space, Henri Lefebvre has utilised the frame of the window to explain the differently framed window on the both sides to illustrate different faces can be classified as outside and inside. In this case, there is a dominant side and it faces the visitor who enters from the outer layer of the site. The fixed orientation of the deck chairs gives the intention of a welcoming sign and this side of the boundary is the first image presented to the visitor and the city. Therefore, not only did the orientation of chairs showed the direction of opening but the face would determine which side is regarding as the inside and outside.

The position of the deck chairs is placed to provide a viewing point for users to look over at the grand entrance of visitors and pomegranates. Users sitting at the North deck chairs will be able to see boxes of pomegranate arriving from Afghanistan by truck and the moment when fruits enter the infrastructure. The users at the south entrance will be looking out to the main entrance for visitors. This setting of orientations gives connection to the overall site context broader than the immediate surroundings.

The gate would open and operate as the drying rack. It is placed horizontally when there is a production on dry seeds. In the contrary, the drying rack would flip down and form the closing gate when there is no seed supply.

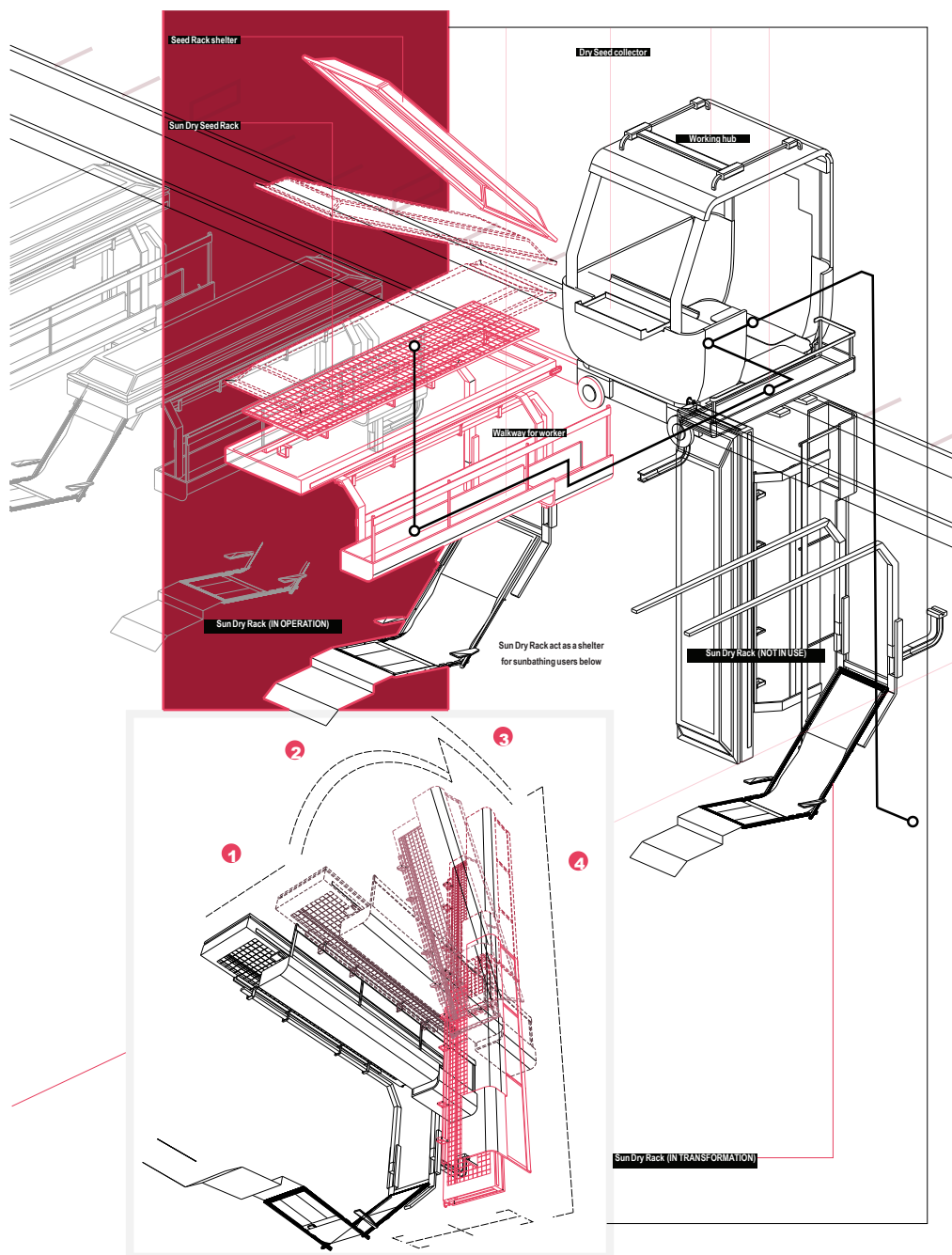


Figure 2.33

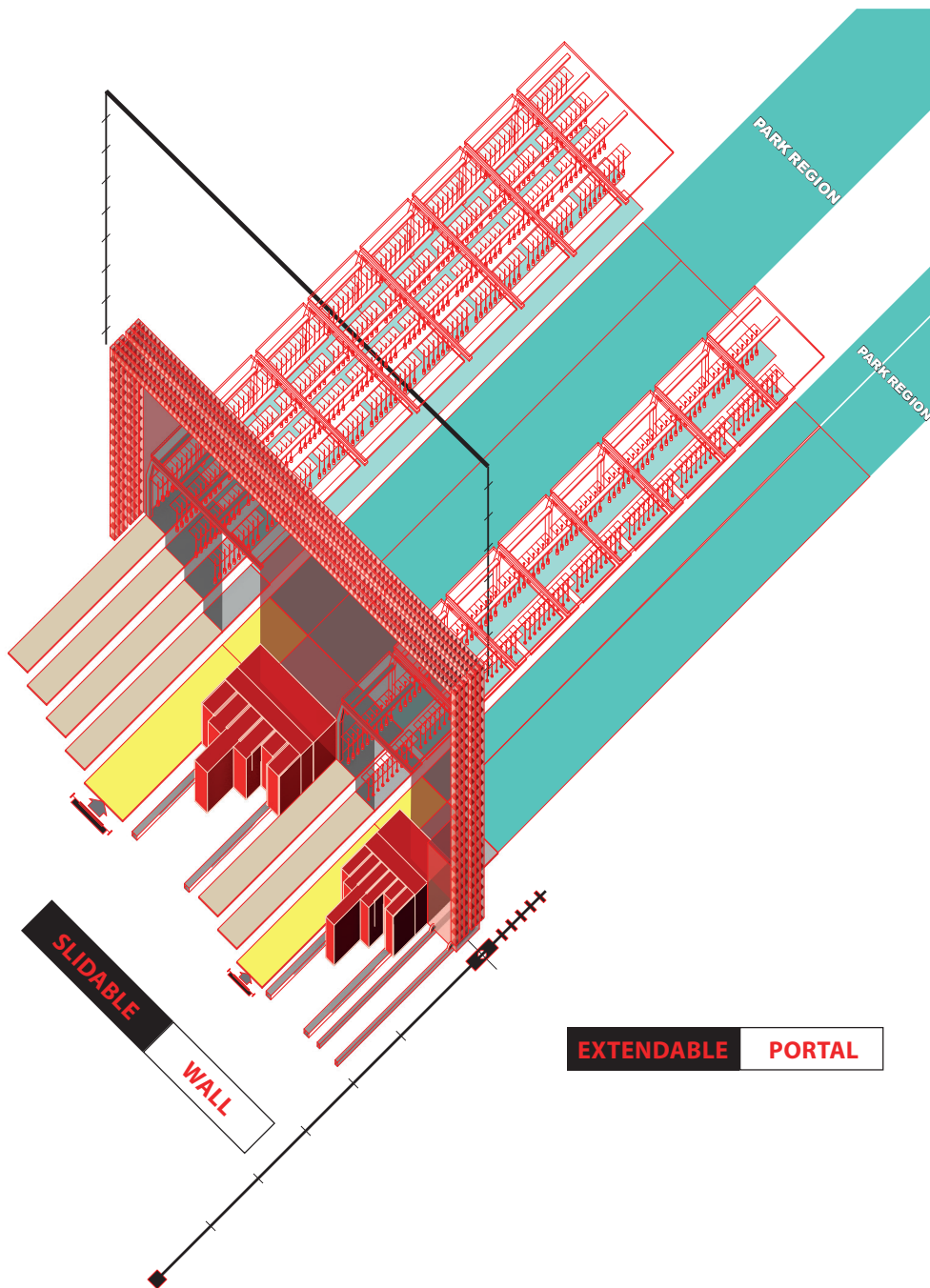


Figure 2.34 Sliding Portal

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## DESIGN EXERCISE 6: FOOTBALL PITCH

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**ARTIFICIAL  
BOUNDARY**

**SLIDING  
PORTAL**

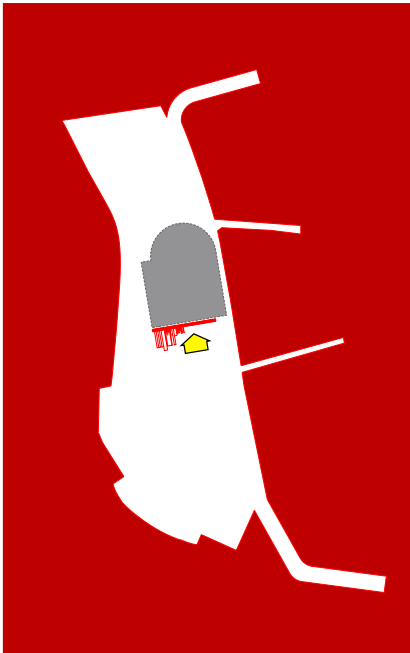


Figure 2.35

Beyond the Flipping gate, visitor will get access to an open sports ground. Within the sports ground, there is a football pitch. To enter the, visitor would need to cross the 'Food Powder Threshold'.. Spanning across and in parallel to the width of the pitch holds the oven drying rack, pomegranate seeds need to be oven dried before grating into food powder and this is in the form of a frame. It connects to the food powder store and the preparation hub on both ends.

The intention is to translate the idea of Zero Space into the threshold and incorporated with the manufacturing process to construct an experiential space such that visitor would register



the atmospheric moment created by the architecture. Again, it is a result from the successful replacement of opium farming in Afghanistan but also allows the boundary to be a space of distinction between the inside and outside<sup>[32]</sup>.

Although boundary are meant to separate and divide, it does not need require to be in a physical form. This transition is taking the form of a portal and it is not just to fulfil the functional purpose. Here, I have attempted to apply Lefebvre's theory, the nature of 'Food Powder threshold' will change class from a functional object<sup>[33]</sup> to a transitional object. The threshold is not an aperture, in conjunction to the pomegranate powder production, it functions as an entry point and calls for something more<sup>[34]</sup>. Thus, the portal is not only seen as a functional object but it attains the status to gain the right for access and serve the space to users. The penetration through the frame allows this opening to maintain the function of a door while the movable feature gives a symbolic limiting property to the region behind.

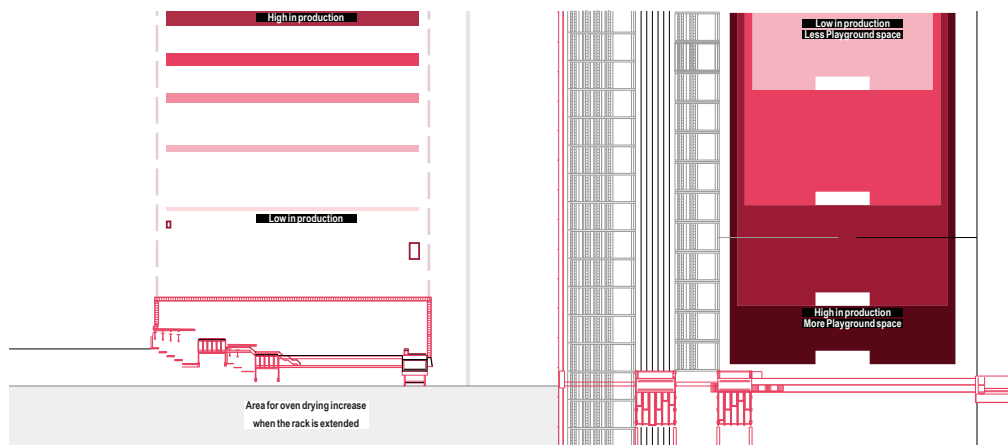


Figure 2.36 Elevation and plan view of the sliding portal

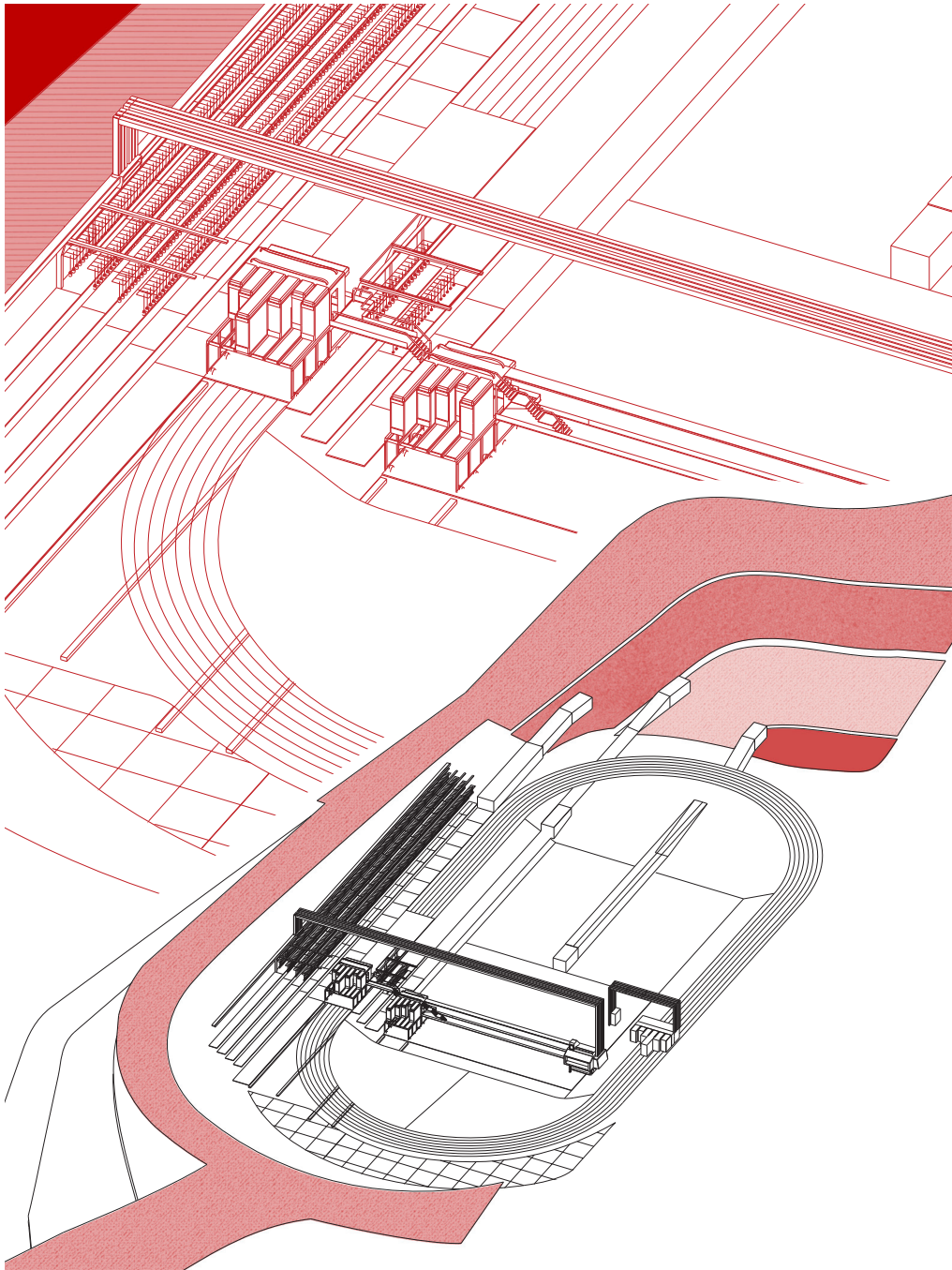
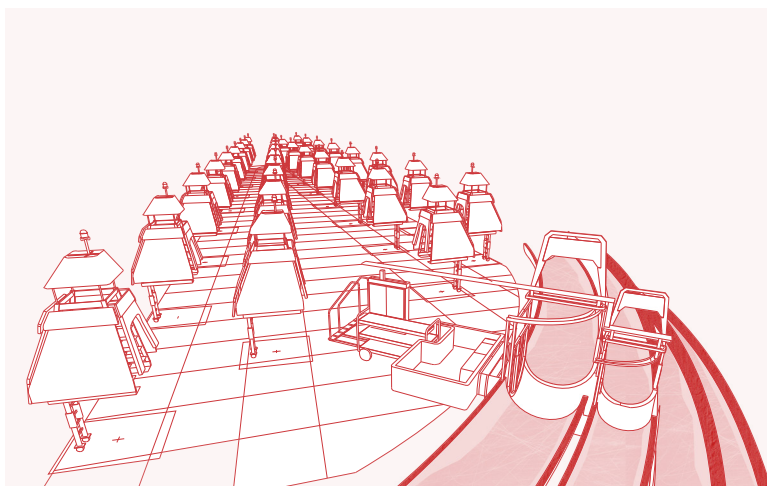


Figure 2.37 Sliding portal



View of water channel

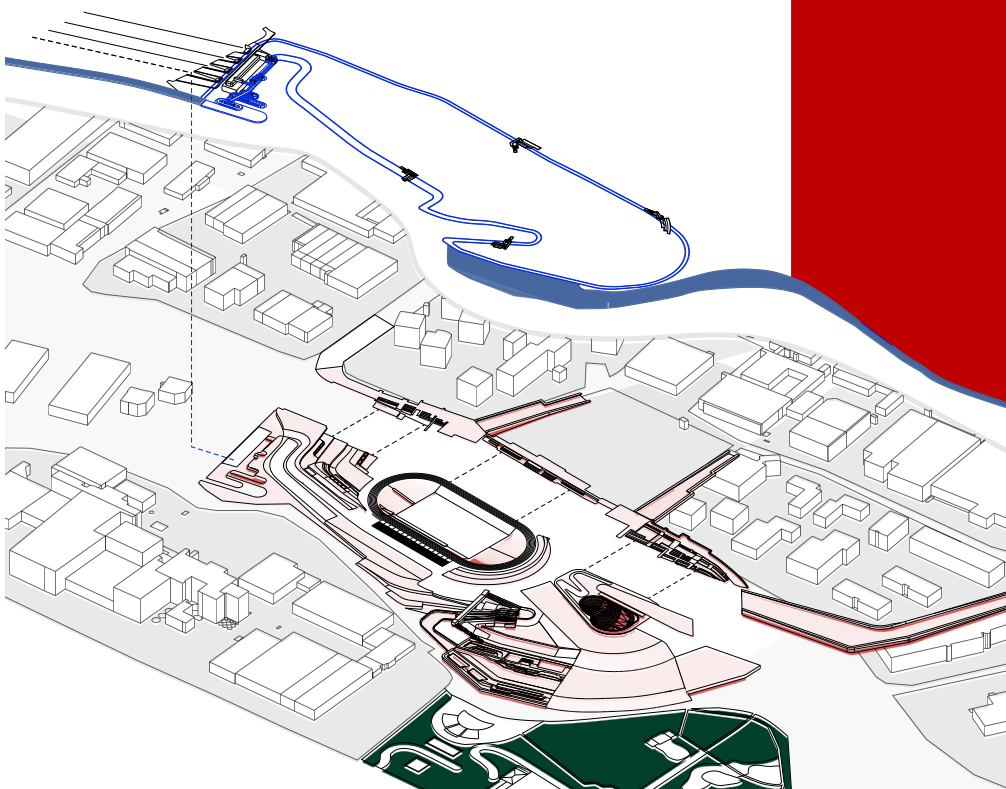


Figure 2.38 Water channel in the site context

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## DESIGN EXERCISE 7: RIVER AYHALADES

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### NATURAL BOUNDARY

### WATER CHANNEL

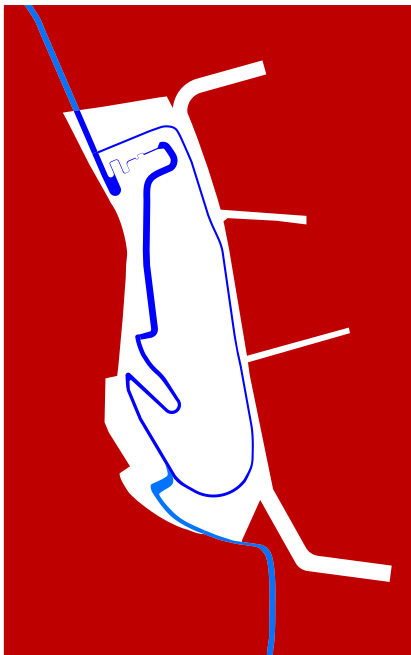


Figure 2.39

The river Ayhalades also runs across the site, it's natural path has been altered and incorporated into this proposal. Ultimately the water used throughout the park will be rejoined with the river. Functionally, it is a pomegranate water transport route which flow the fruits from the main storage to various manufacturing hubs. There are 3 channels in the waterway; each channel carries a different grading of pomegranates. In the design, water is chosen as the natural element is because the moment when the fruit is flowing in the waterway can also be utilised as part of the cleaning procedure.

The interpretation of water as a spatial divider for different zones in

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the park presents the idea of the physical law in natural boundary and is directly transferrable to the architecture.

Water from the river is directed to the water filter which filters out the leaves and stones to a usable level. It will then meet the main storage where pomegranate is dropped into the water channels. Together with the dry seeds sun-deck gate, they firstly form a boundary (Figure 2.40) to the football pitch and auditorium. Secondly, water slide in the water park is connected to the swimming pool and it flows through the juice factory. Together with the See-Saw gate, it forms a boundary which separates the water park and the garden behind.

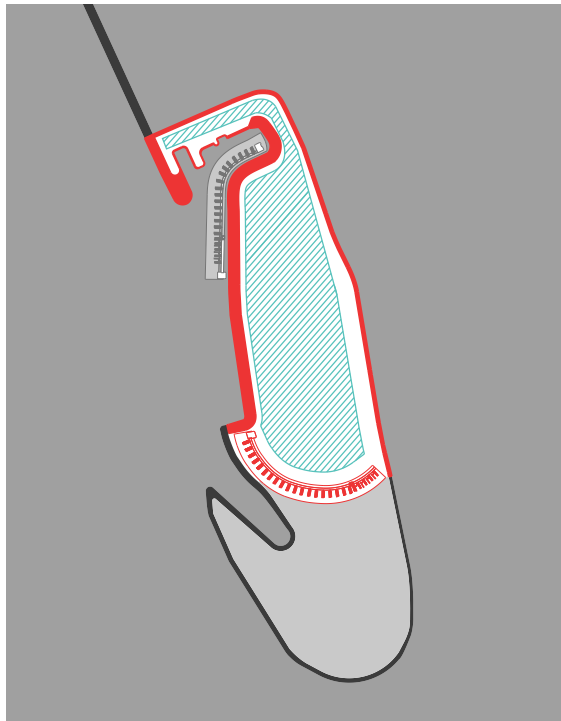


Figure 2.40

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At this point water is split into 2 routes, part of the water will carry on weave through other part of the sites to transport pomegranates and the rest of the water will flowing to the bottom of the site and join its original route and continue down Marseilles. Lastly, it flows along the right edge of the site which separates 4 open air market and the rest of the site. It flows on the surface in the main part (from market 2 to 4) (Figure 2.41) and runs underneath the cantilevered sitting platform which extend from market 1 to 2 (Figure 2.42). The level differences set the separation. The idea is to restrict the visitors from entering the building through the market as to maintain the agenda of the scheme with the overall boundaries system. Visitors are to experience the architecture with the designed rules register the political implication behind. In addition, the advantage of a water boundary is that it denied the physical accessibility but still provide a visual connection between the two region. Therefore, visitors who are enjoying the market events will still be able to see happening in the park.



Figure 2.41



Figure 2.42

## DESIGN EXERCISE 8: FOOTBALL STADIUM AUDITORIUM

### SYMBOLIC BOUNDARY

### STADIUM SEATINGS

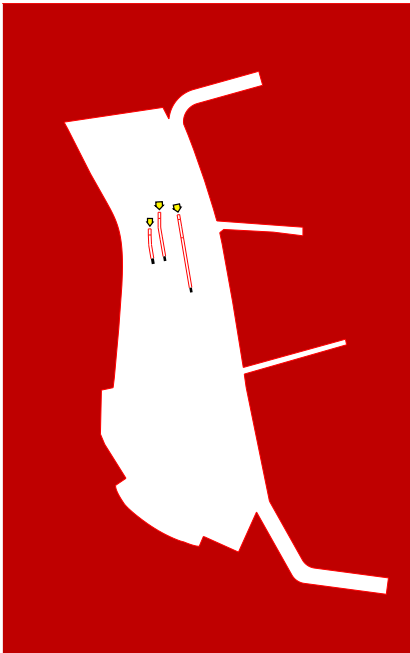


Figure 2.43

Within the park, the football pitch is located at the most inner zone of the whole scheme. It is a major facility in the park because it is an event space to hold football match, it brings a large capacity of public together and celebrate the event. Pomegranate seed tasting and football match happens at the same time. The design of the seed tasting area and the football auditorium in this project is developed by incorporating the ideology of symbolic and economic boundary. Pomegranate seeds are categorised into 3 grading: A as the best quality and C as the worst. Seeds are graded and so as the seating. Therefore, there are 3 different tasting areas designated for the 3



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grading of seeds. For seating in the auditorium, it involves position of seating and viewing distance to the events. There is a correlation between the event viewing distance and the seed's quality.

The price for the 3 types of seating is different.

Firstly on the occasion of the spectacles the public took a seat according to a rigid division based on social classes and it has a direct link to the viewing distance from the user to the event. The exclusive sunken cubicle which located at the centre of the pitch is a Grade A pomegranate seeds tasting area. It provides the closest view and experience to users. The auditorium is also used a tasting area for B and C Grade seeds. Pomegranate seeds are stored in small container hanging above the seating.

Secondly the differences in service provided. Obligatory pathways led to the tiers of seats through different entry points and the idea of symbolic boundary is employed. Architectural composition of the seed tasting zone has therefore been a tool to objectified forms of social differences manifested in unequal access to and unequal distribution of resources<sup>[35]</sup>. Lastly the interior of the pathway. All these elements have contribute to construct the economic boundary of different social class. User will choose the seating according to their ability to afford the price, this is the process of self-identification and objectified collective identity for the others<sup>[36]</sup>.

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## CONCLUSION

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Through an analysis of the idea of boundary in the professions of architecture, geography, spatial planning, social anthropology and mathematics a theoretical understanding of the abstract concepts of border and boundary is attained. This thesis demonstrates it is a useful design agent and a powerful element in the design of the physical architecture. The thesis has also established that boundary has an underlying relationship to space.

Boundaries are used to mark a separation of regions and this general concept has tied closely to different aspects in our daily lives, while existing in different scales, different occasions, physically and conceptually.

In a society, there are separations in ethnicity, social class and culture, it groups people in different ways. Inevitably, it influences the interaction among people but more importantly this separation has caused a direct impact on the way people interact with the architecture.

In design exercise 1, I found it useful to utilise the occupant's internal cultural or social self-identification process as a driver for the design of the entrance of the indoor swimming pool. The design relies on the

self-identification as a means to control the occupant's movement within the pool's frontier entrance. This symbolic boundary ultimately allows for the privacy needs of female Muslims in Marseille who require a gender segregated pool.

In maps, border is often treated as a representational tool to define space and mark the extent to a region. Similarly, in the built environment, boundaries are often seen as a functional element to define inside, outside and a physical purpose which controls access to the architecture. Due to its functionality, it is an indispensable component within the body of a building, however the conceptual idea of boundaries as explored in this essay are not always considered when designing spatial form. As Glaville said boundaries exist 'as a space by itself'<sup>[37]</sup> as such and through Design exercise 3,4,5,6 I have utilised this core concept to inform my design. By tying the political issues of opium farming and the unique function of boundaries together I have highlighted the way human experience of the transition of space is reconsidered.

# ENDNOTES

- 1 <http://education.nationalgeographic.org/encyclopedia/boundary/>
- 2 [https://en.wikipedia.org/wiki/French\\_Connection](https://en.wikipedia.org/wiki/French_Connection)
- 3 *ibid*
- 4 Haselsberger (2010), *Decoding Borders: Appreciating Border Impacts on Space and People*, *Planning Theory and Practice*: 509
- 5 Anderson & O'Dowd (1999): 594
- 6 Haselsberger, *op. cit*: 510
- 7 Kristof, *The Nature of Frontiers and Boundaries*: 277
- 8 *ibid*
- 9 *ibid*: 281
- 10 Ancel (1938), *Les frontieres*, Armand Colin
- 11 Haselsberger, *op. cit*: 507
- 12 One of the earliest definitions comes from the European Regional/Spatial Planning Charter (often called the 'Torremolinos Charter'), adopted in 1983 by the European Conference of Ministers responsible for Regional Planning (CEMAT).
- 13 Haselsberger, *op. cit*: 509
- 14 Kristof, *op. cit*: 276
- 15 Kristof, *op. cit*: 275
- 16 Kristof, *op. cit*: 269
- 17 Oxford English Dictionary (1989) Oxford University Press <http://www.oed.com/>
- 18 Kristof, *op. cit*: 270
- 19 <http://www.rca.ac.uk/schools/school-of-design/innovation-design-engineering/zero-spaces-professor-ranulph-glanville/>
- 20 *ibid*
- 21 George Spencer Brown (1969), *The Laws of Form*
- 22 Houghton (2009), *The US-Caribbean Border: An important security border in the 21st century*: 11
- 23 Lamont and Molnár (2002), *The Study of Boundaries in the Social Sciences*: 168
- 24 Cohen, *Self-Consciousness* (1994), *An Alternative Anthropology of Identity*: 128
- 25 *op. cit*: 170
- 26 Cohen, *op. cit*: 5
- 27 Richard Jenkins *Categorization: Identity, Social Process and Epistemology*: 9
- 28 Simmel (1999), *Cultural Boundaries*: 13
- 29 Heidegger (1971), *Building Dwelling Thinking*
- 30 Kristof, *op. cit*: 275
- 31 Kristof, *op. cit*: 272
- 32 Glanville, *op. cit*
- 33 Henri Lefebvre, *The Production of Space* p.209
- 34 *ibid*
- 35 Lamont *op. cit*: 170
- 36 *ibid*
- 37 Glanville, *op. cit*

## Figures

Figure Int.1	<a href="http://www.storyco.ca/portfolio/boundary-country">http://www.storyco.ca/portfolio/boundary-country</a>
Figure Int.2	<a href="http://www.floornature.com/media/photos/30/4818/wr48_01_popup.jpg">http://www.floornature.com/media/photos/30/4818/wr48_01_popup.jpg</a>
Figure 1.0-1.4	Author's Own
Figure 1.5	<a href="HTTP://WWW.VOANEWS.COM/CONTENT/SAUDI-ANTI-TERROR-PLAN-DRAWS-SKEPTICISM-IN-MUSLIM-COUNTRIES/3106551.HTML">HTTP://WWW.VOANEWS.COM/CONTENT/SAUDI-ANTI-TERROR-PLAN-DRAWS-SKEPTICISM-IN-MUSLIM-COUNTRIES/3106551.HTML</a>
Figure 1.6	Haselsberger Beatrix (2014) 'Decoding Borders: Appreciating Border Impacts on Space and People'
Figure 1.7	<a href="http://www.chartercat.org/profiles/blogs/hs-engineering-drawing-and-1">http://www.chartercat.org/profiles/blogs/hs-engineering-drawing-and-1</a>
Figure 1.8	<a href="http://s230.photobucket.com/user/otdriftwood/media/28MexicoPalenqueTempleoftheSunMexic.jpg.html">http://s230.photobucket.com/user/otdriftwood/media/28MexicoPalenqueTempleoftheSunMexic.jpg.html</a>
Figure 1.9	Ranulph Glanville 'Architecture and Space for thought' Centre for the Study of Human Learning, Brunel University
Figure 1.10	<a href="http://flyicarusfly.com/12-awesome-hours-in-athens/">http://flyicarusfly.com/12-awesome-hours-in-athens/</a>
Figure 1.11	Author edited on <a href="https://classconnection.s3.amazonaws.com/438/flashcards/2510438/png/reconstruction_temple_f_aphaia13517448341171360977634219.png">https://classconnection.s3.amazonaws.com/438/flashcards/2510438/png/reconstruction_temple_f_aphaia13517448341171360977634219.png</a>
Figure 1.12	<a href="http://www.gulfmex.org/archive/map.htm">http://www.gulfmex.org/archive/map.htm</a>
Figure 1.13	<a href="https://prezi.com/mmbj3nkmv2_i/civil-right-movement-megan-b-and-alison-o/">https://prezi.com/mmbj3nkmv2_i/civil-right-movement-megan-b-and-alison-o/</a>
Figure 1.14	<a href="http://www.zimbio.com/pictures/tqLdDI6Rz-2/">http://www.zimbio.com/pictures/tqLdDI6Rz-2/</a> Thai+Muslims+Attend+Islamic+School+Southern/CEjo1q6aphE
Figure 1.15	<a href="http://zythophile.co.uk/2012/10/02/shades-dives-and-other-varieties-of-british-bar/">http://zythophile.co.uk/2012/10/02/shades-dives-and-other-varieties-of-british-bar/</a>
Figure 1.16	<a href="http://www.legendsofamerica.com/picturepages/pp-saloon-2-meekerco.html">http://www.legendsofamerica.com/picturepages/pp-saloon-2-meekerco.html</a>
Figure 1.17, 1.18	<a href="http://zythophile.co.uk/2012/10/02/shades-dives-and-other-varieties-of-british-bar/">http://zythophile.co.uk/2012/10/02/shades-dives-and-other-varieties-of-british-bar/</a>
Figure 2.0	<a href="http://www.veteransnewsnow.com/2012/07/22/vladimir-putin-russia-and-the-changing-world/">http://www.veteransnewsnow.com/2012/07/22/vladimir-putin-russia-and-the-changing-world/</a> <a href="http://www.scotlandnow.dailyrecord.co.uk/news/pomegranates-not-poppies-save-afghanistan-4713110">http://www.scotlandnow.dailyrecord.co.uk/news/pomegranates-not-poppies-save-afghanistan-4713110</a> <a href="http://www.darivova.com/content/investment-in-afghanistan-beyond-2014/1646663.html">http://www.darivova.com/content/investment-in-afghanistan-beyond-2014/1646663.html</a>
Figure 2.1	<a href="http://www.kommersant.ru/gallery/2329585">http://www.kommersant.ru/gallery/2329585</a>
Figure 2.2- 2.9	Author's Own
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Figure 2.13	<a href="https://s-media-cache-ak0.pinimg.com/736x/47/9b/">https://s-media-cache-ak0.pinimg.com/736x/47/9b/</a>
Figure 2.14	Author's Own
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Figure 2.21	<a href="http://www.plaintextures.com/graveltextures">http://www.plaintextures.com/graveltextures</a> lcode=pMvE3Rftk3iEbPXcUyEKvmLJ6Dfa54BEE75uxOt15OpSy3y6BV285eldY8z8m5ofBPvaxcQkEGjP5etUOZhHKQ%3D%3D
Figure 2.22	<a href="http://www.textures.com/download/gravelcobble0027/64659">http://www.textures.com/download/gravelcobble0027/64659</a>
Figure 2.23 -2.43	Author's Own

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