MAKING THE CONNECTION

STUDY OF A JAPANESE SUPERBLOCK

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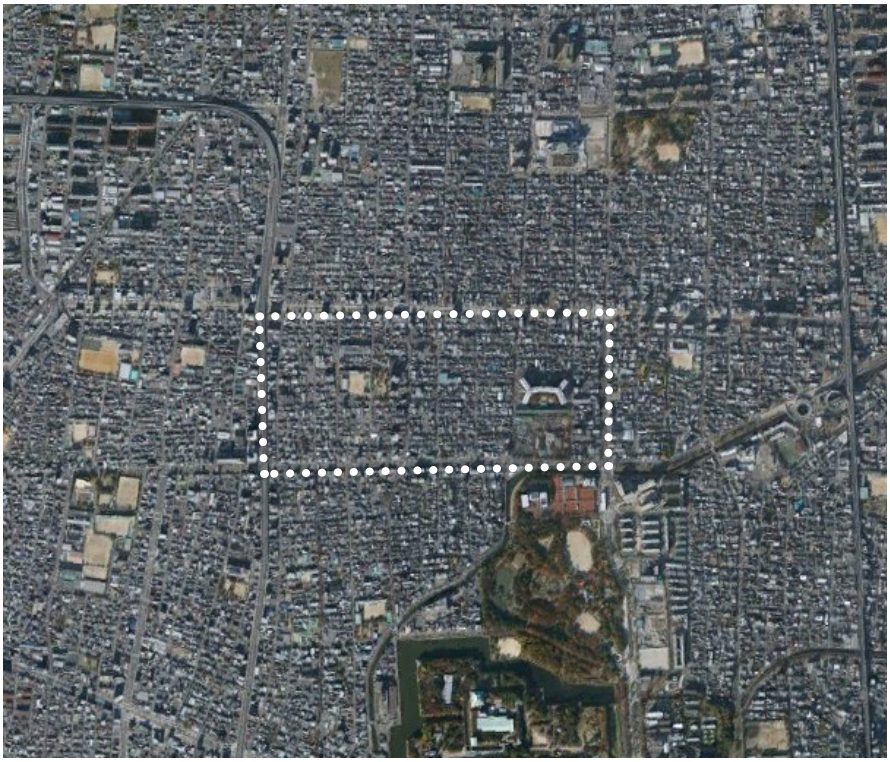
TYPICAL LOCAL STREET

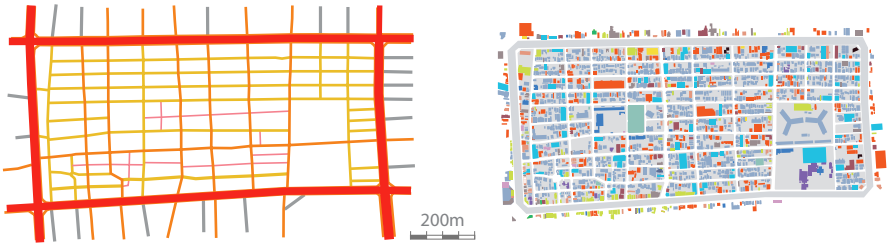
A superblock is a unit of the city. Arterial roads define it and its key qualities, and its design reflects how the city as a whole functions.
Study of Japanese cities is important as the 'Eastern' philosophy provides an alternative model of development that contrasts the Anglo-American approach and creates a connected, compact and convenient urban environment. Kaminagoya, a superblock in Nagoya, Japan has been chosen as the site of investigation for this study. Its regular structure and good connectivity reflect Japanese planning and urban values.

HISTORY

The examples of superblock models examined here are from Anglo-American culture, and until 1980s each displayed the characteristics of ever increasing disconnect between the interior and exterior of the superbock. In 1980, New Urbanism presented an alternative to the prevalent philosophy. However, the concept was still embedded within the typically radial western city structure. These precedents are presented in contrast to the Japanese superblock, exemplified by Kaminagoya.



KAMINAGOYA
AERIAL VIEW



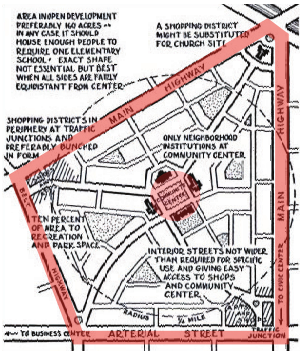
KAMINAGOYA
ROAD NETWORK
AND USE VISUALISATION

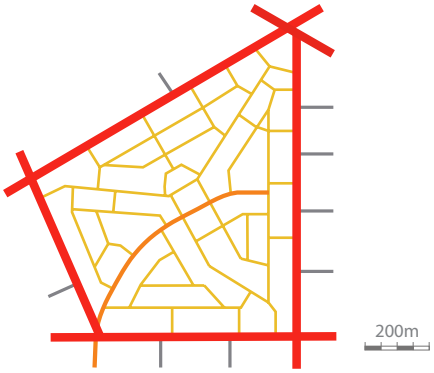
1929 - Perry's model

The concept of a neighbourhood unit as a distinct residential area was advocated by Clarence Perry in 1929. He designed the model for a 'family-life community' with a desire to create a wholesome society. The underlying principle of the design was that a neighbourhood would be a distinct entity, which would be connected to other neighbourhood units via an arterial road system. The size of the neighbourhood unit was based on a 400m walking radius and the density required was that which would support a centrally located elementary school. Through-traffic was discouraged, but a limited connection with external communities was created by positioning shopping districts on the periphery of the block.[1]

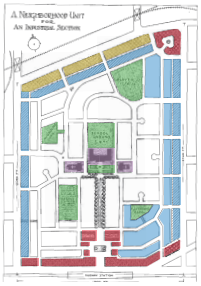
The key critique of the model is the lack of connections between interior and exterior of the superblock resulting in a series of isolated communities and a sprawling city.

PERRY'S MODEL AND DIAGRAMATIC ROAD NETWORK





PERRY'S URBAN MODEL - USE VISUALISATION



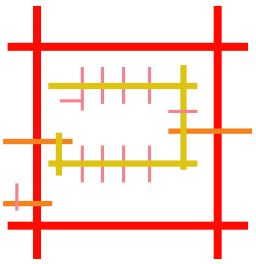
PROPOSED USES

- PARKS
- RESIBENTIAL
- WAREHOUSE AND LIGHT INDUSTRY
- BUSINESS
- CIVIC

1970 - Milton Keynes

Milton Keynes, a city in England, exemplifies the modernist city-planning principles. The town was provided with a dominant grid of principal roads for vehicular circulation, while the interior of each block was screened by surrounding trees. Within the superblock, designated pedestrian and cyclist paths further separated different modes of transport. Theorist Bill Hillier, described Milton Keynes as "more than anything … a town of parts, each spatially distinct … [an] embodiment of the belief that good local places can be designed free-standing then hierarchically combined to form an urban whole" [2]. This of course is not true.

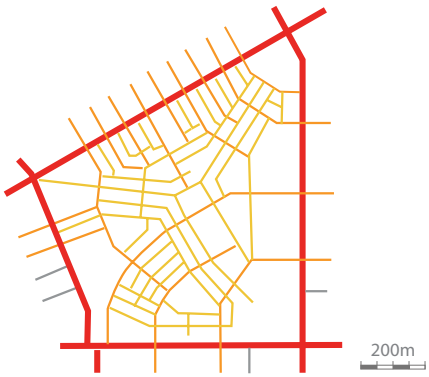
DIAGRAM OF ROAD NETWORK



1980 - New Urbanism

New Urbanism was a response to the problems such as isolation and sterility of suburban development[3] evident in places like Milton Keynes. It advocates for a return to smaller, connected blocks but, as a model, it still promotes suburban sprawl through low density development. Social idealism found in both New Urbanism principles and Clarence Perry's writing stems from the idea that 'if you build it, they will socialise'. This has long been discredited; [4] therefore, a new model of development is needed. I believe that the alternative can be found by studying Japanese urban structure.

NEW URBANIST DIAGRAMATIC ROAD NETWORK



SUPPORTING THEORY

Connection-theory advocated by a number of urbanists explains why urbanism in Japan provides a high degree of amenity in contrast to the aforementioned models. Jane Jacobs advocated for short street blocks with a mix of uses, varied urban fabric and buildings of different ages, as well as bottom-up planning – all found within Kaminagoya. Christopher Alexander criticised hierarchical, pyramidal relationships between parts of a city and instead proposed a more natural city with a flexible structure. Bill Hiller understood that natural movement in urban spaces was that determined by the city structure itself, rather than by specific attractions or generators. He importantly noted that most movement is not to-movement but through-movement and critiqued "ideologies of segregated urban communities and collective territorialism [that] create concepts of space which are local rather than global, static rather than dynamic and all too often visual rather than functional."[5]

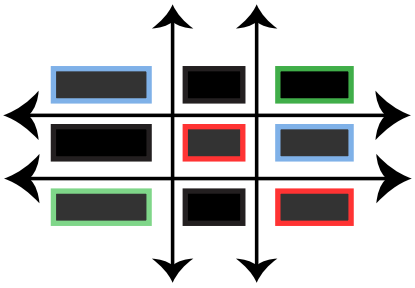


DIAGRAM OF A STRUCTURE WHICH SUPPORTS THROUGH-MOVEMENT

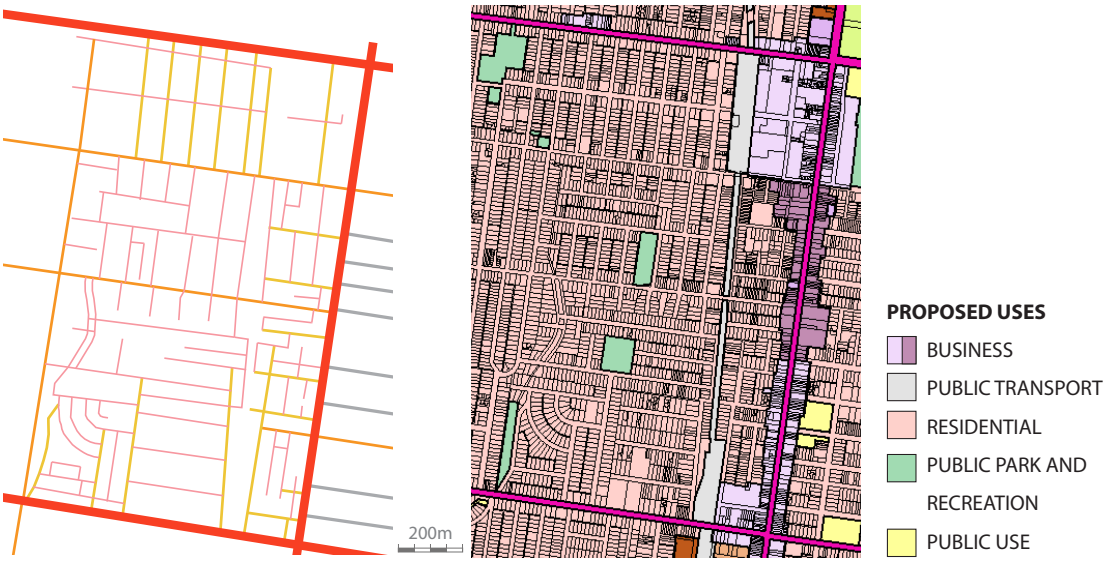
CURRENT STATE OF EVENTS

We need to change the structure of our cities.[6] Australian government expenditure on healthcare has grown by approximately 70% due to a rise of chronic diseases. The rise can be partially explained by Australia's aging population; however, car dependence, poor walkability, inadequate public transport options, limited recreational infrastructure and lack of access to affordable food exacerbate preventable health conditions. Many of these factors have been attributed to the prevalence of urban sprawl. Study of correlations between physical activity and the built environment have shown that land use mix, connectivity, population density, and overall neighbourhood design are important factors.[7] Exercise and mental and physical health are closely related. In compact environments, human beings move more often. Studies also suggest that higher density communities are more likely to experience better mental health outcomes due to "integrated, mixed and vibrant urban areas [that] provide plentiful opportunity for informal, interpersonal engagement in the public environment, which is vital for mental health, and combats social isolation".[8]

Furthermore, an adaptable city is able to evolve in response to the changing needs and preferences of its residents. Connectivity shapes the adaptability of an area in two ways. Firstly, being well connected to a broad range of opportunities enables people to adjust to change. Secondly, well connected residents and businesses are far more likely to want to remain in the same area.[9] A variety of housing options in one area provide for choice which supports regeneration and renewal as well as local business development. Therefore, we need to stop designing large, low-density only housing areas and instead should develop suburbs within which options for change are embedded.[10]

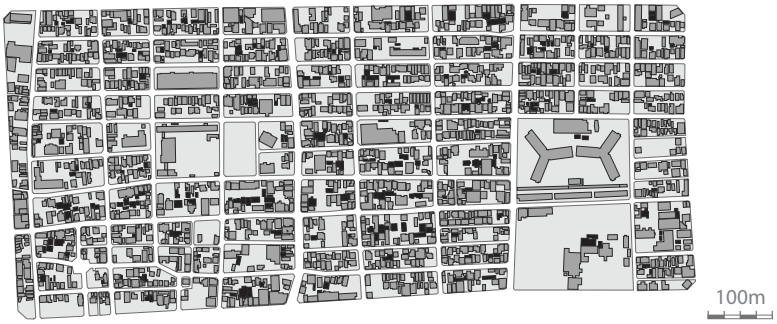
MELBOURNE / JAPAN COMPARISON

To illustrate the stark difference between Eastern and Western city design, a comparison is made between the Melbourne suburb of Coburg and Kaminagoya. Both are located a similar distance from the city centre, but their structure is significantly different. Coburg represents a typical suburban condition found in Australia, that of disconnect. Australian streets are further apart, less connected and do not accommodate through-movement. In Japan, a 'grid within a grid' network exists, within which mixed building fabric is found, therefore, a variety of uses can prosper. The varied but complimentary uses benefit from close proximity to one another and create an infinitely more interesting and vibrant place than Coburg where a monotonous, extensive, residential-only area is found.

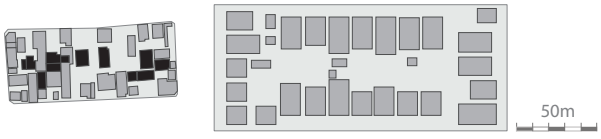


COBURG
ROAD NETWORK AND
USE VISUALISATION

Examination of how buildings are placed on a plot reveals varying approaches reflected in different values between East and West. In Japan, each building is placed on a plot without a set-back requirement or a need to respond to immediate context. Street frontage is not necessary and the size between buildings varies; consequently a dense, but low, area is created where most structures are between one to three stories in height.
By contrast, a block in Coburg presents much larger building footprints of similar scale, all aligned and set back from the street, except on the corner. All buildings face and actively address the street. To the rear of each property is a backyard, where at times an ancillary shed is accommodated.



KAMINAGOYA PLAN,
SHOWING DWELILNGS
WITHOUT STREET
FRONTAGE

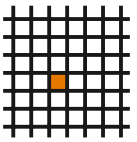


A BLOCK IN
KAMINAGOYA AND
A BLOCK IN COBURG

JAPANESE INVESTIGATION

The structure of each city can be understood by studying its major movement routes. Western cities have a radial structure that emerges from the city center. Instead, in Japan, a net of arterial roads was laid to form a grid and in time a series of linear centers have formed along these routes. The major arterial roads were imposed upon the city by the government through land acquisition and readjustments.

EASTERN vs WESTERN CITY STRUCTURE DIAGRAMS



GRID STRUCTURE

RADIAL STRUCTURE

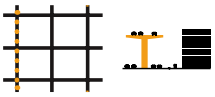
LINEAR CITY OF COMMERICAL CORRIDORS

CENTRALISED CITY

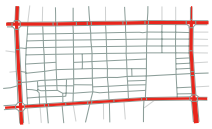
Kaminagoya, chosen as the site for detailed analysis, is located to the north-west of Nagoya Castle. It is a 55.8ha superblock with a remarkably regular grid and good connections, a density of 135 people per hectare and 67 dwellings per hectare.

Kaminagoya is defined by its surrounding global roads, which connect two or more superblocks and provide for large amounts of vehicular traffic to move across the city. An intercity expressway runs in the middle of the western global road and at times connects with the local system. The glocal street system connects two-or-more superblocks and includes sidewalk streets. Sidewalk streets are footpaths alongside global roads, which function as a street due to their width and the variety of activities that occur on them. Local streets provide for internal connection within the superblock and connect to the global network, but do not cross it. Internal streets are internal connections, which increase permeability and provide variety within the overall network.[11]

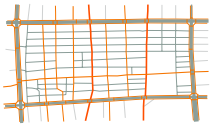
EXPRESSWAY DIAGRAM



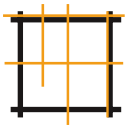
EXPRESSWAYS
INTERCITY CONNECTORS

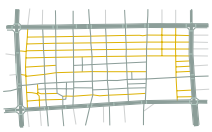


GLOBAL ROADS
CITY WIDE CONNECTORS



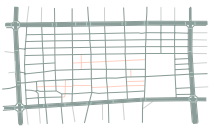
GLOCAL STREETS
CONNECT TWO OR MORE SUPERBLOCKS





LOCAL STREETS
PROVIDE A CONNECTION TO THE EDGE OF THE SUPERBLOCK

STREET NETWORK DEFINITION

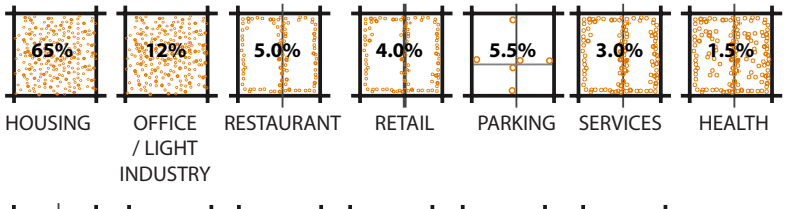


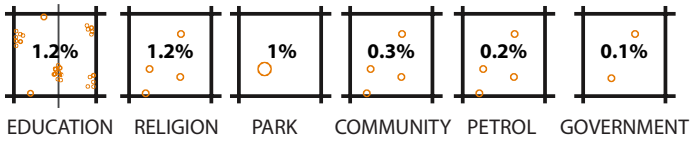
INTERNAL STREETS
INCREASE PERMEABILITY AND VARIETY OF EXPERIENCE WITHIN THE SUPERBLOCK

Analysis of land use on ground level reveals a significant mix of uses throughout the block. Residential use is most common, occupying approximately 65% of area, followed by office and light industrial uses occupying approximately 12% of the area . All uses are fairly evenly distributed throughout the block, except restaurants, retail and services which are found more frequently on global roads and glocal streets. Public parking is frequently found on corners and a significant amount is provided, approximately 5.5% of area. Shrines and temples are located inside the superblock, while a church and a Jehovah Witness Centre are on a global road. There is one public park, placed centrally within the superblock.

USE VISUALISATION

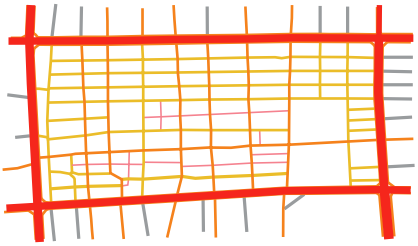
USE LOCATION AND PERCENTAGE



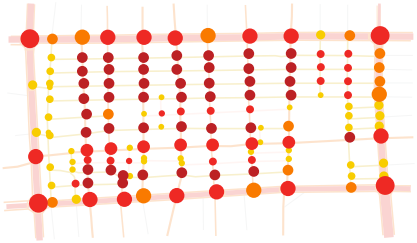


Rob Krier described the city block as “the original cell of every urban design structure” [12]. Its size limits or encourages permeability. Pedestrians quickly becomes familiar with block sizes and start to understand and measure the city by this unit. In Kaminagoya, there is a variety of block sizes and shapes; however, 50% are between 3,000 and 5,000 sqm and oblong. The smallest blocks are located in close proximity to temples, but unfortunately there are only a few, therefore, richness of experience is limited as the structure is too regular, likely due to the age when Kaminagoya was subdivided. Had there been an old village within this superblock many more smaller blocks would be evident. The largest two blocks in Kaminagoya are located on a significant glocal road and respond to the surrounding blocks’ permeability. Closer analysis reveals that most large blocks tend to only accommodate a few uses. This further limits vibrancy and complexity of the place. Connection analysis exposes very good connectivity in the north–south direction, but east-west connectivity needs to be encouraged. The figure ground reveals an incredibly fine grain, nearly non-existent in the West, with only a few large footprint buildings.

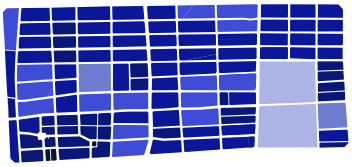
ROAD NETWORK



CONNECTIVTY DIAGRAM



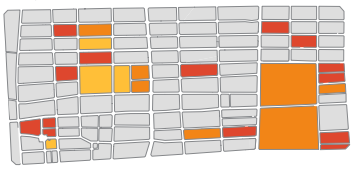
BLOCK SIZE DIAGRAM



BLOCK SIZE

- <1,000 sqm
- 1,000-3,000 sqm
- 3,000-5,000 sqm
- 5,000-7,500 sqm
- 7,500-10,000 sqm
- >10,000 sqm

USE VARIETY PER BLOCK DIAGRAM

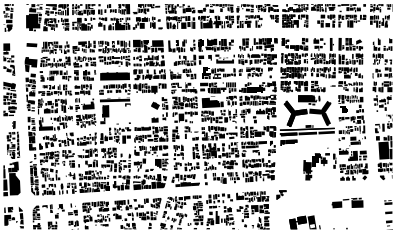


NUMBER OF USES

- 1 (4.7%)
- 2 (6.6%)
- 3 (13.2%)
- 4+ (75.5%)

USE VISUALISATION

FIGURE GROUND



TYPICAL
INTERNAL STREET

CONCLUSION

Kaminagoya's structure is highly connected and permeable. It is supported by a railway and a number of buses. This structure allows for the life within the superblock to flourish. Historic glocal streets remain and provide long, easily traversable, but smaller, spaces that connect the city alongside vehicle dominated global connectors. The interior of the superblock is considered shared communal space by the inhabitants, who manage it alongside city authorities; this includes residents cleaning the streets and sweeping the park on a regular basis. Fumihiko Maki described the interior of a superblock as "narrow lanes [which] separate house from house [and] though nothing of the dim interiors can be seen from the street, the faintest hint of movement within makes us aware of layers of space peculiar to Japan."[13] The morphology of the superblock is that of a mosaic. Its grain is small and varied, and the uses mixed. The wealthy and those with less disposable income live side by side. Internally low residential development is dominant and externally higher buildings abound. A few larger blocks exist within the interior of the superblock; notably these are occupied by a local school and a park, among other uses. Significant addition to street trees and the central park is provided by the residents through an incredible variety of pots that surround most properties and by private trees that overhang fences. Many streets are flat and footpaths are demarcated by a change in paving or a painted line. The flat streets not only ensure that all modes truly share the space between the buildings and cater to all ages, but they allow for such an understanding to form within the community.

Mentioned here are only a few qualities which manifest due to the magnificent Japanese urban structure I encourage all to study. A number of my colleagues and I, guided by Professor Barrie Shelton, looked at Kaminagoya as a part of a Urban Design Studio. I wish to thank all those who participated and Professor Shelton for showing us the magic within Japan.

TYPICAL LOCAL STREET

[1] Perry, C (1929) The Neighbourhood Unit Regional Plan of New York and Its Environst;
[2] Hillier, B (1992) Looking back to London A.J April ; Space Syntax Analysis: Hillier, B.
[3 4] Ford, L (1999) Lynch revisited - New urbanism and theories of good city form, Cities, Vol. 16, No. 4, pp. 247–257
[5] Hillier, B (1992) Looking back to London A.J April
[6, 9, 10] Kelly, F-J; Breadon, P (2012) Tomorrow's suburbs: Building flexible heighbourhoods, Grattan Institute Report
[7,8] Report (2012) Inquiry into Environmental Design and Public Health in Victoria
[11] Shelton, B (2012) Learning from the Japanese City: Looking east in Urban Design, Routledge
[12] Krier, R (2003) Town Spaces, Birkauser
[13] Maki, F (2008) Nurturing Dreams, MIT Press

Ogawa, A (2013) Ai contributed significantly to this research as we studied Kaminagoya together. She also produced the use visualisation diagram.

Google (2013) Image of Kaminagoya Aerial View