

MAT URBANISM: GROWTH AND CHANGE

JAIME J. FERRER FORÉS
Universitat Politècnica de Catalunya

ABSTRACT

The paper aims to re-evaluate a modern strategy of formal organization in architecture and urbanism called 'mat-building', exploring its potential to contribute to the contemporary discourse of sustainable built environments. The discourse of mat-building emerged from the Smithson's fascination with the traditional Arabic Kasbah (Smithson, 1974). In her search for signs that identify 'mats', Alison Smithson goes back to Katsura, Sinan, Honan, the vaulted constructions of Greek and Arabic architecture, as well as Mies van der Rohe's work in America. The Kasbah also embodies a metaphorical reference: "full of starts and stops and shadows... with a high degree of connectedness to allow for change of mind and the in-roads of time" (Ibid). Team 10's work in the late 1950s and during the 1960s became heavily influenced by mats, their urban structure, environmental identity, patterns of mobility and transformability. The influence of the Kasbah can be seen in Candilis-Josic-Woods's project for the reconstruction of central Frankfurt and the Free University of Berlin in 1963, both proposing horizontal buildings that Shadrach Woods referred to as 'groundscrapers'. Mat-building is a process, a growing structure of additive elements characterized by a delicate interplay between variations and repetitions of form. Retracing the formal evolution of mat-buildings, this paper tries to point to the typology's relevance in the contemporary discourses of sustainable urbanism and land-use planning.

Introduction

Mat-building emerged in the late 1950s as a consequence of the debates within CIAM over principles of functional zoning. A group of younger architects, called Team 10, suggested an alternative to the functional city described in Le Corbusier's Athens Charter (1933), in which the four functions of daily life — living, working, circulation and recreation — were segregated from one another. Alison Smithson described the mat concept and defined mat-building as follows: "mat-building can be said to epitomize the anonymous collective; where the functions come to enrich the fabric, and the individual gains new freedoms of action through a new shuffled order, based on interconnection, close knit patterns of association and possibilities for growth, diminution and change." (Smithson, 1974)

It is through their insistence that modern urbanism could express a higher degree of particularity and identity that Team 10 argued for a greater individual focus over the universalizing approach of the functional city (Figure 1). Instead of a static architectural composition, mat-architecture is the installation of a generative structure: urban forms shaped by the unique characteristics of particular places, specific patterns of human association, open to transformation, respectful of local nature and climate. The mat was intended to provide flexibility in planning for a range of functions over time, thus assuring its own longevity; its very realization is spread out over time and subject to revision and adaptation. "The systems will have more than the usual three dimensions," argued Alison Smithson, "They will include a time dimension." (Smithson, 1974)

Mainstream mat-building became visible in Team 10's work with the completion of the project for the Frankfurt-Römerberg center (1963) and the Berlin Free University (1963) by Candilis-Josic-Woods, where their work attempted to demonstrate the environmental responsiveness of mat-building in the context of a large and rapidly evolving institution (Figure 2, 3). The principles of these and other mat structures are now reappearing in the contemporary debates on sustainable architecture and urban development. According to Hashim Sarkis, "today mats are appearing everywhere. We call them fields, grounds, carpets, matrices. The mat answers to the recurring calls for efficiency in land use, indeterminacy in size and shape,

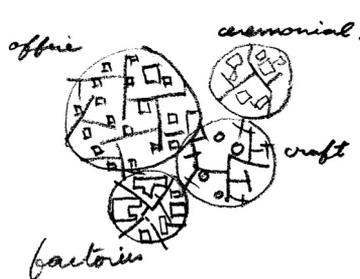


Figure 1. Cluster of overlapping functions. Source : Smithson and Smithson, 2005.

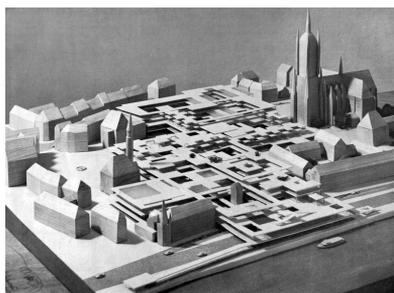
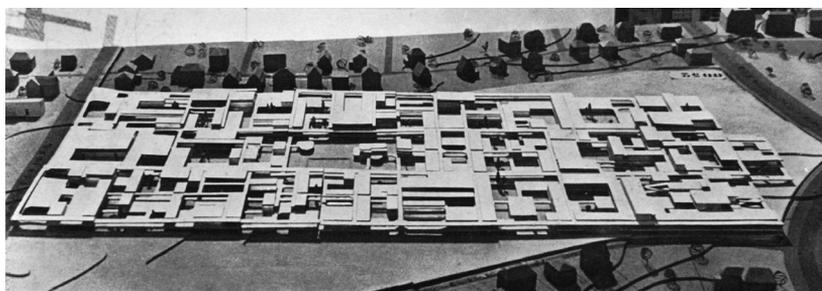


Figure 2. Competition for the reconstruction of Frankfurt-Römerberg centre, 1963, Source: Joedicke, 1968.

Figure 3. Competition design for the Free University, Berlin, 1963, Source: Joedicke, 1968.



flexibility in building use, and mixture in program. In the face of these challenges, and in every other design published in every other magazine, the mat claims to address a wide range of problems preoccupying contemporary architecture” (Sarkis, 2001). Stan Allen has recently also re-evoked mat-building principles to meet the design challenges of contemporary architecture and urbanism, characterizing mat-buildings as “a shallow but dense section activated by ramps and double-height voids, the unifying capacity of a large open roof, a site strategy that lets the city and the landscape flow through the project, a delicate interplay of repetition and variation and the incorporation of time element as an active variable in urban architecture” (Allen, 2001).

This paper aims to re-evaluate the mat-building strategies of formal organization in architecture and urbanism, exploring their potential for contemporary sustainable environments. The paper traces a formal analysis of mat projects in the following thematic order: from cell to cluster, from cluster to stem and from stem to mat, presenting worked examples by Candilis-Josic-Woods and Alison and Peter Smithson.

From Cell to Cluster

The re-conceptualization of the urban tissue in Team 10’s work started with a single dwelling cell. The cell — an individual building or space that accommodates human activities — was organized through the ‘from cell to cluster’ principle, which separated the urban tissue into its smallest components, cells, and re-assembled them so as to establish intricate spatial variation between private and public space (Figure

4). This essential characteristic of the traditional European city was put to practice by Candilis-Josic-Woods in their extremely diversified low-rise, high-density courtyard housing in Aulnay Sous Bois, France (1960) and in their competition entry for semi-urban housing in Algeria (1960), which the authors considered “an attempt to discover structuring principles which might be applicable to the organization of the physical environment” (Avermaete, 2005). The typology, which was forward-looking in its innovative treatment of vehicular traffic and site climate conditions, used the courtyard house as the organizing cell of the development, and the courtyard itself as a vital center and climate regulator of the house. The courtyard plan can adapt to different climates – in hot areas, exposure to the sun can be avoided by keeping courtyards small and overshadowed by high walls, wide eaves and foliage. The exposure of vertical surfaces to the sun is minimized by sharing the external walls with neighboring houses. Thick walls and small windows of the courtyard layout keep interiors cool, while allowing cross ventilation with shady verandas and patios facilitate outdoor living. The resulting cluster typology creates a rich variety of spatial experiences and a formal framework for changing patterns of use.

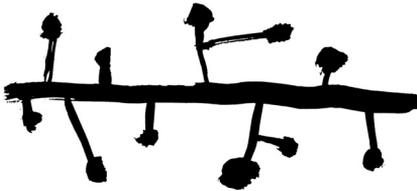


Figure 4. Cluster diagram of Fold Houses, 1955, Source : Smithson and Smithson, 2005.

From Cluster to Stem

In his declaration of the four functions of cities at the 4th CIAM Congress in 1933 – living, working, recreation, circulation – Le Corbusier proposed a comprehensive city desing framework for a Modern society. By the 1950s, the younger members of CIAM were advocating a planning approach that would better account for diversity – social, cultural, climatic and ethnic – in the built environment as well as its users (Statement on Habitat/Doorn Manifesto, 1954). Shadrach Woods, one of the opponents of functionalist zoning, argued: “The implantation of isolated housing projects or of dormitory towns makes as little sense as the building of educational or industrial parks. Public and private are contiguous and continuous, each supporting the other, but each limited to its own domain... when either clearly dominates over large areas, the fabric of life is discontinuous, creating zones of blight” (Woods, 1962). According to the Smithsons, “the forms and patterns derived from the garden city movement or the rationalism of the 30’s [were] endlessly repeated in contradiction to the climate, human habit, location and common sense”. For Team 10 architecture is not a ‘magnificent play of form in light’, as defined by Le Corbusier, but rather an attempt to create spaces for particular human activities over time. Architecture’s aim is to define a ‘carrying order’, an infrastructural project capable of variation and growth.

In line with their response, the Smithson studied groupings of dwelling that would foster community and develop a natural relationship to their environment: “this might be termed the ecological concept of Urbanism, a concept of obvious value when we are dealing with the problem of ‘habitat’”. (Smithson and Smithson 2005) Re-thinking the basic relationships between social life and mechanization, they searched for new patterns of Habitat for a new urban reality. Their work suggested that the structure of cities lies not in their geometries but in the activities within them. These activities are articulated or materialized by buildings and spaces, by paths and places, and by the careful articulation of public and private control. In contrast to standardized architecture that ignores the particularities of its location and uses, they argued that architectural order should derive from community hierarchies and contextual associations. The system of relationships and patterns of encounter, which the cells and stems of the cluster generate, provide the spatial framework for these hierarchies and associations.

Instead of ‘new monumentality’, grand piazzas and the ‘heart of the city’ presented at the previous CIAM by Sert and Giedion, the Smithsons put forward the streets of London’s working class neighborhoods as inspiration for a new form of architecture and urban design. The idea of the street as a stem of public life was developed further in their competition entry for a new housing block at Golden Lane in 1952. The project’s ‘street in the air’ concept was designed as an ample gallery that gives access to flats, but at the same time also functions as a place for human encounter

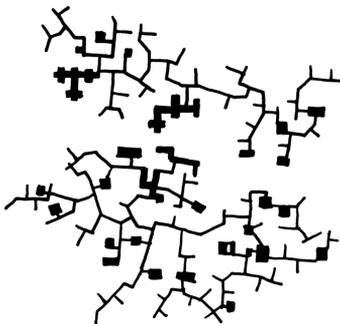
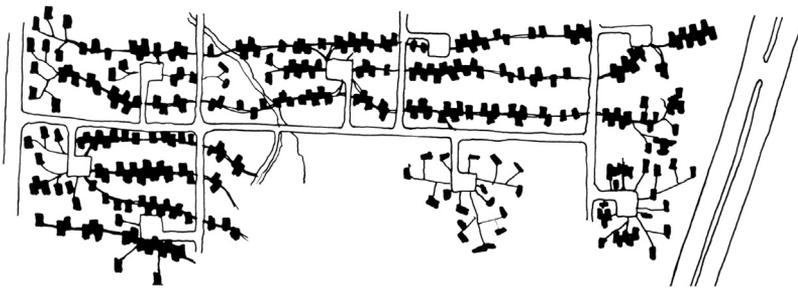


Figure 5. Diagrammatic plan of a small city from the Golden Lane project, 1952, Source : Smithson and Smithson, 2005.

Figure 6. Cluster diagram of Close Houses from 1955, Source : Smithson and Smithson, 2005.



and play (Figure 5). Instead of the *rue intérieure* proposed by Le Corbusier in his *Unité d'Habitation* in Marseilles, the Smithsons proposed to move the circulation space to the façade of their buildings, thereby accentuating the public character and spatial autonomy of the stem.

Placing the stem along the periphery, rather than the center of the cells, also allowed the stem to grow or change with greater ease over time. The Fold House ideogram, presented in 1954 as an infill to the fabric of an existing city, connected dwelling units by a straight 'stem' that could grow, shrink or change in response to needs over time (Figure 4). The stem is also the basic structuring device in the *Close Houses* of 1955, where multiple parallel stems start forming a network of covered passages that link various dwelling types and activities in a loosely defined grid (Figure 6). The nucleus of the project, in each case, is a stem, rather than a 'hearth'.

From Stem to Mat

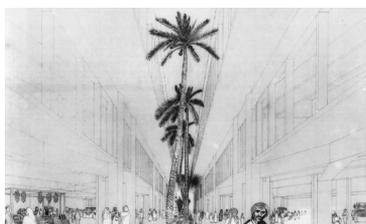
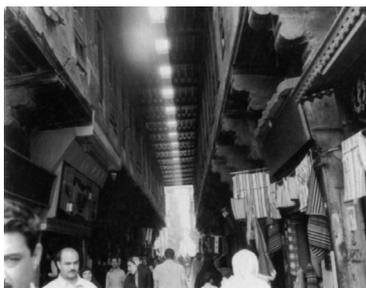


Figure 7. Interior of bazaar in Kuwait City and perspective of a gallery, 1968-72, Source : Smithson and Smithson, 2005.

Eventually the concept of autonomous stems gave way to a two-dimensional network of stems and cells – a mat. Through its organizing network of circulation routes and support systems, the mat provides even greater flexibility for unifying diverse clusters of activity in multiple directions. It can grow along any of its stems in two dimensions, while simultaneously maintaining a coherent and systematic interconnected order.

Mat-buildings were strongly influenced by the dense historical tissue of traditional cities. In parallel to their design work, the members of Team 10 studied the spatial structure and functional layout of traditional Islamic cities. As George Candilis pointed out, "in Morocco with Shadrach Woods, we began to work on an idea of a special conception to create place. Certainly the special concept was influenced by the Souks of Marrakech.

These had two phenomena: two which always existed; spontaneity and diversity; with the 'main street' of the Souk as 'the skeleton'" (Risselada and Heuvel, 2005). For Candilis and Woods, the mat typology became the vehicle for generating the spatial and functional density of the traditional city. Aldo van Eyck described Woods' and Candilis' inspiration of the Arab city as follows: "Shadrach Woods and George Candilis, in a different way since they are so different, both tended to project their

experience – one in Morocco and one in Far East – into the souk and into the bazaar: they believed in the bazaar, in the souk and in the stem... We just used that one word 'casbah' as an image, as a poetic image. We were referring to any kaleidoscopic society where all the functions are more or less mixed, and always said the 'casbah' was the final limit. We don't have to literally make a casbah, imitating a period of human history when things were mixed and closed knit, but we need to be a little more 'casbahistic', by putting things together: and letting things penetrate into each other again. That is what we meant by casbah." (Tuscano, 2005)



The Smithsons too were fascinated by the traditional Arabic casbah, its rich texture, "full of starts and stops and shadow... with a high degree of connectedness to allow for change of mind and the in-roads of time" (Smithson, 1974) (Figure 7). Building on the spatial qualities of the 'casbah', mat buildings became condensed into continuous structures of interlinked stems. The Smithsons even had an opportunity to propose mat structures in an arabic context as part of their 1968-72 Kuwait Urban Study (Figure 8)².

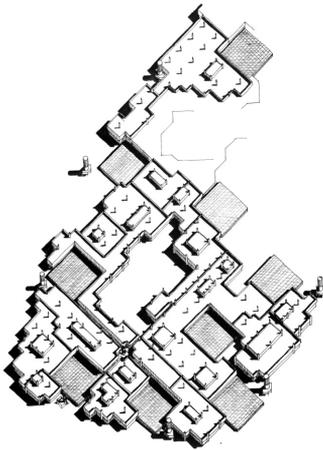


Figure 8. Peter Smithson presents the model of the mat-building to the Crown Prince of Kuwait, Source : Smithson and Smithson, 2005.

The mat's structuring concept of mobility and connectivity was developed in collaboration between the Smithsons and Peter Sigmond in their competition entry for Hauptstadt Berlin (1958). Through its particular focus on urbanity and mobility, the project emphasizes the inseparable relationship between an individual and the city, between the part and the whole. The project illustrates the Smithsons' ideas about mobility networks in post-war cities; instead of divisions, which characterize CIAM's previous concepts of functional cities, the Smithson's suggest that new forms of mobility demand physical patterns of connectivity. According to the Smithson's, "the urban forms of Berlin Hauptstadt have as their basis the idea of mobility, of absolute maximum mobility, achieved by a layered movement pattern that separates the various means of expression and gives to each its own geometry, its own formal expression." (Smithson and Smithson, 2005) The mat's indefinite circulation network is the project's generator.

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time. The Smithson's emphasized "the feeling for change, so that buildings, roads and services can develop freely according to their own laws without compromising the development as a whole" (Smithson and Smithson, 2005), which the two-dimensional circulation network of the mat generously provides. There are two interrelated



Figure 9. Competition for Berlin Hauptstadt, 1958, Source : Smithson and Smithson, 2005.

geometric systems of movement — the upper-level network for pedestrian paths and — platforms of vistas that integrate existing historical remnants of the city, and which are accessed by escalators over the street grid; and the lower-level fabric of vehicular streets (Figure 9). By overlaying movement systems, the Berlin Hauptstadt project jointly addresses the relationships between mobility, growth and change, producing an urban network that anticipated the mat concept. "Architecture and planning", argued Woods, "which are each part of the other, are concerned with the organization of places and ways for the carrying out of man's activities. The architectural process begins with a way of thinking about organization in a given place-time, then establishes a system of relationships and, finally, achieves plastic expression." (Woods, 1962)

In Candilis-Josic-Woods' competition entry for the reconstruction of Frankfurt-Römerberg centre (1963), an area that was destroyed in the Second World War, the spatial organization also takes the form of a multi-level grid of pedestrian walkways that link public activities at the lower level with the private dwellings on the upper levels (Figure 2). The project brief asked for the reconstruction of a historical city centre in a ruined area between the city hall and the cathedral. For Candilis-Josic-Woods, structuring of new urban development in a historical urban tissue called for new spatial practices: "Such diversity of activities needs to be housed, that if all of these had to be considered separately, the result would be chaos. These diverse elements must be made into a whole, a single organism." Using a mat typology enabled the partners "to organize the multitude of activities called for in the program, into a clear, comprehensible, adaptable order." (Candilis, Josic and Woods, 1964)

The Frankfurt mat was not only meant to accommodate growth and change within its limits, but to also adapt to its surrounding context. Despite the apparent complexity of its grid, the scheme demonstrates that the scale, grain and traces of the surrounding urban fabric are reinterpreted on the ground level of the project as an attempt to harmonize the project and the neighboring urban tissue. The circulation grid of the mat corresponds to the existing network of pedestrian walkways on the site. Relationships with context are further intensified by the sequence of interrelated open spaces, courts and patios that permeate the entire project.

The structuring concept of the mat was developed further in Candilis - Josic - Woods' design for the Free University in Berlin (1963). The project was handled as a 'city in miniature' that is structured around an orthogonal double-level pedestrian grid, with most public functions located on the ground floor (Figure 3). The scheme proposed a series of wider pathways, stems, which serve the most active areas of the building, with a secondary system of perpendicular pathways serving the less trafficked areas of the building. The resulting 'groundscraper' organization ensures abundant opportunities for communication and exchange between various parts of the mat without sacrificing their autonomy. Ample pedestrian pathways, ramps and escalators connect clusters of rooms into a two-layer mat that extends over the entire project site. The juxtaposition of platforms, open spaces and covered pathways generates a continuous and spatially diverse structure. Alison Smithson later recounted that: "the Berlin Free University makes mat-architecture recognizable" (Smithson, 1974). She defined the term "mat-building" as a structure whose order is based on three parameters: interconnectivity; relational patterns; and opportunities for growth, decline and change (Ibid).

Discussion

By exposing the evolution of mat structures in the work of Team 10, this paper has tried to outline advantages of mat configurations that may offer renewed interest for contemporary architecture and urbanism. The mat concept is a critique of both the functional separation of urban land uses in post-war Europe and the widespread adoption of high-rise buildings during the same period. It was a reaction, common to many Team 10 contributors, against the orthodox zoning of cities into discrete functional areas, advocating that urbanism be more than merely an organization of buildings and activities into coherent zones with limited connectivity. Rather than giving it definitive form, the mat is a planning instrument that allows the urban environment to be mixed and structured over time (Avermaete, 2005). As an effort to escape from earlier CIAM dogmas, the mat typology signaled an emerging awareness of the complexity and richness of the urban fabric, evident in historic vernacular environments, but lacking from mainstream Modernism.

The mat typology also offers a flexible framework for relating to a site through

an uninterrupted continuation of the urban fabric into its own spatial network. The network of pathways, courtyards and platforms allow the neighboring urban or natural fabric to flow seamlessly through the project. Mat-buildings thus establish a system of relationships, present and potential, between the built and the natural. The spaces of transition and connection offer 'poetry of movement' and a 'sense of connectivity'. The very essence of mats is urban: architecture made of relationships rather than form.

Future Research

Mat-typologies have been realized in large-scale institutions, such as the Free University and Massachusetts Institute of Technology, as well as in housing projects, such as the Agricultural City by Kisho Kurokawa (1960). The typology has been recently re-introduced in Foster and Partners' plan for the Masdar City in Abu Dhabi (2007-2023) as a structural blueprint for sustainable development³. The typology has thus been mainly applied in singular institutional projects, and it remains unclear whether mats could be equally suited to more decentralized forms of development that are shaped by multiple owners over time. The case of Masdar City, which will need to transcend multiple institutions, might provide a partial answer to this question. Yet, it is also unclear whether mat-structures are bound to remain unique and rare for large-scale development, or whether their benefits can attract larger interest and adoption in dispersed, small-scale developments in rapidly urbanizing cities. Due to a number of challenges, mat buildings have not yet entered mainstream urban design practice. The need for costly up-front infrastructure investment compared to conventional patterns of development, and the procedural difficulties involved in separating the permanent infrastructure from the more flexible and adaptable parts, have so far limited the widespread adoption of mat structures. More research is required to understand and desirably overcome these challenges.

ENDNOTES

[1] The Kasbah is a dense historic urban development typology encountered in many Islamic cities.

[2] Four international architecture teams were invited by the Emir of Kuwait in 1968 to participate in the Kuwait Urban Study. Besides the Smithsons, participants included Candilis-Josic-Woods; Reima Pietilä; and BBPR. Jørn Utzon, whose proposal won first prize in a restricted competition for Kuwait National Assembly, also proposed a growing mat structure. For Jørn Utzon "traditional Arab architecture will have an enormous influence on the future architectural development of the world and it is, therefore, a natural thing that the concept of the Kuwait National Assembly complex has been based on some of the major elements of traditional Arab architecture, such as the covered street -the bazaar street- the interior courtyard, the succession of structural arches" (Ferrer Forés, 2006).

[3] Though no provisions for long-term growth and change have been outlined in Fosters & Partner's project.

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THE OBJECTIFICATION OF INFRASTRUCTURE:
ELEMENTS OF A DIFFERENT SPACE AND AESTHETIC
FOR SUBURBAN AMERICA

ALEXANDER D'HOOGHE
Massachusetts Institute of Technology

ABSTRACT

One can look at infrastructures of mobility as a system, or one can look at it as a series of *artifacts*. This paper argues that rather than a system of transportation planning and engineering, we may read infrastructures as objects of cultural production with a spatial content not unlike that of architecture or sculpture. Obvious as this statement may seem, it has far-reaching consequences on our own conventions and aesthetics in urban design. The reduction of infrastructures of mobility to a transportation system, blurring its recognition as a cultural stage (artifact + space) in its own right, may be to blame for the current disillusion Americans have with their suburbs, because this reduction depleted these suburbs of a consciousness of what they have in common: these bulky objects called roads.

Hippopotamus Tinguely. Source: The Tinguely Museum, Switzerland.



Introduction

“the road ... also exists as a static, bulky object in the landscape, a substantial piece of the urban scene for those who live along its borders.. it is a problem that we will not consider here.”

– Kevin Lynch and Donald Appleyard in “A View From the Road”.¹

This article claims an intellectual space for the road in its ‘static, bulky *objecthood*. In doing so it aims to complement Kevin Lynch’s analysis of the modern road. It speculates about infrastructures of mobility as cultural artifacts rather than technocratic systems. In doing so it argues not only with the world of transportation planning / engineering, but also with a powerful tradition internal to urban design and social studies. Territorial design of infrastructure should abandon its instincts towards the systematic (or the anonymous, absolute, dehumanized, totalizing), and replace it with the cultural (authored, finite, crafted, subjectively positional).

Not Systems but Objects?

The last hundred years of English and American urban planning literature describes roads and other infrastructures of mobility primarily as systems of distribution (*‘transportation’*), or of cinematographic sequences of views of the surrounding picturesque country (*‘highway as parkway’*). Both attitudes make the material presence of the road itself subservient to its bigger purpose as conductor of flows of goods and people.

Against this reductive interpretation exists another, which reads infrastructure not as a system but as an object, not as a logic but as an artifact, not as a tube but as a space. From this point of view, infrastructures of mobility are prime candidates for becoming public spaces, or, better yet, public forms that are true and proper to the exigencies and demands of a modern urban society. Such an approach would privilege infrastructure by imposing on it all the demands that culture and the arts usually reserve for themselves but rarely apply to the technocracy that structures the very society in which they operate.

A Short Archeology of Infrastructural Thinking

The ‘systems turn’ in infrastructural thinking occurred about 100 years ago, when the American Planning Association turned from a City Beautiful attitude to a more functionalist approach of the city as a system. City Beautiful architects had aimed to restructure and grow the American city with architecture, monuments, and public

spaces. Increasingly inadequate to the demands of speed, flow control and scale increases, this approach was abandoned in favor of a more systematic approach through a tool called 'the comprehensive plan'. To this corresponded a shift in the design of roads from one where architects and artists were often involved, to one dominated by engineers and policy maker — the field of culture was purged from what was to become suburbia's main public realm: the roadway surrounded by green buffer zones. Planning's technocratic turn coincided with widespread suburbanization, effectively bereaving the new field of a modern civic idiom uniquely adapted to its own spatial structure. Suburban roadway design, as emerged in the new roadway typology of the 'parkway', never developed an aesthetic consciousness about itself: *"As urban sprawl, industrial development, and rising traffic began to diminish the appeal of suburban pleasure driving, however, it became necessary to create artificial landscapes to simulate the appeal of traditional vernacular roadways"*.² As a result the exodus from the city avoided the development of a conscious presence. However, this self-denial could only last for a while.

By the 1950s, after decades of 'marked suburbanization'³ and against the technocratic sterility of the expanding universe of post-war suburban roadways, a series of new approaches attempted to reconcile infrastructure as a distribution system with infrastructure as a humanist conception. We can distinguish three attempts at such reconciliation.

Architecture as an Infrastructural System

In 1962, Team X argued for a closer relationship between modern infrastructure and Modernist building.⁴ After focusing on the problem of the greater number and the associated questions of identity, change and growth, they saw a need for a designer's conception of infrastructure. Van Eyck brought the 'Noah's Ark' plan by his favorite student Piet Blom to the group's 1962 meeting in Royaumont and explained it in terms of a 'tree-leaf' diagram. Van Eyck tried to demonstrate the inseparable reciprocity between the house and the city, a reciprocity he saw expressed in an exemplary and poetic fashion in Blom's design. His presentation drew a vigorous dismissal, particularly from the British members of the Team X group. Though Blom's plan might operate as 'identifying structure', Bakema later observed, it gave insufficient expression to the idea of 'freedom of choice'.

Arguably, Blom's proposal was to produce a total infrastructure, subsuming and exploding the objects of architecture within an infrastructural system. In fact, we could argue that he first naturalized infrastructure as a 'new nature', and then proceeded to integrate and dissolve architecture within this new totality. In other words, he naturalized the 'new' qualities of infrastructure as a technocratic, anonymous and total system by endowing it with organic terms such as 'the stem' (Candilis, Josic and Woods), by drawing it as an expanding system with roots and branches, and transfer

that total system to architecture, injecting as it were the old body of architecture with the modern properties of infrastructure. In doing so the *objecthood* of infrastructure, its authored subjectivity, its lack of homogeneity, its self-consciousness, and its lack of belonging were destroyed. This attempt towards systematization can be discovered in much of the work done at MIT in the 1960-70's under the aegis of Habraken's 'structure-infill' system. 'Structure-infill' was nothing else but a way to blow up architecture's *objecthood*, reconstituting the building as a series of layers with different life-spans in which structure corresponded to the urban design concept of infrastructure – long lasting, invisible and total support platform of the building. By dissipating infrastructure in the total body of urban production, which itself had turned every act of urban production into a infrastructural extension, infrastructure became to the city what water is to the fish — total.

Infrastructure as the Scenography of the Territory

Kevin Lynch and Donald Appleyard's "A View from the Road" (1964) constituted another contribution, almost setting the script for the design of the new city of Milton Keynes in 1968-1969. The planning and design team of this project, brought together by Richard Llewellyn-Davies and led by John de Monchaux, deliberately twisted and deformed the proposed grid of roadways in order to account for the topography of rolling hills, and the preservation of woods and ancient villages. Rather than a mathematical operation to optimize grading, the roadway design operates according to the principles expounded by Lynch and Appleyard, organizing shifting views into a cinematographic experience of the surrounding territory. Lynch and the team at Llewellyn-Davies knew each other, and John de Monchaux would join Lynch's faculty group at MIT a decade later. Lynch and Appleyard, as well as the designers of Milton Keynes, were amongst the first to bring infrastructure into design culture. Their projects take on the logic of the suburban road in a more immediate way than ever before. Lynch and Appleyard speak about 'aesthetics of the highway', but in fact they restricted themselves to an aesthetic *from* the highway. They themselves are extremely clear about this:

*"While the road makes a dynamic impression on the driver and his passengers, it also exists as a static, bulky object in the landscape, a substantial piece of the urban scene for those who live along its borders. This presents a two-faced problem, much as if a theatrical designer had to be concerned with the visual form of his backstage apparatus. However important, it is a problem that we will not consider here."*⁵

In hindsight, the prioritization of the view *from* the road over that *of* the road is not a coincidence but a re-articulation of traditional landscape picturesque roadway design principles, proper to the English landscape tradition that were previously explored by Robert Moses' 1920's parkway designs around New York City. The road has become a system, and while Lynch acknowledges its importance as an object, he never got

to analyzing it as such. Who, then, attempted to objectify infrastructure during the systems era?

Early Attempts to Objectify Infrastructure

Louis Kahn's work on *bee-hives* — enormous transfer stations functioning as highway exits, ramps and parking garages around Philadelphia — may serve as embryonic, poetic and naïve declarations of intention towards such an architecture.⁶ What happened after that?

A generation of designers, more or less overlapping with practice that Kenneth Frampton has deemed 'critical regionalism', have also attempted to contextualize, localize, and objectify Modernist infrastructure systems. These practitioners have included Manuel De Sola Morales, Joan Busquets, Marcel Smets, and others. The embryonic objectification of infrastructure by these authors resulted in the downplaying of the hegemony of transportation as the primary function for the object. Instead of traffic *along* lanes, they have looked for transversal connections within infrastructure objects. Instead of a zone of speed, they have looked for means to turn the infrastructure itself into a civic space, shifting the attention from designing for one particular flow to organizing and negotiating between multiple flows. This tradition has identified infrastructural design on a human scale as the primary target of architectural intelligence. Almost each of their projects has emphasized multi-modality, the capacity of infrastructure to welcome several different speeds and modes of occupation, as one of the primary strategies to make them a public realm.

Towards an American Approach for Suburban Infrastructure Objects

Unfortunately, the bulk of the Mediterranean Modernists' work only targeted infrastructures in historical city centers. Both qua scale and qua complexity, this differs from the contemporary infrastructure challenges of American suburbs and peripheries. The vast brown fields, half-developed fragments of civilization and decaying environments that constitute the middle-ring suburbs of the American city — the Passaics, Patersons around New York or the Maldens, Medfords around Boston — may well form a field ready for the critical insertion of a series of infrastructural objects.⁸

That is because these middle ring suburbs have become a demonstration *par excellence* of the endgame of infrastructure resulting from a systematic obsession with transportation mobility. The ubiquity of transportation infrastructures in the middle ring, whether roads, highways parking lots, interstates or residual spaces between them, may demonstrate that automobile infrastructure as a means to increase mobility has realized itself maximally, exhausted itself, and thus lost its critical edge. Indeed, the very reason that the American middle suburb has lost its appeal may well

be attributed to its strangling excess of access, spaghetti of often redundant and overdesigned roadways. The outcome of the gradual pavement of what was once meant to be green is nothing else but a vast tarmac. To consider, under such circumstances, systematic mobility as a critical project seems inadequate. Quite the opposite, the middle ring demonstrates how the generational task of urban designers and architects graduating in America today, will involve the radical re-conceptualization of infrastructure as a series of finite, concrete objects that are simultaneously places: in short, a series of discrete stages.

Suburban Stages

The fine, small scale of infrastructure interventions proposed by Mediterranean Modernists in Barcelona need to be re-scaled and re-considered for these terrains; their intelligence made more inclusive of the automobile logic and multi-modal exchange, yet kept as project of objects rather than of systems.

The objectification of infrastructure in American suburbs would celebrate and, with limited means, civilize and monumentalize moments in which the thin strands of civic life clot into moments of conscious coexistence – moments of *publicness*. This being-in-coexistence does not come about automatically, it needs to be actively worked at and created by re-wiring traffic flows, stops, intermissions and crossings and especially by colliding and designing their temporary co-existence in one single space. Such spaces, as singularities where different flows co-exist, form the public essence, yes the very *raison d' être* of the project of the infrastructure objects.

In that sense, the project of infrastructure objectification will rely on the intertwining of two sets of knowledge and intelligence: (a) curating flows and (b) designing singular objects in which these collide. On the one hand, the curating and designing of flows implies our capacity to organize their re-wiring, their staging, their intersecting. This knowledge obviously needs to draw on the fields of transportation engineering and planning. However, rather than using insight into the hydraulics of human circulation in order to maximize one logic only (automobile use only, or pedestrianization only), we may use this knowledge in a more deviant manner towards the deliberate staging of frictions and forms of co-existence, which from a traffic management point of view may make no sense, but from a public interest point of view are imperative. In other words, the weaving together of disparate thin strands of movement and existence into actual moments of public existence.

On the other hand, the role of the architect becomes clear in objectifying this re-wired moment into a singular space which gives that moment a form, a presence, an elevation and a boundary:

Infrastructure, instead of continuous, breaks up into a sequence of finite mo-

ments or bubbles of experience, corresponding to particular spatial and formal configurations.

Infrastructure, instead of ubiquitous, would be deliberately absent in certain areas, thus restating a degree of wilderness, while simultaneously raising awareness and consciousness about its very existence.

Infrastructure of being about one-dimensional movement becomes about the resolution of conflict between opposing flows and modes.

Infrastructure, instead of articulating a smooth flow, would instead take advantage of the moments of friction and begin to articulate those into delineated public spaces.

Infrastructure endings and entry / exit points, rather than anomalies of a circulation system, would become the primary anchors of civic life.

Infrastructure as we understand it here would, within the confines of Marxist theory, actually be categorized as superstructure.

The Aesthetics of Infrastructure as a High Art Project

Finally, the cultural sphere of an American stage object is so radically different from that of a historical European city (such as Barcelona) that the aesthetics and formal consistency of the latter cannot simply be copied. But the current approach of so-called 'beautification of infrastructures' may not succeed either. For in aesthetics, *kitsch* means the representation of something as that which it is clearly not – e.g. a cigarette lighter in the form of a tiger cub. With ominous kitsch in mind, the 'beautifying infrastructures' constitutes a form of aesthetic betrayal, a populist cop-out against the underlying aesthetic problem of design in our time. All attempts at beautification of roadways (benches, flags, pavements, etc.) are kitsch. Avoiding kitsch is one of the ways to achieve an integrity that we usually associate with so-called 'high design'. Against the populism of low expectations, I would argue that our last vestiges of public space deserve the highest and best of our efforts. Furthermore, the continuing abstract quality of the Modernist aesthetic is the best guarantee towards its value as a collective form – for everyone reads and reconstructs the open aesthetic of the abstract differently when lacking obvious semantic clues.

With the sensibility of kitsch in mind, a design that strives towards a non-kitsch integrity becomes a piece of labor to formalize artifacts in a manner that does not deny their own, perhaps ugly but nevertheless honest, functional nature. The infrastructural object is in this sense doomed to celebrate its own technocratic origins. However, the self-conscious approach of culture and art may well have to consist of

simple and modest tweaks and shifts in the existing language of American infrastructure, albeit tweaks that turn functionality on its head. There exist precedents in recent art history. The art works of Marcel Duchamp, Vladimir Tatlin, but most importantly and more recently, Jean Tinguely and Panamarenko, illustrate an existing lineage of absurd machine art. Tinguely's auto-destructive and de-humanized machine art of the early 1960ies uses parts of machines, re-assembles them differently, destroying the functionality of the machine, but opening up different and subtly anthropomorphic interpretations of the machine – all while maintaining its machine-ness and avoiding the violation of the kitsch principle. Already in 1954, Michel Carrouges theorized this approach in '*Les Machines Celibataires*'.⁹

To Tinguely's use of machine parts could correspond our use of technocratic codes and forms in infrastructure design. Any design of a contemporary infrastructure object should begin and end with an acknowledgement of the object crafted. The high design of an infrastructure object would have to directly address its own subject matter as a coded piece of technocratic, anonymous production. As a collective form, technocracy – the apparatus of codes and laws as enshrined in vast libraries and endless pdf's that have governed roadway construction – has effectively created a true collective form: a form without any clear authorship of its own, without a 'subject' at work. The road, in its current form, lacks self-consciousness. It is almost as natural to modern society as water is to fish. A critical design project will then consist of the creative appropriation of these codes, forms and the entire syntax of bureaucratic order, in order to re-invent and re-build them as authored systems with a human poetic element. Using the same technocratic elements that gave rise to the original form of the infrastructure system, but re-arranging them in a way that multiplies their functionalities and directions of potential use, will enable a consciousness of their existence as cultural objects. Doing this would reconstitute the technocratic formalism as a quintessentially theatrical stage upon which the big dramas of America's suburban life could unfold.

ENDNOTES

[1] P.4, 'the highway experience' in Appleyard, Donald; Lynch, Kevin; and Myer, John R. *The view from the road*. (Cambridge, MIT Press 1964)

[2] Davis, Timothy, "A Pleasant Illusion of Unspoiled Countryside": The American Parkway and the Problematics of an Institutionalized Vernacular (pp. 228-246). In 'Constructing Image, Identity and Place.' *Perspectives in Vernacular Architecture*, Vol.9, 2003.

[3] As Chauncy Harris called the 1920s and 1930s, in: pp.1-14 in: Harris, Chauncy D. in: *The American Journal of Sociology*, (Chicago, July 1943).

[4] Notes from the meeting at Royaumont (France, 1962). In: Heuvel, Dik Vanden. *Team 10 Meetings*. Retrieved June 14, 2010, from Team 10 Online: <http://www.team10online.org/team10/meetings/1962-royaumont.htm#2>

[5] P.4, 'the highway experience' in Appleyard, Donald; Lynch, Kevin; and Myer, John R. The view from the road. (Cambridge, MIT Press 1964)

[6] These images have been published widely. Kahn presented them also in 1959 : Louis Kahn, "Talk at the Conclusion of the Otterlo Congress," in CIAM 59 in Otterlo, edited by Oscar Newman (ed). Text republished as: Twombly, Robert (ed.) *EssentialTexts.* (New York, London: W.W. Norton, c2003). Images republished as: Ronner, Heinz; and Jhaveri, Sharad. *Louis I. Kahn: Complete Work, 1935-1974.* (Birkhauser, 1987)

[7] Especially during Oriol Bohigas' leadership of Barcelona's planning and development. See also: Bohigas, Oriol. Ten points for an urban methodology. Pp. 91-97 in Marshall, Tim. *Transforming Barcelona.* (Routledge, 2004)

[8] See also: definition of 'grey goo' in: D'Hooghe, Alexander, et.al. *Crisis? What Crisis?*, Volume, nr. 9, November 2006.

[9] See also: Hulton, Pontus; and Gunnar, Carl (ed.). *The Machine as seen at the end of the Mechanics Age.* (New York: Museum of Modern Art, 1968).
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A PUBLIC SERVICE ROLE FOR PLANNERS AND ARCHITECTS

SAM BASS WARNER
Massachusetts Institute of Technology

ABSTRACT

The consequences of world economic development and global warming will force the suburbs of the United States to densify. If there is not an adequate design response to these pressures these residential settings will be destroyed by slide-in small apartments, packaged accessory buildings, and heedless remodeling. This article proposes the creation of state-funded design teams to fashion place-sensitive land, structure and street reconfigurations in cooperation with existing neighborhoods in order to preserve the green suburbs of America.

A Public Service Role for Planners and Architects

A major local planning challenge for the reworking of American suburbs now confronts planners and architects. The challenge grows from a series of global and national problems that together threaten today's commonplace ways of life in the United States. Since the 1980s, global warming has proceeded unabated. Forests everywhere have been reduced, oceans trashed and acidified, and the northern ice is melting at an alarming rate. If the nations of the world continue to emit pollutants at their present rate, catastrophes will surely ensue. (McKibben, 2010)

This same polluting global economy also over-consumes existing natural resources of water, timber, grass, oil and natural gas and places excessive demands on wheat, corn and rice production. Consequently, the price of the basic materials of modern life will rise steeply and soon. The current economic depression can suppress these price rises for at most one more decade. (Schor, 2010)

Since the 1980s employment has grown more uncertain and three quarters of all American families have seen their incomes decline. Costs for housing, food, transportation and education have increased substantially. These sharply rising prices will place further stress on already burdened family budgets. The direction of the world's economy and global warming thus press down upon the circumstances of American life. (Chan & Carbone, 2010)

To address this challenge properly, planners and architects will need to work in new ways to address the coming press for densification. The goal of such efforts must be to redesign and to rebuild existing single family suburbs to make residential environments that are more energy efficient, more convenient and less expensive for American families to occupy while at the same time providing new kinds of green amenities for the residents. Among other changes, block-by-block attention to alter streets, residential landscapes and efforts to design satisfactory accessory apartments and structures will be needed. Fortunately, the suburban segments of urban regions can be substantially improved to cut family costs by at least 5% per year.

Although thoughtful planners and architects have been calling for denser, more transit-friendly residential neighborhoods for years, little has been accomplished. There has been little or no progress in retrofitting existing single family suburbs. The failure to institute new ways, however, cannot be placed at planners' and architects' doors. Federal and state initiatives necessary for support of local suburban action have not been put in place. There are no extensive federal policies for public transportation: neither plans nor adequate funds. The states are penniless and their public transportation agencies operate at a loss. Oil, gas, automobile and highway interest groups prevent the reduction of carbon emissions. Metropolitan land owners and developers resist the laying down of urban growth limits, and few have considered a materials

policy that might reduce the nation's demands for costly resources. Thus, global warming goes forward unchecked and steep price increases for the basic materials of the economy can be expected by 2020. (Stern, 2010)

The shock of these twin forces may in time breach the national political log-jam. But when this moment arrives, will change come to the suburbs in a way that will improve conditions there? Or will it come as a series of corporate building packages that will worsen suburban environments? In the past, building packages for remodeling have not respected the variety of circumstances and possibilities that prevail in existing suburbs.

Currently there are no institutions in place within our suburbs capable of carrying out a comprehensive planning, infrastructure and home rebuilding process of the magnitude the coming crisis will demand. Planning is separated from architecture, and property law and finance treat existing lots as isolated entities rather than interdependent parcels. Homeowners, themselves, also treat their property as an independent entity. They do not generally behave in a cooperative manner with their neighbors in order to maximize the possibilities of their holdings. Of course, local planning boards could instantly alter zoning regulations to authorize two families to occupy an existing single family lot. Such a change, however, demands a revolution in the outlook of suburban residents. The culture of a single family house and lot is deep and long established. To affect change requires a patient approach. The immediate response to such a change would be cries of, "I paid my hard-earned money to live in a single family neighborhood and the proposed change to two families will ruin my investment in my house."

With these issues in mind, I would like propose here a process for the purpose of opening a discussion of how planners and architects might meet the densification challenge. In putting forth this proposal, I am guided by my experience as a member of a planning board in a suburban town and by evidence from an excellent review of accessory unit policies in metropolitan Boston. (Stege, 2009)

My planning board experience tells me that suburban towns contain a wide range of quality in building design, a range that extends from simply awful to handsome. Recently, stock plans and manufactured housing have been replacing the work of private architects. Surely a few packaged designs for accessory apartments and structures cannot adequately serve such variety. Landscape architecture, for its part, is divorced from town design of streets, infrastructure and open spaces. Time-based fees drive services to towns by private planning firms. Such institutional patterns seem woefully inadequate to guide a shift in public beliefs and changes in residential arrangements.

The record of building accessory apartments and structures reveals further gaps between good intentions and action. Over 100 cities and towns in metropolitan Boston

have enacted accessory unit laws, but the laws have brought little response. Several reasons account for the want of action. Many homeowners lack sufficient credit to finance a remodeling or addition. Others need aid in obtaining good plans and passing through the many steps needed to advance from finance to building permit and construction. The most common and formidable obstacle, however, is the fear of alienating the neighbors.

This evidence leads me to believe that a successful densification process will require sustained education about alternatives to existing single family neighborhoods and a great deal of attention to the details of adding units. The program will necessarily be slow and detailed--a combination of needs that the fragmented planning and building institutions of the suburbs are ill-fitted to provide.

Therefore, I propose a state-financed planning and design process to follow on from federal-state programs for public transportation improvements. The location of enlarged public transportation services will indicate where in the suburbs densification can most usefully take place. The next step envisions that professional societies of planners, architects and landscape architects set forth panels of qualified members that cities and towns can choose from to form three-person teams for densification work. The team members must be state civil servants so that their work can be sustained over a number of years and so that they will be secure from real estate conflicts in particular places. The team's task would be to work with town administrators and local landowners to transform the initiatives of private investment in accessory units into a town process of neighborhood betterment. The team's process would begin with a succession of neighborhood or block meetings designed to stretch over several years. The goal would be to move from education of neighbors to bit-by-bit densification joined to municipal improvements that could add the benefits of a green neighborhood to the new efficiencies of transportation and housing additions.

A likely scenario would anticipate that team members move in two directions at once: toward town officials and toward the neighborhoods. Review of design alternatives for the improvement of existing streets and streetscapes with town authorities – especially the engineering department, the department of public works and the planning board—is especially needed. Current efforts to create traffic calming and child-safe streets offer a variety of patterns for greening existing neighborhoods by narrowing streets and altering their configuration. Cities and towns when they participate in densification can recapture the costs of their improvements in increased residential and retail land assessments.

Should a block or neighborhood request such changes, these new patterns could compensate for some of the yard loss caused by residential densification. (Southworth & Ben-Joseph, 2003; Kaplan, Kaplan et al., 1998)

The approach to neighborhoods or blocks might best be a voluntary process. For ex-

ample, if four landowners requested meetings with the team the consultation process could begin. A discussion of the values of residents would constitute the essential starting subject of the meetings. What do people like about their surroundings and how do they use the block or neighborhood? How do the children use the spaces? What are the shortcomings? Problems? The values embedded in these issues make up the foundation upon which the team's later design suggestions can build so that these value discussions should not be rushed.

After a series of such meetings the team might begin to offer suggestions for alternatives that would add housing units here and there and also improve the neighborhood. Suggestions would be made for adding an apartment to an existing home, for accessory structures – either a remodeled garage or a new building--and for alternatives to improve yards and the street. In the end what is being sought is a vote among the majority of homeowners (not unanimity) to support such improvements and a willingness to support one or more neighbors who undertake to add a unit to their property.

Of course, discussions can break down and a majority not materialize, but if several blocks or neighborhoods are in play it seems likely that the momentum for change will build after a few demonstrations. After all, added units bring rents to their owners and the public improvements make a pleasant green setting. Single family homeowners have much to gain, but their values must be respected if their fears of property loss are to be overcome.

The team members also stand to reap substantial rewards for their patience and skills. They have secure employment in a public service role that allows them to design freshly and at the highest standards for each particular house, lot and street. In addition to having a sustained opportunity to practice, they will reap a long run satisfaction from reworking whole towns into greener settings and more convenient and efficient ways of life than are now possible.

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CONTINUITY AND CHANGE IN THE URBAN TRANSFORMATION
OF OLD DISTRICTS –
A CASE OF SHAM SHUI PO, HONG KONG

PUI LENG WOO / KA MAN HUI
The Chinese University of Hong Kong

ABSTRACT

Urban structure not only represents the past but also conceals catalytic drivers for the growth of a city in the future. With massive redevelopment of old districts in many rapidly changing cities, the structure of old neighborhood fabrics is often ignored and destroyed. Uninformed by history, contemporary urban redevelopment often leads to the loss of a sense of place and displacement of communities. This paper examines continuity in the built environment by identifying and analyzing catalytic elements of historic transformation in the Sham Shui Po district of Hong Kong. It identifies tangible evidence of permanence as the basis of a generative urban development armature. It attempts to demonstrate that certain land features, buildings, and public spaces can act as generators of historic continuity and should therefore be preserved as guides for future development decisions.

Introduction

The question of permanence was poignantly revealed through the demolition of Hong Kong's Lee Tung Street in December 2007. Known colloquially as the "Wedding Card Street", Lee Tung Street was famous for its concentration of print shops. Laid out perpendicular to topographic contours, the street represented the first phase of Wan Chai District's land reclamation of 1902. Rebuilt after the Second World War, the street consisted of typical nineteen-fifties four to six-storey reinforced concrete buildings of Hong Kong. Replacing these buildings will be a project of four high-rise towers with one thousand luxury residential units and a shopping mall around three conserved historical buildings.¹

Behind the project is the Urban Renewal Authority (URA), a government statutory body responsible for site clearance and redevelopment in Hong Kong. Having spent HK\$3.58 billion to prepare the land, the authority will receive 'the best benefit' of HK\$6.2 billion from a consortium of two private developers selected for the site. It hopes that business will return to help recreate the "wedding city" theme in the redevelopment project.²

Before Lee Tung Street's demolition, denizens of the city made pilgrimages to the site, photographers took countless pictures, and protestors held demonstrations. After the buildings were torn down, the gaping hole reminded people of a loss, but brought in sunlight and hope for desirable change, at least until the construction began. Most people have now resigned their hope for a transformed street. Widespread dissatisfaction with this and other urban renewal sites suggests that Hong Kong needs a better approach in transforming its old districts.

Located in the northern end of the Kowloon Peninsula, Sham Shui Po is another old district, and the poorest one in Hong Kong. (Hong Kong Census and Statistics Department, 2009) Sham Shui Po currently contains ten urban renewal projects, which call for the demolition of all existing buildings and the construction of high-rise mixed-use residential towers. How can a place like Sham Shui Po be renewed without losing its history, identity, and community?

We believe that a city is neither historic nor modern, but evolutionary. A city is made up of buildings, streets, and spaces that have been constructed, demolished, and rebuilt. Certain constructions have become reference points in the process of change. Some have acquired the status of historical monuments, others have evolved to become catalytic elements in the transformation of a city. This study illustrates a method for identifying and working with the elements that could inform the processes of change involved in urban renewal.

Theoretical Proposition

Traces of urban growth are visible in the physical discontinuities of numerous cities. New infrastructure interventions in old neighborhoods, segregated land-uses, high-rise developments replacing traditional buildings and privatized public spaces are now ubiquitous in Chinese cities. Many parts of Beijing, Hong Kong, and Guangzhou are becoming generic and seemingly instantaneous, artificial, and disconnected from their histories. Occasional public outcry and targeted policies lead to a designation of selected buildings or districts for conservation. But general planning strategies that address continuous urban transformation are lacking. This paper seeks to examine the persistent question of how cities can be designed for growth and change without losing their sense of time and place.

A desirable image of a city is one that celebrates and enlarges the present while making connections with past and future. (Lynch, 1972) The architecture of a city includes not only the visible image of the present built environment, but also traces of its construction over time. Aesthetic continuity and strive for better living conditions are permanent characteristics of architecture, which remind us of the close relationship between the form and history of cities (Rossi, 1982). Planning and city design require wider recognition as critical links in the continuous evolution of cities. In other words, we need to look backward in order to project forward (Blau & Rupnik, 2007) .

At least two directions in the theory of city design have consciously addressed the sense of time and place in cities. The first of these – Urban morphology – is a systematic study of the evolution of urban form. By providing an analytical framework for understanding and monitoring change, it recognizes the need for continuity of some built-form, and argues for the management of change rather than preservation (Pendlebury 2009). It is possible, through a morphological study, to identify elements of the city, which via their nature, history, meaning, and design have endured time and become catalytic elements for surrounding historic development. Such elements are not only “pathological”, they can be “propelling.”³

Second, the practice of Town Planning, the roots of which go back to 19th century garden cities, offers a basis for greater community involvement in urban transformation. Despite the differences of scale, and complexity between contemporary cities and garden cities, the latter’s theoretical underpinning of civic art as an expression of community life still appears to hold (Unwin, 1909). Unwin’s emphasis of civic art as an outward expression of a community’s needs, rather than decoration, still seems applicable to rapidly growing modern communities whose needs and aspirations seek expression in the form of their habitat. In order to foster social cohesion and avoid alienation, the contemporary dense and diverse city requires greater community expression in the design of its streets, public buildings, and open spaces. By working with these relatively permanent elements, the contemporary city can reinforce its connections with the past, while satisfying its collective aspirations of the present.

Urban Renewal in Hong Kong

Numerous districts of Hong Kong, which were rebuilt to higher densities after the Second World War, have once again become targets of urban renewal. These districts are mainly comprised of low-rise buildings of varying conditions that support a large number of low-income families, elderly people, recent immigrants, and minority groups. These districts support the social, economic, and residential needs of working class communities that are emblematic of Hong Kong's history. Yet, under the pretext "to create quality and vibrant urban living"⁴, the present redevelopment projects of the city appear to be displacing and eliminating these communities through eminent domain, demolition, and reconstruction.

The URA's stated goals are "to provide better living environments and neighbourhoods", "to sustain local characteristics", and "to revitalize through enhancing and strengthening the socio-economic and environmental fabric for the benefit of our urban communities."⁵ The rhetoric is widely contradicted by a massive replacement of buildings in targeted sites by large high-rise podium structures. Much of the "socio-economic fabric" of old districts is made up of small businesses and street markets. Demolition of these buildings destroys the "environmental fabric" that supports their economic life and social potential. The replacement of this fabric with shopping malls and exclusive residential towers is, in fact, the opposite of sustaining "local characteristics". With the current practice of redevelopment, the original "neighbourhoods" disappear.

There are currently ten urban renewal sites in the Sham Shui Po District. The sites contain mostly four to six-storey reinforced concrete structures built in the nineteen-fifties. The ground floors of these structures typically contain shops with upper floors subdivided into tenements. The housing conditions vary from moderate to poor. The new projects are planned at Floor Area Ratios (FAR) of eight to nine – twice that of the existing buildings, typically producing more than two hundred thousand square metres of gross floor area per project. The result is the familiar Hong Kong podium-tower with forty to fifty-storeys of apartments on top of a three-storey podium shopping mall.⁶

Hong Kong is well known as a city of skyscrapers and rapid change (Abbas, 1997). Real estate development has always shaped the political economy and culture of the city. However, with Hong Kong's return to China in 1997, its people have come to view the city, its history and form, with a heightened sense of belonging. Authorities that forge drastic change are now met with increasing resistance from residents, activists, and academics. The public concern with the life and architecture of their city is encouraging and calls for new methodologies to understand growth and change in relation to a wider public aspiration for continuity between the city's past, present and future.



Figure 1. Images of Sham Shui Po.

Defining Permanence

We define two properties of permanence in city design. The first is the duration of physical infrastructure through time, its continuity and long-term existence. The second is the persistence of social processes – their durability and continued functioning. Permanence thus refers to the endurance of both physical objects and social activities from the past to the future. The opposite of permanence is temporary, mortal, and transient. Analogous definitions of permanence are known in other disciplines. In digital technology, for instance, permanence is a measure of the life of digital data storage. In psychology, object permanence describes the awareness of existing objects even when they are no longer visible during a stage of cognitive development. Permanence in the built environment implies continuity for both static objects and dynamic processes. “Persistence is revealed through monuments”, argued Aldo Rossi, “the physical signs of the past, as well as through the persistence of a city’s basic layout and plans... sometimes these artifacts persist virtually unchanged, endowed

with a continuous vitality; other times they exhaust themselves, and then only the permanence of their form, their physical sign, their locus remains".⁷ Edmund Bacon argued, on the other hand, that "If the architect deals with movement systems...the chances of their survival, and indeed of their strengthening and extension over time, are very good indeed, even if the structures along them are torn down and rebuilt".⁸

The Growth Of Sham Shui Po

The urbanization of the Kowloon Peninsula is clearly evident in the physical fabric of Sham Shui Po. Piers and reclamations, street layouts and speculative buildings, temples and markets, police stations and military camps, industrial buildings and public housing have transformed a number of villages on a jagged coast into a vast expanse of interconnected urban districts along Kowloon's waterfront. The gridiron streets of Sham Shui Po are known today for their trade of electronic goods and clothing supplies. The area houses a community of working-class, low-income, and immigrant families in a variety of apartment buildings and public housing projects.

Sham Shui Po Village (1824-1898)

Prime areas of Hong Kong Island began to develop with the cession of Hong Kong Island to Britain in 1842. The district of Sham Shui Po, still a part of China on the fringe of Kowloon, initially remained rural. It was made up of a number of villages surrounded by a bay and mountain ranges. Separated by hills and water, the villages were linked by footpaths and waterways. Sham Shui Po, one of the villages with a strategic location near a coastal pier, became the center of the entire district. Sham Shui means deep water, Po refers to a bay with interlocking land and waterways (Cheng, 2007).

The original village, located at the intersection of present day Nam Cheong Street and Yee Kuk Street, no longer exists. It was a hamlet in the bay with a winding main street and several side streets. It contained dwellings, a market, two temples, shops, workshops, lime kilns, a custom house, and ten gambling houses (Smith, 1995). A boundary line (Boundary Street) south of Sham Shui Po marked the extent of Kowloon's cession in 1860 from China to Britain (Figure 2). Located at the border of the two countries, Sham Shui Po attracted both legitimate and illicit business, and became known as a haven for criminals and smugglers (Smith, 1995).

Sham Shui Po New Town (1899-1944)

The leasing of the rest of Kowloon and the New Territories in 1898 for ninety-nine years was to have the greatest impact on Sham Shui Po. In order to grant new leases, the British Government drafted a new plan for Sham Shui Po in 1900. The

Growth of Sham Shui Po (1902-2008)

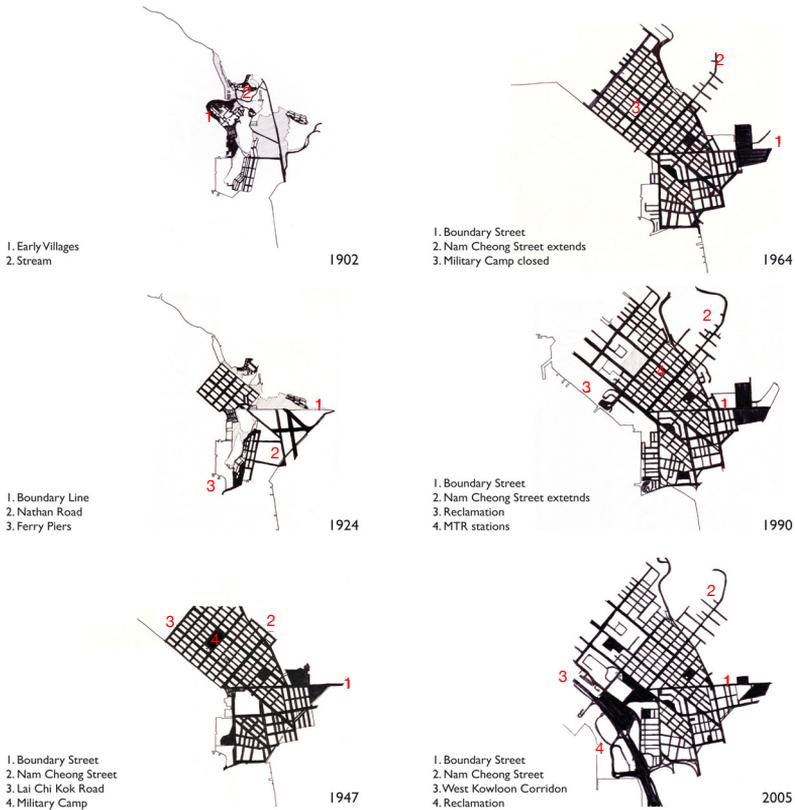


Figure 2. The growth of Sham Shui Po.

scheme was executed by private developers, mainly contractors, using land reclamation and building projects (Smith, 1995). Two streets, Nathan Road and Boundary Street, played a critical role for the layout of Sham Shui Po. Nathan Road was the first major road built in Kowloon, while Boundary Street was merely a line of high bamboo fences. The regulating line for the orthogonal layout of Sham Shui Po was set by bisecting the angle formed between Nathan Road and Boundary Street (Figure 2).

Another wave of development for Sham Shui Po was brought about by a fire in one of the villages (Apliu Village) in 1912. The resulting Sham Shui Po Improvement Scheme, which followed the fire, called for the removal of the village (Smith, 1995). Three hills were leveled and a nullah was built at Nam Cheong Street for drainage. The first stage of reclamation began in 1914. A gridiron of streets was laid out between Nam Cheong Street and Kweilin Street and building lots were sold to construct early two

to four-storey Chinese residential tenements with shops on the ground floor.

The second stage of reclamation between Yen Chow Street and Tonkin Street began in 1919. The expanded layout and public amenities shifted the town centre northwest from the Boundary Street towards Pei Ho Street, where a new market was built in 1918 (Smith, 1995). A ferry service to Hong Kong Island was introduced in 1919 from the pier at Boundary Street, and relocated in 1924 to the Sham Shui Po Ferry Pier at the junction of Pei Ho Street and Tung Chau Street (Cheng, 2007).

Reclamation of Sham Shui Po was mostly complete by 1927 (Cheng, 2007). The area between Yen Chow Street and Tonkin Street was planned for public uses. The plan included a post office, a police station, a school and open spaces. A military camp was added with the increase of British troops in 1927 (Smith, 1995). The camp was later used for the internment of British prisoners of war during the Japanese occupation of Hong Kong between 1941-45 (Smith, 1995) (Figure 2).

Sham Shui Po District (1946-2008)

After the War, Sham Shui Po attracted a large number of refugees and immigrants, producing a rapid growth of squatter settlements on the hill slopes. A major fire in nearby Shek Kip Mei launched the first public housing programme in Hong Kong. The military camp was closed in the late nineteen-seventies, and its land used for the additional construction of public housing estates (1981-1993) and the Dragon Centre shopping Mall (1994) (Figure 2). Large tracts of land were reclaimed in the nineteen-eighties for the construction of highways, a railway, housing developments, open spaces, and port facilities. The center of Sham Shui Po shifted inland towards a newly developed mass transit system. The waterfront attracted new large-scale developments. The once hamlet-by-the-deepwater-bay is located somewhere between the center and the bay.

Exploring the Permanence of Sham Shui Po

The following presents an attempt to outline spatial elements of Sham Shui Po, whose continuity could establish a desirable armature for maintaining a sense of the area's past while simultaneously guiding future growth and change. We attempt to reveal the permanence of Sham Shui Po through tangible elements that have guided its growth and change between 1902 and 2007 and tell the history of the neighborhood's transformations today.

Natural landforms and villages of the nineteenth-century marked the beginning of Sham Shui Po. The early twentieth-century gridiron layout of streets and blocks formed the armature of its urban structure that continues till this day. Markets and

temples marked the economic and religious expressions of the local population, while a police station and a military camp revealed the control and power structure of the government. A ferry pier and subway stations situate the area in a metropolitan mobility network, while public open spaces reveal the character and condition of its diverse inhabitants. Following a Lynchian tradition, these elements can be represented as points, lines, and planes. Points refer to the area's landmarks and nodes; lines to the paths and edges; and planes to the physical forms of districts (Lynch, 1960). A combination of these points, lines and planes suggests a spatio-temporal structure, which appears to have guided the historic urban evolution of the area.

Points

Mo Tai Temple [Figure 3, Index 1]

Built in 1899 on Hai Tan Street, the Mo Tai Temple is one of the oldest temples of Sham Shui Po. Having resisted the 1922 Sham Shui Po Improvement Scheme, it still stands at an oblique angle to the orthogonal layout of the district. In front of the temple, facing the bay, lay the first marketplace of Sham Shui Po Village in the nineteenth-century (Smith, 1995). The temple thus marks the only place in the district, where the original coastline of Sham Shui Po is revealed.

Sam Tai Tsz & Pak Tai Temples [Figure 3, Index 2]

First built in 1898, the Sam Tai Tsz Temple is another historic symbol in Sham Shui Po. It was rebuilt and relocated to its present location on Yu Chau Street as part of the 1915 Improvement Scheme, which combined the Sam Tai Tsz and Pak Tai Temples into a single complex (Smith, 1995). Villagers believed that Sam Tai Tsz (The Third Prince) helped dissipate the area's plague outbreak of 1894 (Cheng, 2007). It is the only temple in Hong Kong devoted to Sam Tai Tsz and it keeps attracting numerous worshippers. The Pak Tai Temple was built in 1920 by fishermen to worship Pak Tai (God of the North). The complex has now been registered as a Grade II historic building by the Hong Kong Antiquities and Monuments Office (Figure 1).

Tin Hau Temple [Figure 3, Index 3]

Though there are over seventy temples dedicated to Tin Hau (Goddess of the Sea) in Hong Kong, the Tin Hau Temple on Yee Kuk Street can be traced to only one of two such temples in the Sham Shui Po Village in 1867. It was relocated from its original location and rebuilt in 1913 under the Improvement Scheme (Smith, 1995). Like many Tin Hau temples in Hong Kong, it has lost its connection to the sea and

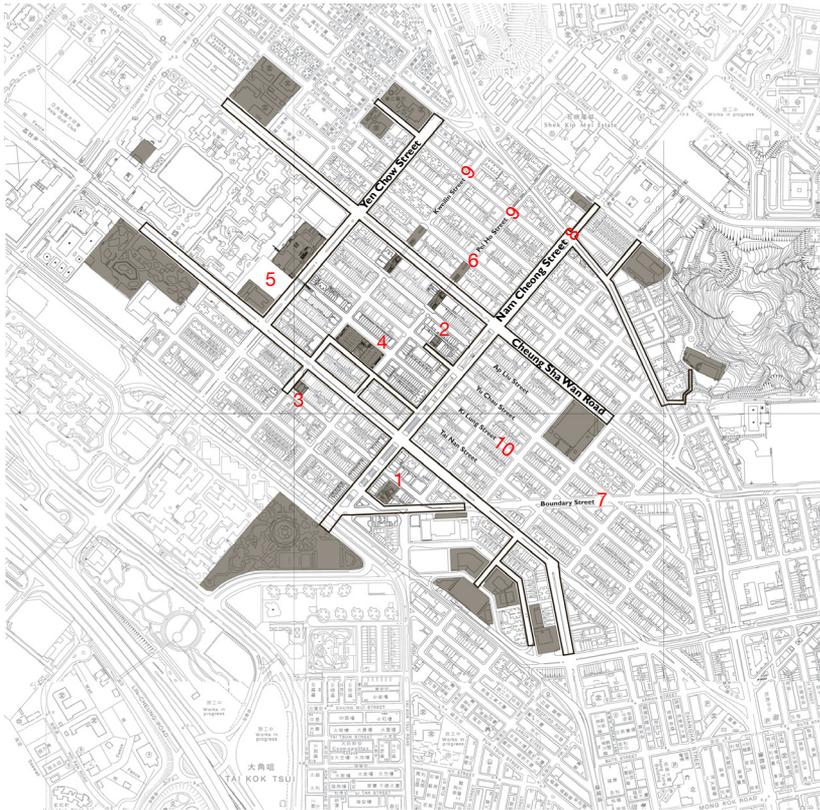


Figure 3. Map of Sham Shui Po showing important streets and landmarks.

currently faces a narrow sidewalk and a busy street. The temple is registered as a Grade III historic building.

Pei Ho Street Market [Figure 3, Index 4]

The markets of Sham Shui Po are the area's centres of economic and social life. We have already noted the first market, which was an open area in front of the Mo Tai Temple. As part of the Improvement Scheme, a new market consisting of two elongated buildings with a space in-between was constructed in the centre of Sham Shui Po at Pei Ho Street. Enlarged in 1928, and spilling onto surrounding streets, it formed one of the largest concentrations of retail activities in Kowloon (Smith, 1995). The market was reconstructed in 1995 into a multi-storey Municipal Services Complex with a gymnasium, a library, and various community services. Like many similar buildings in Hong Kong, the complex is massive and inward-looking, its blank walls look harsh

and trite in comparison to the surrounding apartment buildings. Nonetheless, the complex provides vital community services and continues to generate vibrant street life in its vicinity (Figure 1).

Dragon Centre [Figure 3, Index 5]

Built in 1994 on the site of the old military camp, the Dragon Centre was the first shopping mall to bring large-scale air-conditioned retail activity to Sham Shui Po. Its corridors are lined with mini-stalls that evoke the feeling of a marketplace. An ice-skating rink located on the top floor offers area's working class people an opportunity try exotic winter sports. With two huge masts, a curved glass atrium, and a collage of architectural features, the Dragon Centre is bombastic and incoherent in appearance. Nevertheless, this shopping mall brings people in the community together, and 'announces' that Sham Shui Po can finally offer a contemporary Hong Kong experience (Figure 1).

Sham Shui Po MTR Station [Figure 3, Index 6]

Ferries used to provide a historically important mode of access to Sham Shui Po. However, the completion of the subway system in 1982 led to the closure of the ferry pier on Pei Ho Street in 1992. The Sham Shui Po Mass Transit Rail (MTR) Station has shifted and enlarged the centre of Sham Shui Po from the market towards Cheung Sha Wan Street (Figure 1). Next to the subway entrances are the famous Golden Computer Arcade and the Apliu Street electronic goods market.

Lines

Boundary Street [Figure 3, Index 7]

Initially developed as a bamboo fence that marked a political line on maps, Boundary Street captures a physical and emotional divide in Hong Kong's history. It reminds people of the loss of sovereignty, the expansion of a colony, and eventually the unification of a country. It cuts into the orthogonal grid of Sham Shui Po, forming irregular streets and blocks. The experience of Boundary Street symbolizes fragmentation, disorientation, and ambiguity. It is a broken line that few like to recall, yet it is intricately bound to not only Sham Shui Po's history, but also of Hong Kong's (Figure 1).

Nam Cheong Street [Figure 3, Index 8]

Nam Cheong Street was one of several streets constructed to drain the area in 1912. The drain was covered over sometime in the nineteen-sixties. Squatter huts used to occupy the land in the middle of the street, which is now landscaped with pergolas in their place. Nam Cheong Street gives a feeling of openness and grandeur rarely seen in urban Hong Kong. More importantly, it serves as a reminder of the area's coastal geography and the early urbanization of Sham Shui Po (Figure 1).

Pei Ho Street and Kweilin Street [Figure 3, Index 9]

These two parallel secondary streets that run from the hills to the coast share many similarities. Both were formed between 1915 and 1924 under the Improvement Scheme (Cheng, 2007). Between them is the Municipal Services Complex and both host three MTR entrances respectively. The streets also reveal the characteristics and disparities of three sub-districts. Northeast of Cheung Sha Wan Road, the center of electronic products, attracts a more prosperous and younger population. Between Cheung Sha Wan Road and Lai Chi Kok Road, the market of Apliu Street and the Municipal Services Complex mainly draw tourists and local residents. An area of dilapidated buildings between Lai Chi Kok Road and Tung Chau Street Park, is a gathering place for the elderly, peddlers, and the homeless (Figure 1).

Ki Lung Street [Figure 3, Index 10]

Perpendicular to Pei Ho and Kweilin Streets, Ki Lung Street cuts through the heart of Sham Shui Po. The street is composed of four sections. The first section, near Boundary Street, is relatively quiet. The second, between Boundary Street and Nam Cheong Street, is lined with many tiny stalls selling rolls of colourful fabric. The third section, between Nam Cheong Street and Kweilin Street, is marked by imposing urban blocks from the nineteen-fifties and sixties. On closer examination, these blocks express numerous signs of life through advertisement, curtains, laundry, and potted plants (Figure 1). The last section, between Kweilin Street and the Dragon Centre, attracts throngs of people to cheap goods, illegal trade, as well as shopping opportunities at the mall.

Planes

The streets of Hong Kong's old districts are urban rooms. The rooms have clear spatial enclosures and fuzzy surfaces. Moveable and box-like stalls occupy the ground; balconies, laundry racks and planters extend from buildings; large overhead signs stretch into the void of streets. Seemingly unplanned, these colorful expressions of

habitation are actually supported by a regulatory structure of the city. The buildings of Hong Kong are shaped by regulations that maximize permissible density. Buildings constructed in a similar period thus generate an urban fabric that is coherent both in plan and in elevation.

A typical building in Sham Shui Po is five to nine-storeys high with a common staircase shared by two adjacent units on each floor. The elevation of the building is simple and contiguous, which due to the small width of the street is perceived more often as a street wall than a façade. Landlords have pierced the façade to widen their units by three to four foot enclosed extensions (Habraken, 1998). Though this practice is now prohibited with stringent building regulations, awnings, laundry racks, signage, and balcony enclosures are still permitted.

Apart from providing light and ventilation to the apartments, the wall plane of the street is also the surface of additions and alterations. Its functional nature stands in contrast to the sleek façades of the contemporary podium towers. The simple and malleable façades of apartment blocks produce planes of expression that register the imprints of habitation over time.

Discussion

An examination of Sham Shui Po's transformation over the last several decades suggests that traditional elements of urban form have given way to more complex and elusive spaces, buildings, and technologies that often exceed the traditional focus of preservation strategies (Livesey, 2004). Outlining the morphologically structural elements of the site suggests that an armature of points, lines, and planes can be defined that could guide future development without compromising a holistic image of time and place in Sham Shui Po. Rather than ignoring the development generators of the past, present and future changes in the built fabric of a neighborhood could benefit from a better spatial, social and economic integration by following, rather than reversing, the course of decisions and customs that have withstood the test of time till now. By doing so, the area might achieve what Lynch has called a desirable image of the city – “The desirable image of a city is one that celebrates and enlarges the present while making connections with past and future”.⁹ Discrete points, as well as the armature of lines and planes outlined above are meant to stimulate debate on defining a generative structure that can guide the future growth and change of Sham Shui Po.

The historic analysis of the area suggests that such a structure has always been somewhat dynamic, expanding and shifting, with certain elements disappearing over time to give way to others, continuously reflecting the aspirations of the area's users at any given point in time (Figure 4). The list described above contains places and qualities, some of which date back to 1902, with others less than a decade old. These ele-

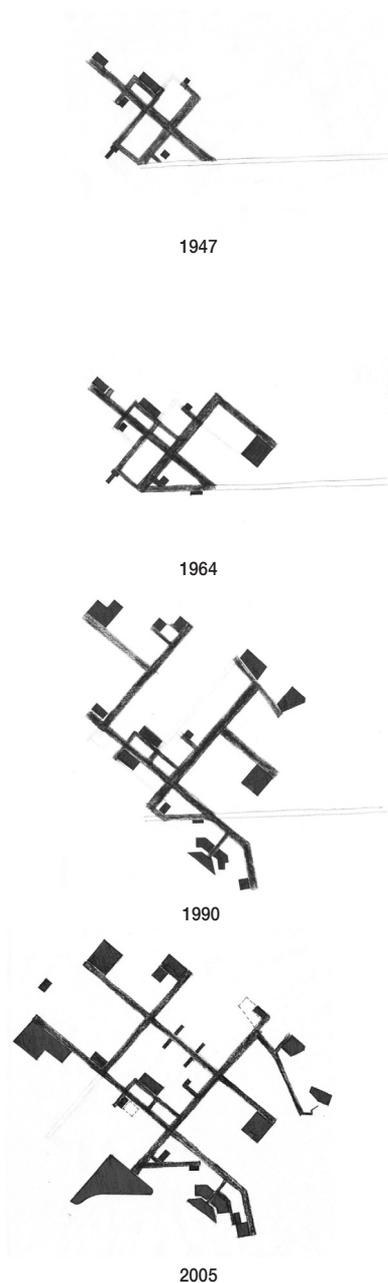


Figure 4. Evolving structure of continuity.

ments should thus be taken as generative rather than constraining, inspiring rather than regulating, considered as part of an evolving whole that bridges the neighborhood's past to its future. As in the course of a person's lifespan, certain experiences are remembered and retained more vividly than others because they continue to offer guidance to daily life, so too should one carefully consider the combination of these elements as collective experiences crystallized in the stones and habits of the neighborhood. A heightened awareness of their forms and histories could allow us to shape the present and future decisions of redevelopment without eradicating the historic wisdom embodied in the urban structure of a place.

Conclusion

Urban transformation creates opportunities for architecture and urbanism. Sham Shui Po was created at the turn of the twentieth-century through land reclamations, demolition of temples, and the displacement of residents. Can Sham Shui Po be renewed without destroying all of its original architecture, eradicating its public spaces, and displacing its inhabitants again? In this study, we have explored the elements of Sham Shui Po's urban structure that have played a key role in its historic transformations through the study of the area's morphology and planning.

Change is necessary for sustaining cities. Hong Kong has transformed from a landscape of villages into a preeminent hub of global trade. Change in the last one hundred and eighty years has greatly improved the lives of its people. However,

with higher standards of living and an increased sense of belonging, people now question the changes introduced by recent practices of urban renewal. Given the increasing concern to retain the traces of Hong Kong's history through urban renewal, we contend that contemporary transformations could benefit from a deeper understanding of the city's continuous transformation in the past. We have tried to emphasize that not only has transformation always occurred, but that it has occurred in certain ways, with some of the city's elements withstanding changes longer than others due to their continued capacity to guide the more rapidly changing fabric around them. A better understanding of these elements is required in the present urban renewal projects of old districts.

ENDNOTES

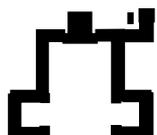
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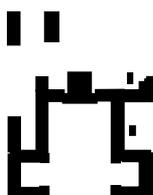
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1916



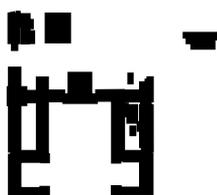
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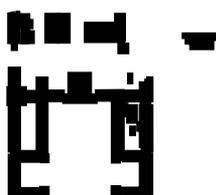
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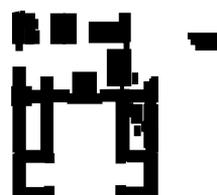
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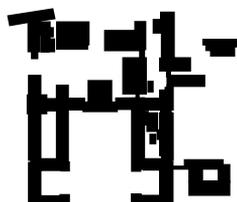
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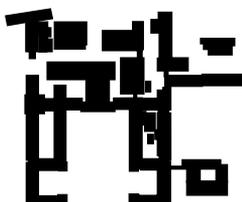
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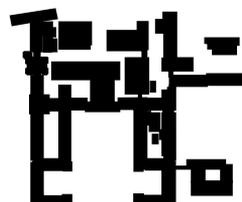
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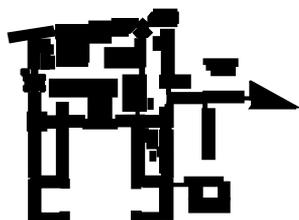
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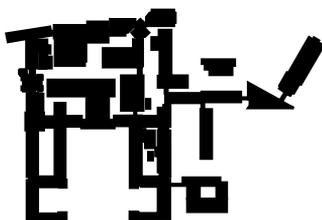
1967



1983



1990



1994

