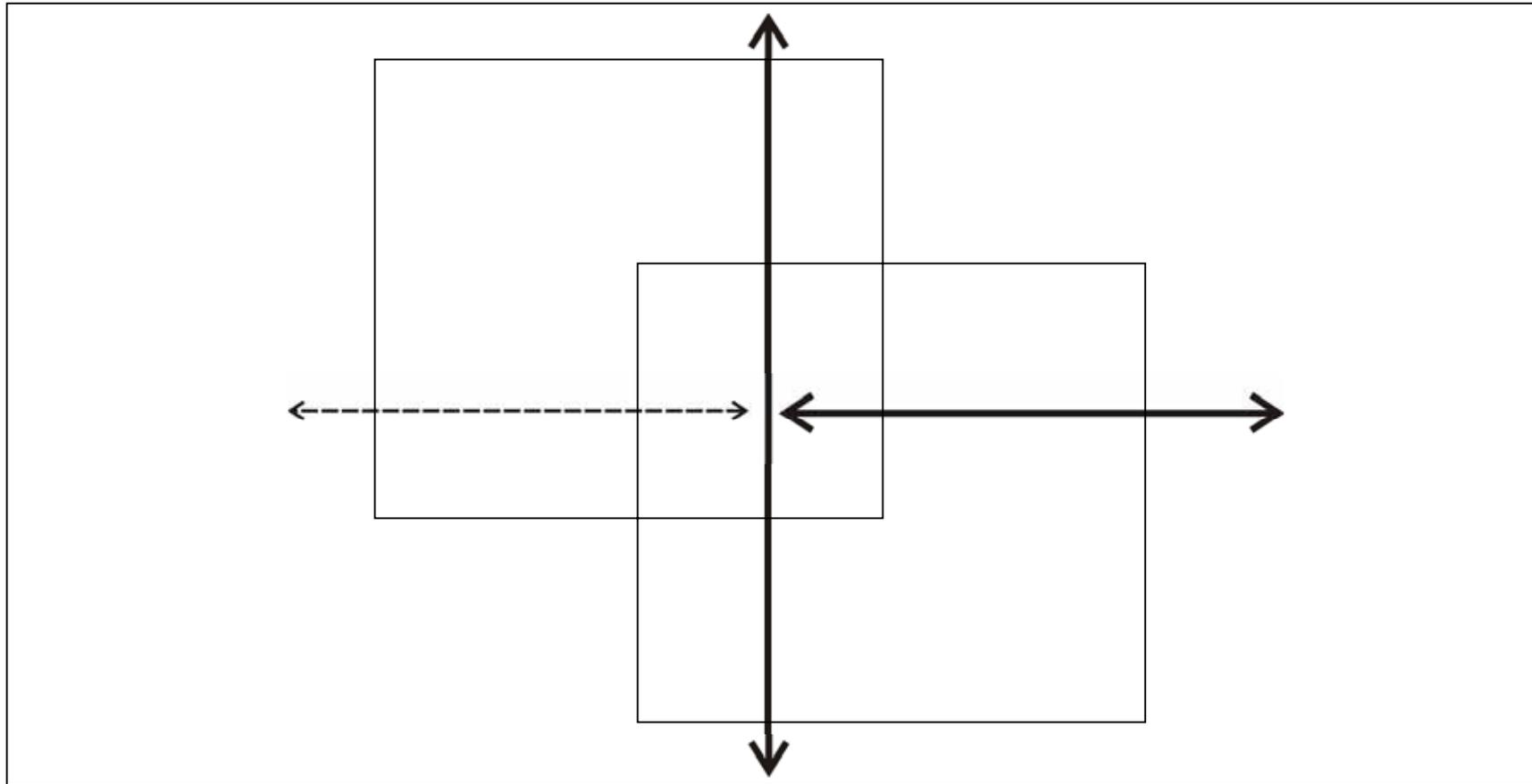


CHAPTER 2 _____ THEORETICAL DISCOURSE _____



Barricading fences have become standard in the modern day. It would be reckless to expect that they disappear overnight, but so too is the notion that we simply have to live with their inadequacies in providing a more efficient, developed and safe urban environment. More appropriate urban design tools have to be utilised in place of fences to create this safety.

1. Urban design development

The theoretical discourse of this dissertation shall be based primarily on the analysis of the emerging urban theory from Christopher Alexander and Nikos A. Salingaros' perspective. Most intrinsic to this research is the analysis and application of Salingaros' principles of the urban web. The principles of the urban web are rooted in rules derived from connective principles in complexity theory, pattern recognition and artificial intelligence- based primarily on Christopher Alexander's work. Through the theory, the urban setting is decomposed into human activity nodes and their interconnections. Salingaros then treats the connections as a mathematical problem (here in a qualitative manner). It is his view that "...urban design is most successful when it establishes a certain number of connections between activity nodes."

Theory of the Urban Web (Abstract). Nikos A. Salingaros

In this Hatfield district location study, the university is one node and the activity business hub is the other node.

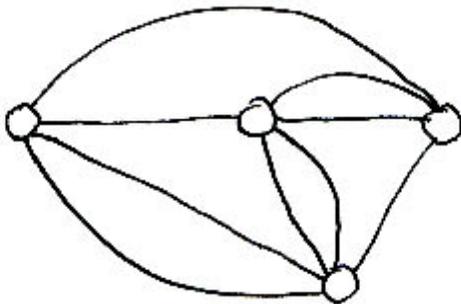
Structural principles of the urban web connections in architecture and urban design (Salingaros, 1998:55)

3.01

(a)



(b)



- Connecting nodes of human activity

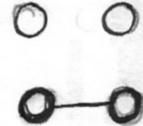
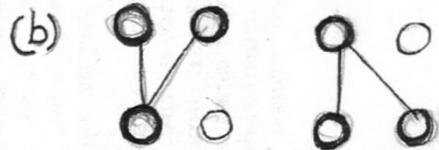
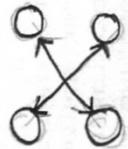
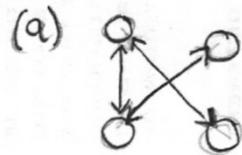
Both the placing of the nodes and the connections between them have to be optimized for human activity.

- (a) Four nodes placed so that they look "regular" from the air; but this regularity forbids anything more than minimal connections.
- (b) Multiple connectivity between the same four nodes, seen in plan.

This chapter discusses the hierarchy of connections necessary to sustain urban life. This entails identifying the disconnected nodes within the Hatfield district; in particular, the impact of future envisioned developments on the current activity spine of Burnett Street, where the site is situated. Any new development along this path has great potential to become a node. This chapter informs as to how the development can best achieve connectivity to current and future nodal activities in areas such as the Gautrain station and Hatfield Square.

3.02

- Stability against loss of connections



- (a) Connecting nodes incrementally will result in a perceptible improvement in the organization of the overall structure. What happens if a single connection is broken;
- (b) A loss of just one of this connections results in an loss of connectivity of the whole. Illustrated are the indirect connections lost as a result the whole is weakened.

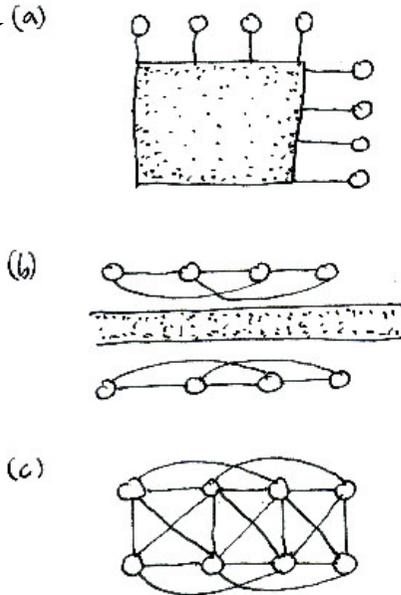
This concept informs the need to design a built environment that is in sync with the current successful trends along the Burnett, with the aim of stimulating the 'dead-ends' of the district activity spine.

To use a quote from Salingaros 1998; 57 - "...each line has a certain probability of failing, which applies directly to the urban web."

Currently the university is the severed link between Loftus and Burnett Street, two of the primary recreational areas within Hatfield. The resuscitation of this connection is feasible. By the development of pedestrian friendly environments along the University edge towards Burnett Street. This can be accomplished not only through architecture, but most often, by landscaping and street lighting. The development should read as a continuation, a step towards an interconnected city and not an end or individual, segregated from its context.

The following applications of the theory are from Theory of the Urban Web by Nikos A. Salingaros (1988:ch4.). These applications are investigated to achieve the above.

3.03



The success of a retail area is determined by the density of its pedestrian connections, listed in order below according to increasing effectiveness:

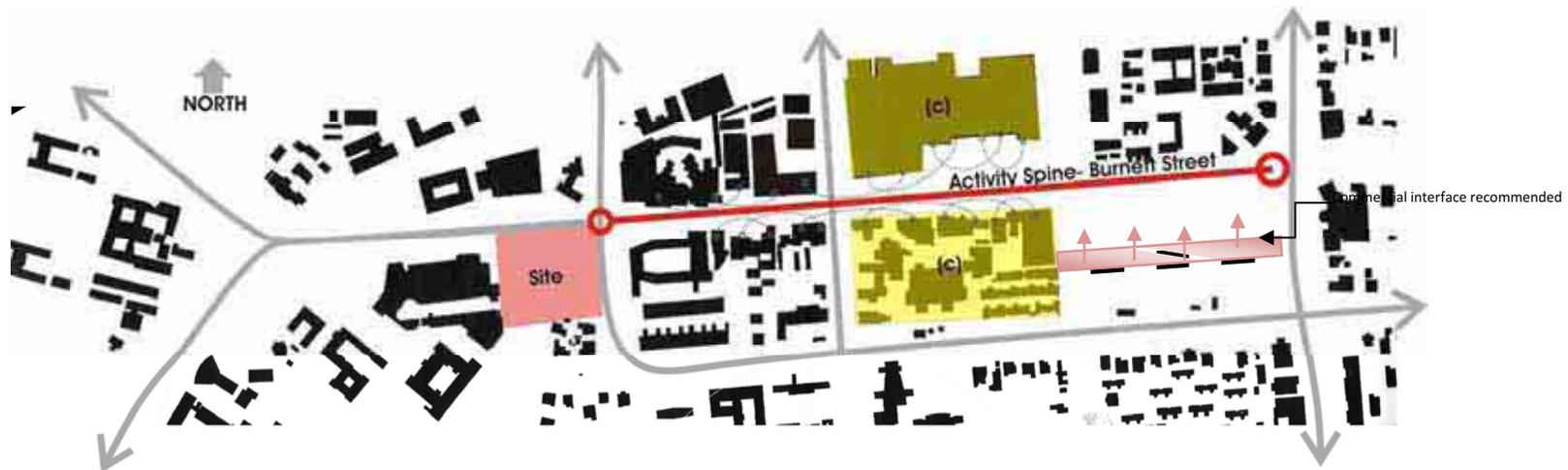
- (c) Strip mall, where each store is connected only to the parking lot.
- (d) Main street shopping, with stores on each side of the street.
- (e) Shops on a pedestrian street or indoor mall have many more connections, thus reinforcing each other.

Condition (b) exists along Burnett Street to create the activity spine. It is likely to be an informative design tool in extending the energy of the spine.

(Fig. 3.03) Options (b) and (c) occur at the Hatfield centre and Square, across from one another on Burnett Street.

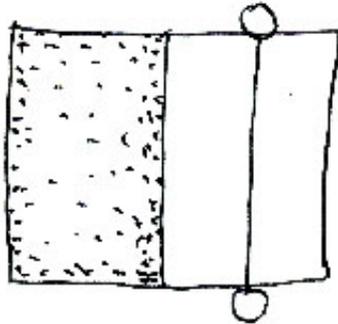
The proposed development is envisaged as a permeable commercial pedestrian area at ground level, similar to Hatfield Square, with parking provided underground.

3.04

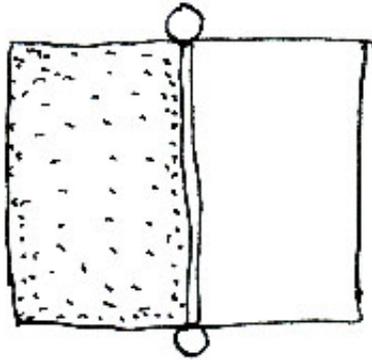


3.05

(a)



(b)



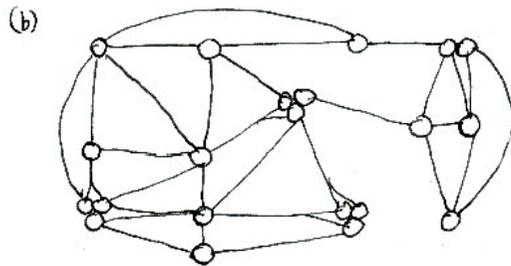
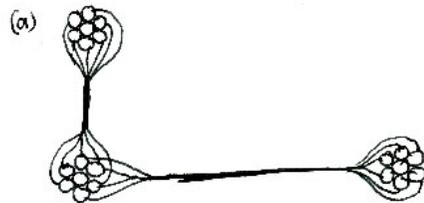
- A path as the edge of a region

- (a) Nodes and paths placed ineffectively; it is impossible to define this path without creating another boundary.
- (b) Natural boundaries help to fix and sustain this connection. From the point of view of an area being divided, a path disturbs the original unity of that area; it is an intrusion and is, therefore, unsupported by the area itself. It is very different when a path is created along a boundary between two distinct areas. The path now supports the boundary and vice-versa.

In order to form a continuous spine of activity involving the university, it is important that the chosen site for the development is situated within the set current boundaries of Burnett Street. This also ensures that the project receives maximum exposure, as it is also a corner site.

- Priority for creating pedestrian paths

3.06



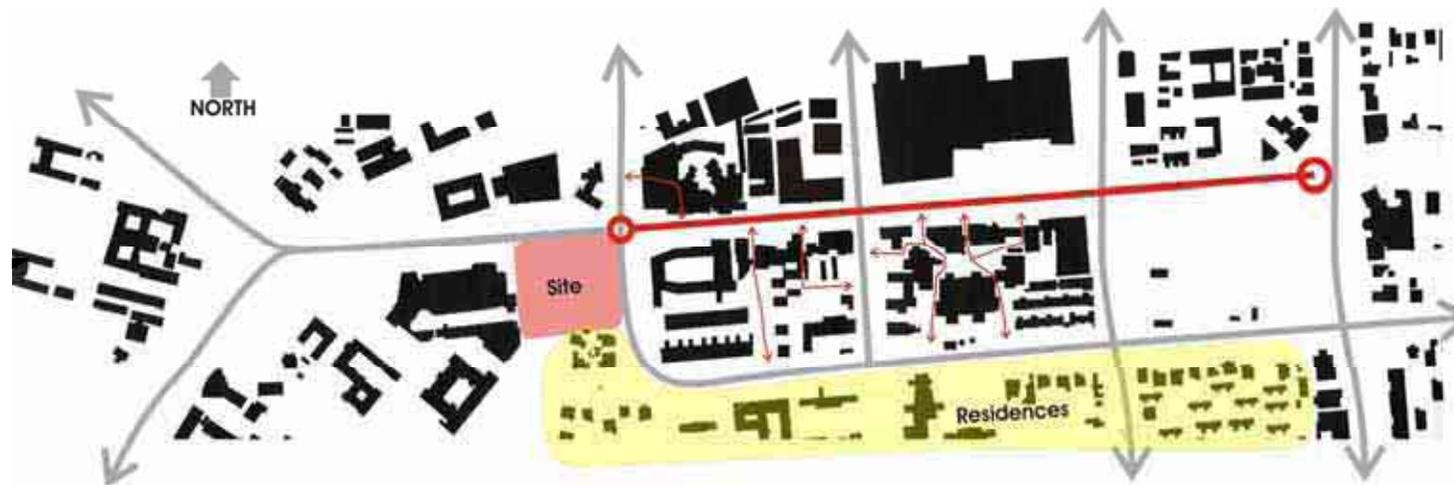
An over-concentration of nodes and connections create a singularity.

- Nodes are concentrated into three separate clusters and all connections are forced into two channels. Such connections exceed the carrying capacity of the channels.
- The same nodes distributed in their connections work much better, providing cross-connectivity. The nodes of a neighborhood must be connected by functional footpaths. It is advisable to follow existing patterns of movement, instead of creating artificial paths on a plan to guarantee the functionality of individual paths.

This idea is kept in mind when proposing new vehicular and pedestrian entries. A new development invariably introduces new users into not only the immediate, but also district proximity.

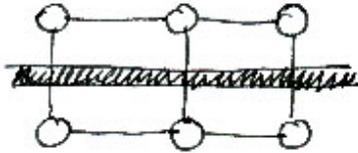
(Fig. 3.8) illustrates existing footpaths that allow students passage to and from the academic and activity nodes. They cease at the university and residential boundary gates. Such connections encourage the interconnectivity of activities in the area; this sort of permeability should be encouraged. Existing foot paths at the site will be integrated as an organising design tool.

3.07

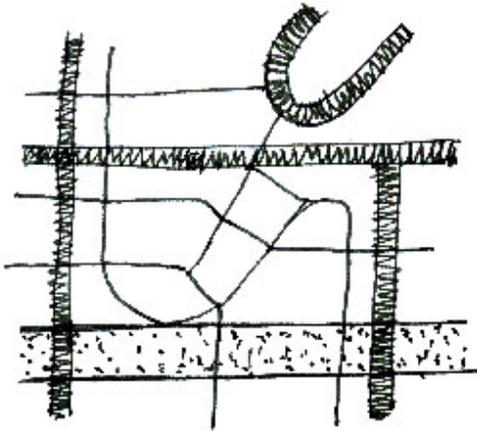


3.08

(a)



(b)



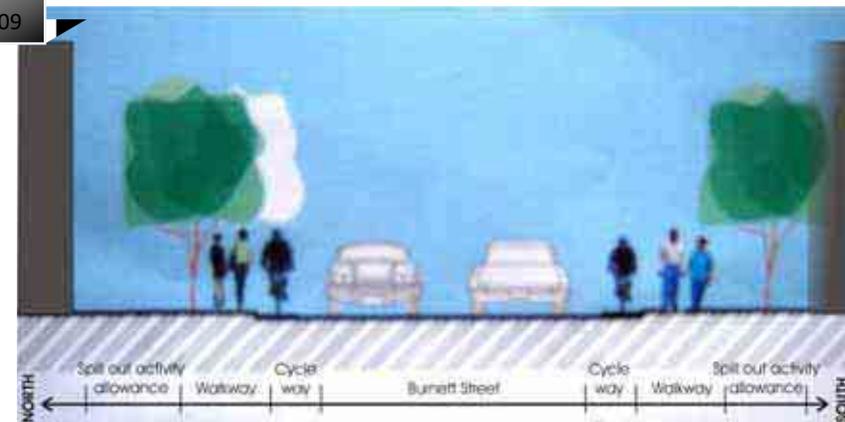
- The pattern of roads as an organising principle

Different networks of paths exist for foot and bicycle traffic, as well as for vehicular traffic at different capacities. Only connections of not-too-widely differing flow can align or intersect, and the weaker connection has to be protected from the stronger.

- (a) Pedestrian paths cross and connect to a local street.
- (b) Local streets feed into a through street, with superimposed pedestrian and bicycle paths.

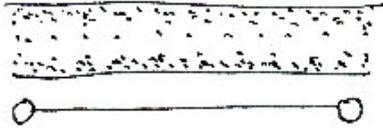
(Fig. 3.09) Dedicated network paths for pedestrian and bicycle traffic should exist on Burnett, especially considering the large numbers of students without vehicles that influx into the activity spine. Buildings along Burnett Street are, however, recessed at up to 10m from the pavement edge, but decrease to 4m on the south (at the corner of Festival and Burnett Street, adjacent to the site).

3.09

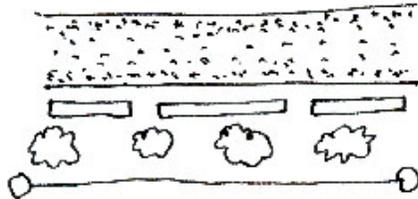


3.10

(a)



(b)



- Necessary discontinuities and separation

What cannot connect must be separated. Barriers are necessary to protect pedestrian paths from high-capacity roads.

- (a) A sidewalk next to a secondary vehicular route.
- (b) A busy, primary vehicular road is flanked by a barricade and/or trees, which protect the pedestrian and bicycle paths.

In this case, university access needs to be protected while being perceived as being connected to its surroundings, creating a sense of ambiguity. In satisfying the requirement to shield pedestrians and cyclists from a busy vehicular route, without creating a crude atmosphere, the divisions can be softened by a uniform surface on the sidewalk and road, thus alluding to a blurring of the divisions.

The existing secured entry off Prospect Street could be utilised so as to minimise the number of strategic security barriers ultimately required.

2. THE BUILDING WITHIN THE URBAN CONTEXT

a) The city: fragmentation versus unity (connective public space)

Much of this research is also supported by fractals, which are defined by applying a shared system of transformation to chaotic events. Shared transformations are the source of the new symmetric property of fractals known as self-similarity. In order to create modern fractal cities, it is necessary to adapt the relevant geometrical solutions from traditional cities, while incorporating new fractal structures appropriate for new demands and new technologies.

The common idea to be analysed and gleaned from theorists' various writing on urbanism, such that of Christopher Alexander and Nikos A. Salingaros, is that the work of urbanism must be about two fundamental aspects: defining a system of transformations that will apply to all unforeseeable acts of construction in the city, at all scales, and creating the connective public space that will bind the different buildings together.

The tradition of teaching the classical orders in architecture was once an imperfect approach to granting architects this skill. The classical orders are one form of transformation system, where large-scale elements, such as the column and the entablature, are decomposed into smaller-scale elements, such as the capital and the shaft, which form the large scale elements. And so when many architects, trained to share this transformation system as part of their skill set, worked on completely different buildings, their work could easily form a larger whole; whenever they hit similar problems, they would employ the similar solution they were trained to employ. While two buildings may have completely different sizes or roofs, or one could have a bell tower

while the other does not, if both buildings had windows and columns, the windows and columns would be made the same way and thus symmetrical to each other. This is how every building in a traditional city was tied together in a web of geometric relationships, and it is the density of these relationships that gives these cities their quality of wholeness and beauty.

These traditional cities created fractal cities of a smaller scale, applying these principles to the district rather than to the entire city, thus posing fewer constraints. Sourcing principles of urban design from pre-modernist cities, in accordance with these emerging urbanism theories, will impart knowledge as to how it is possible to design fractal cities, nodes, paths and edges to inform the thesis design project within the assigned city district.

A factor that is relevant to this research is the inappropriateness of zoning in the modern city.

For more than half a century, the modernists rebelled against the "mess" of the city. They put everything 'In their place', all the while, the in-between, what is not really a house, a shop or an office, has had no place. They call this urban planning.

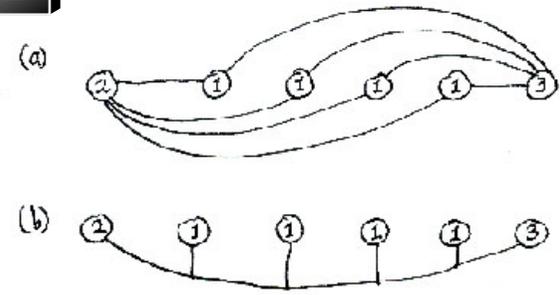
Contrary to modernist belief, that a functional urban environment are developed from specialised land uses and specific function driven buildings, the outcome is that these ideas have resulted in disconnected, non-fractal cities. The life of a city is directly dependent upon its matrix of connections and substructure because the geometry either encourages or discourages people's movements and interactions.

The design process is to be influenced by the idea articulated by Alexander (1965; A city is not a Tree) that a city is not reducible to parts, but that it is made up of a medley of relationships between spaces and at different levels. He expresses that the relationship begins once a space is built to provide a specialised function that is not fulfilled by another existing space, and the two spaces are linked together by a communication system. This relationship does exist in the study area of the university; the university's population acts as the link between institution, and commercial and social public spaces. It is, however, not articulated efficiently to optimise the development of this relationship, making it difficult for either 'space' to move freely between the two.

It is detrimental to design cities by designating district A, for example, to be made up of only building sets B and C, for example. Inevitably, some buildings in either group will need to form relationships with each other. However, this is exactly what zoning is meant to prevent. Zoning destroys many forms of exchange and holds back the complexity of the city. It is only relationships and not the individual spaces that form vibrant and user subservient cities. For such connections to develop naturally, they require an enormous variety of nodes in close mixing. Monofunctional zoning -- the pivotal notion of CIAM urban planning - is thereby shown to prevent life in a city.

Good urbanism is the creation of support systems for building relationships. Streets, public spaces, transportation networks and building codes achieve this. Zoning kills them. The best support systems, the best urbanism, will permit the greatest density of relationships (not density of people), implying the greatest special complexity and diversity achievable. (Alexander, 1965:pg).

3.11



(Fig 3.11) Connections form naturally, only between contrasting or complementary nodes. Different types of nodes (residential, school, office, and store) are shown with distinct numbers.

- (a) How connections between houses 1's are established by having neighborhood stores 2 and park 3 nearby.
- (b) Amalgamation of connections into a path that will be used (Salingaros, 1998:61).

Christopher Alexander advocates a return to the concept of multi-function localities in place of 20th century zoning, which he considers undemocratic.

"In looking deeply at systems in nature and society, and at human aspirations and needs and in challenging us to understand that improved methodologies for urban design are not enough, Christopher Alexander is asking us to keep the eye on the prize: the creation of enduring, organic places that can grow and deepen in complexity and character over time."

Hank Dittmar, Chairman of the Board, Congress for the New Urbanism, 2006.

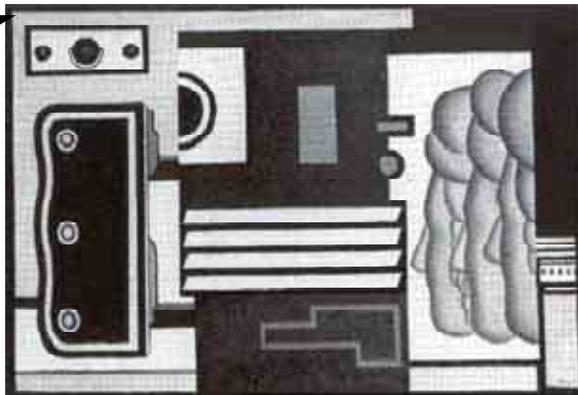
Habraken (2000) endeavors to answer this call for flexible, complex creations through his structure/open building approach. This theory is based on the concept of understanding the complex paradigm in levels. This theory explains the configuration of the components, structure and sub-structures and understanding how best they can depend on one another to create a better building, or in this case, urban framework. These theorists raise the subject of the need for the use of concepts such as coherence, emergence, information, self-organisation and adaptivity - illustrating how to operationalise them, and hopefully mark the beginnings of an urban science. These are the tools to be utilised in the design process, in the pursuit of a more efficient urban response in the 21st century and in an ever changing and demanding society.

3. THE BUILDING

a) Invisible barriers through architectural design

If one sees two or more figures overlapping one another, and each of them claims for itself the common overlapped part, then one is confronted with a contradiction of spatial dimensions. To resolve this contradiction one must assume the presence of a new optical quality. The figures are endowed with transparency; that is they are able to interpenetrate without an optical destruction of each other. Transparency however implies more than an optical characteristic; it implies a broader spatial order. Transparency means a simultaneous perception of different spatial locations. Space not only recedes but fluctuates in a continuous activity. The position of the transparent figures has equivocal meaning as one sees each figure now as the closer, now as the further one (Gyorgy Kepes, 1951:19)

3.12



(Fig. 3.12) The ambiguity formed- overlapped faces imply a sensation of depth that is not there without applying perspective techniques. Fernand Leger, Three Faces, 1926.

Rowe and Slutzky further developed the definition, making a more precise distinction between the kinds of transparency, which may be “an inherent quality of organization,” and that which may be “an inherent quality of substance,” such as with glass. They distinguish them from one another, referring to them as phenomenal and literal transparency, respectively.

Rowe and Slutzky compare paintings from the Cubist period to demonstrate when each kind of transparency is present. They state that simply overlapping literally transparent surfaces does not necessarily produce phenomenal transparency, as very little is left to interpretation. Phenomenal transparency involves ambiguity in terms of how the figures relate to each other and are thus perceived within their composition. It is achieved by implication rather than by the actual existence of multiple relationships between the figures.

Similarly, it is not a matter of simply allowing divergent functions to be housed on the same site - in this case academic and commercial - but rather of deciding how much of each function should be exposed and how each portion should relate to the other.

The dissertation investigates the metaphysical application of the concept of phenomenal transparency, in the urban architectural realm. If the existence of a phenomenal transparent space is a result of layering planes to achieve a third dimension, merely by the manner in which the planes relate to each other. Surely it is achievable, not in the pictorial juxtaposition of elevational planes as indicated in Rowe and Slutzky’s investigations of an architectural application- Transparency: Literal and Phenomenal; pg 5-11 - but more relevant is its conceptual application in the urban matrix.

b) Phenomenal transparency

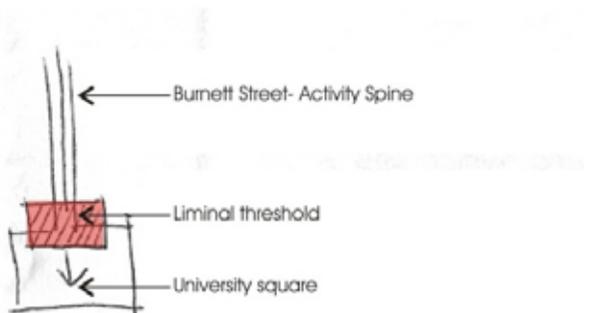
(Fig. 3.14) The illustrated silkscreen prints serve as a means to represent and study phenomenal transparent occurrences. The result is the reading of negative versus positive relationships with resultant newly formed shared areas. These perceived areas are a direct product of the overlapping parts (shared spaces). The shared/betwixt/liminal areas begin to blur the limits between the various parts; ambiguous by their very existence.

The process for this project begins with the 'placelessness' (lack of identity) of a place (university) within its context (Hatfield district) due to a lacking spatial relationship between the place and its context, which would define its character. The concept of phenomenal transparency is adopted to identify where these relationships could exist and how they could occur.

The development acts as a connector, housing university/academic functions, while giving the ground floor over to public use. The street edge composes of the existing public transport stop.

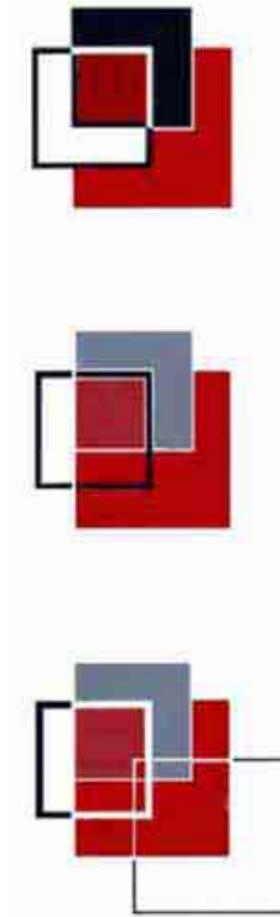
Spatial Transference

3.13



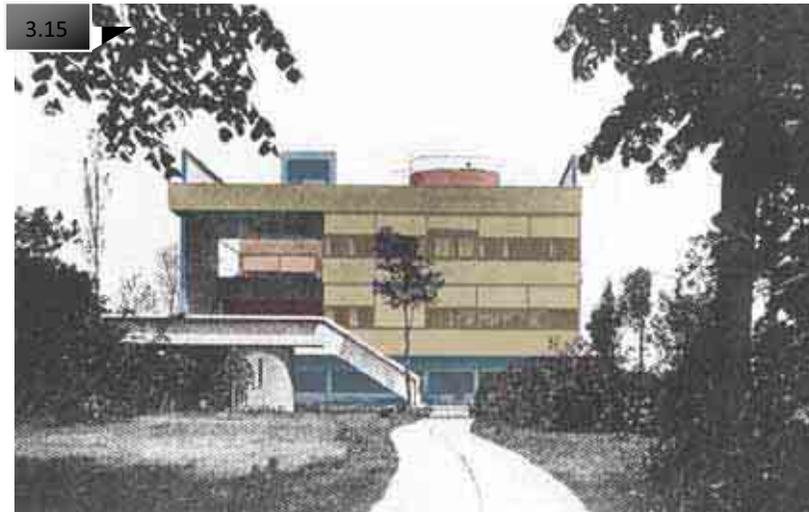
3.14

EXPERIMENTING WITH THE THEORY OF PHENOMENAL TRANSPARENCY IN 2D



Silkscreen prints - Rebeca Vicenz Sanchez

In considering architectural rather than pictorial transparencies, inevitable confusions arise; for while painting can only imply the third dimension, architecture cannot suppress it. Provided with the reality rather than the counterfeit of three dimensions, in architecture literal transparency can become a physical fact. However, phenomenal transparency will, for this reason, be more difficult to achieve; (Rowe & Slutzky, 1968:6)

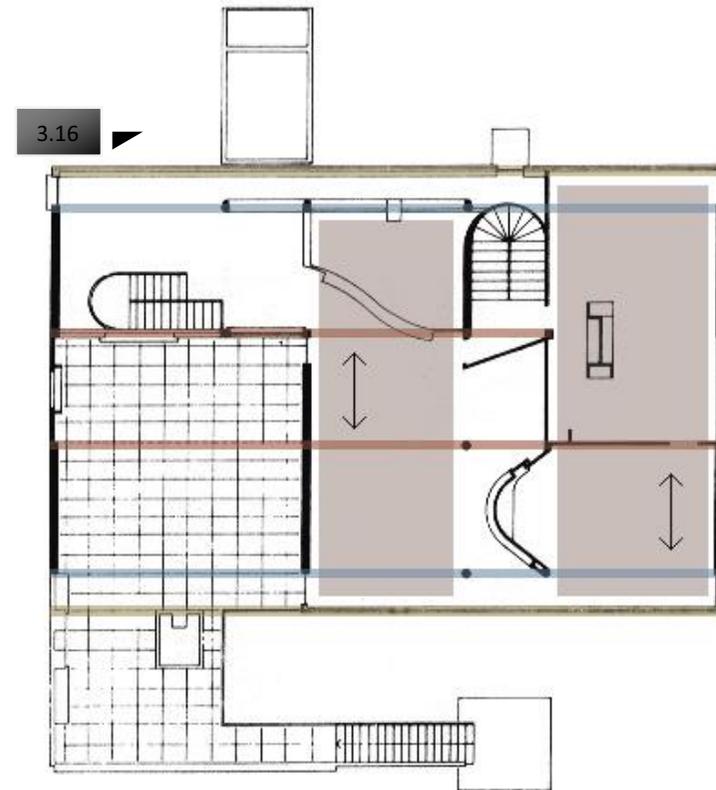


Villa Stein, Garches. Le Corbusier, 1927. Garden Façade.

Rowe proposes that Le Corbusier achieves phenomenal transparency in architecture even with the reality rather than the implication of the third dimension. At Villa Stein, Le Corbusier creates from a distance the visual effect that stratified planar surfaces slide behind each other to define successive shallow spaces parallel to the garden elevation (Fig. 3.15)

In reality, the plan of Villa Stein shows that the long dimension of the house's spaces occurs perpendicular rather than parallel to the garden elevation. "The reality of deep space is constantly

opposed to the inference of shallow; and, by means of the resultant tension, reading after reading is enforced." Ibid. p. 170. Rowe finds that Le Corbusier has achieved in architecture the compression of depth associated with phenomenally transparent paintings.



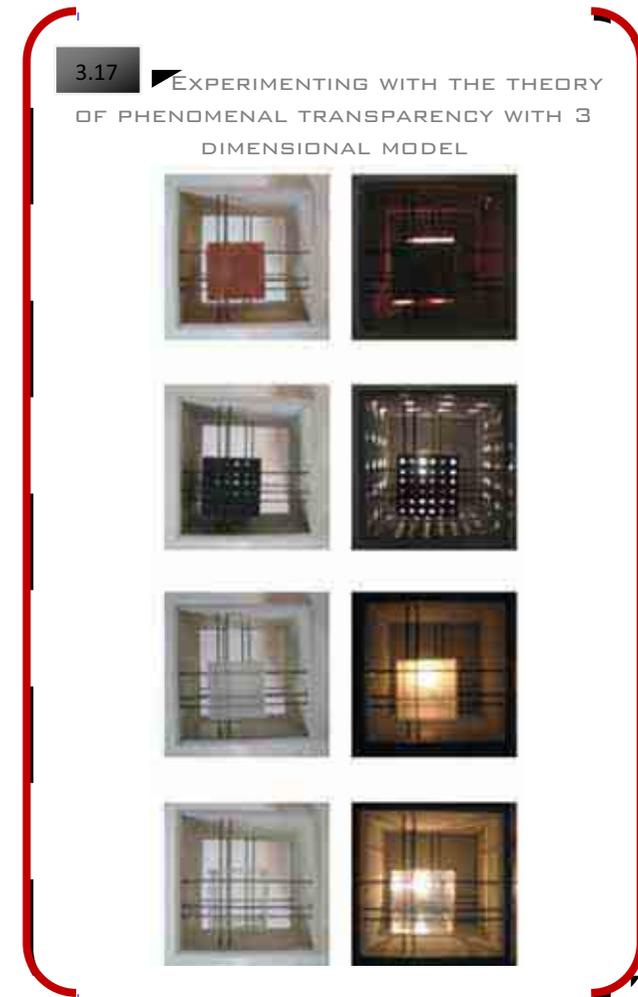
Villa Stein, Garches. Plan.

It becomes difficult for a person without the specialised knowledge to identify, and thus experience the ambiguity when directly applying the concept of phenomenal transparency to a three-dimensional object without introducing literal transparency. This is in direct opposition to Gyorgy Kepes's definition, which clearly implies that anyone with regular optical ability should be able to consciously, or un-consciously identify the transparency. In order to ensure similar sensory experience, literal transparency relating to the translucence of a material, is introduced. The transparency is defined by the sensory ability for a user to experience space beyond the boundaries limiting their physical access, which they understand to exist. The perceived sense of admission results in positive consequential actions of protecting, forced/essential interaction, passive/chance interaction and surveillance.

(Fig. 3.17) A sample of materials with various colour, texture and translucent properties have been introduced and juxtaposition within the very same context; illustrating the changing relationships the materials have in relation to their spatial atmosphere and thus, perception of that environment. Materials vary in their properties, either allowing or evading interaction through themselves with regard to the surroundings. These relations or the lack thereof, affects the degree of this interaction and, therefore, perceptions of the new material's role within its context.

It is evident that visual access or the transparent quality of the material enables this relationship to exist. In order to intensify the blurring/interplay of the element with its environment, a third element may be introduced- light. This emphasises the relationship.

Unlike the existing fence, the building is to be perceived as a threshold, not periphery. The users do not perceive the building as a barrier, but rather only concern themselves with its function and their destination. If the user were to think about the building in plan, he would understand the building to be a limiting mechanism to "the other side."



c) Liminality in architecture: The in-between

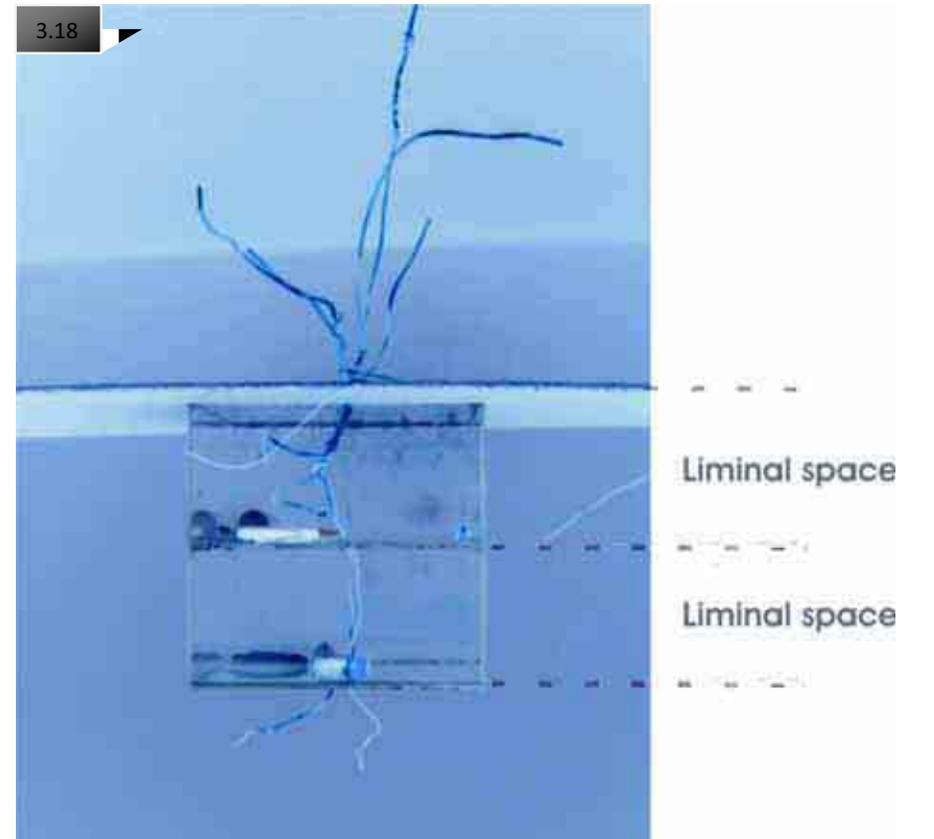
Psychologists call "liminal space," a place where boundaries dissolve a little and one stands there, on the threshold, getting ready to move across the limits from what we were, into what we are to be.

Victor Turner introduced the concept of "liminal space": a space of transformation between phases of separation and reincorporation. It represents a period of ambiguity, of marginal and transitional state (Wikipedia).

The liminal state is characterised by ambiguity, openness and indeterminacy. Sense of identity dissolves to some extent. Liminality is a period of transition where normal limits to thought, self-understanding and behavior are relaxed - a situation which can lead to new perspectives. People, places or things may not complete a transition, or a transition between two states may not be fully possible. Those who remain in a state between two other states may become permanently liminal.

Essentially, this is the core concept for the development; not committing itself to singular definition or taking sides. Architect Aldo van Eyck also reinforces that "a transitional threshold involves the interrelationship between two phenomena rather than their opposition".

In the context of this document, the liminal refers to the space of in-between; neither one place nor another. In this way, the idea of the in-between-ness of architecture is understood as a doubling interpretation of architectural relationships. In short, liminality in "architecture aims to make possible the unity of opposites, gestating a doubling inclusive effect towards the users" (Javier Rodriguez-Motta;2008)



The 'Touchstone' abstract model illustrates the passage through thresholds relating to alternative conditions. These thresholds, although seemingly accessible, are barriers which will work to filter through the in-between those who interact with them along the journey - only the concerned will get to the other side.

d) Multi-layered meaning- Liminal experiences

The process of research

Some scholars argue that ethnographers are present in their research, occupying a liminal state, regardless of their participant status. Justification for this position is that the researcher as a "human instrument" engages with his/her observations in the process of recording and analysing the data. A researcher, often unconsciously, selects what to observe, how to record observations and how to interpret observations based on personal reference points and experiences. For example, even in selecting what observations are interesting to record, the researcher must interpret and value the data available. In order to explore the liminal state of the researcher in relation to the culture, self-reflexivity and awareness are important tools to reveal researcher bias and interpretation (Liminality in ethnographic research – Wikipedia)

It is in this sense that the boundary becomes the place from which something begins: "Always and ever differently the bridge escorts the lingering and hastening ways of men to and fro, so that they may get to other banks....The bridge gathers as a passage that crosses" (Graves, 1998B:)

Liminality of barriers: The threshold

Liminal spaces are the spaces in-between; thresholds or transitions from one state or space to another. The project's goal is to create, through architecture, a development that suggests a liminal urban environment, which possesses the power of transference. The focus of this investigation is the thresholds which should strongly relate to their respective edges- speaking a totally different language to one another if need be. This changing

interpretation of face treatment should relate to the passerby the indistinct sense of being caught between different building, while providing an environment in tune with his desires.

These thresholds should mark an improved adjustment- in activity, noise and thus pace of movement and perception of place. The development should not be perceived as a break away from Burnett Street, as it also houses commercial activities, but rather as one of the activity spines with more pedestrian friendly stops along the way.