

Street, Not Highway, Design

Michael King shows that street design is re-emerging from a road-side ditch



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Streets have existed for millennia, and until the Industrial Revolution their design was largely a community affair. Cities, towns and neighbourhoods were laid out according to various principles based on: religion, health, economy, organisation, environment, and security. Streets were seen and designed as equal parts thoroughfare and location. They were meant to allow passage and be places of commerce, living and pausing. Some streets, such as alleys and cul-de-sacs, had no through function other than to provide local access.

BRIEF HISTORY

Chinese cities were organised according to *danwei*, such that there was little reason for people to travel beyond their own self-constrained work-unit world. Roman cities were largely organised along the dual *Cardo* (north-south) and *Decumanus* (east-west) axes. Anglo-Saxon cities typically consisted of a series of squares, while Latin cities preferred courtyards and walls. Islamic cities followed Shariah law which dictated a 'network of narrow winding streets consisting of public and private and semi-private streets and cul de sacs' (Saoud, 2001). 'One essential characteristic of the traditional street pattern is the ability for people, particularly men, to meet in a series of unstructured encounters. Open areas are effectively a series

of *majaalis* [meeting rooms] arranged in a hierarchical manner flowing from the privacy of the interior of the house to the larger public spaces' (Lockerbie).

Streets have been designed and used for a number of purposes. They were built for ceremonies and parades. Wide streets were introduced to allow light and air into cramped quarters. Calle Amsterdam in Mexico City was designed as a horse racing track; now the central strip is a walkway and the outside used by vehicles. Harlem River Drive in New York City was once a horse race track, complete with stadium seating; now it is a highway.

For the most part, streets were historically the province of those on foot. While goods were wheeled in carts and the wealthy had horses and chariots, most people walked. Charles Dickens' novels are filled with people perambulating – a ride in a horse-drawn cab was a rare treat. Streets were prime mercantile space as much business was done out of doors before the invention of electricity. 'Congestion in the streets of Rome...led Julius Caesar to ban carts and chariots from the city between sunrise and sunset. The Forum of Pompeii could only be used by pedestrians and the street leading to the Forum ended as cul-de-sac roads' (Hass-Klau, 1990). As late as 1911 wheeled traffic was forbidden between 11am

and 9pm in downtown Buenos Aires.

Streets were largely undemarcated, with few pavements. 'Pavements protected pedestrians from wheeled traffic and were used as long ago as Roman times, but had been forgotten until the late 17th century. After the Great Fire of London in 1666, pavements were provided in all the newly constructed streets. In France and Germany pavements were not known until the middle of the 18th century, and then only in the 'better' streets. Haussmann and Alphand included pavements in all streets in Paris' (Hass-Klau, 1990).

STANDARDISATION AND MOTORISATION

Streets began to change during the Industrial Revolution. Designs began to be standardised, and space was given over to mechanised transport: horse-drawn carts on rails, trolleys, bicycles, and cars. 'By the end of the 19th century, attempts at controlling traffic by way of developing a street hierarchy were developed in the most sophisticated way by German engineers and planners' (Hass-Klau, 1990). Reinhard Baumeister's 1876 book *Stadterweiterungen in Technischer, Baupolizeilicher und Wirtschaftlicher Beziehung* (Town Extensions in their Technical, Surveying and Economic Relationship) was perhaps the first effort to codify street

design principles. It called for street widths based on motor vehicle traffic volume, a street hierarchy, different lanes or carriage-ways for fast and slow traffic, a standard ratio between carriageway, landscaping, and pavements, and ring roads.

As streets filled with higher-speed mechanised vehicles, efforts were made to simultaneously clear space and protect others street users. It was fairly easy to manage rail-based transport as long as other travellers could be kept off the rails. Harder were vehicles that could be steered, such as bicycles, cars, and trucks. Lanes were created for slower, faster, larger and smaller vehicles. Pedestrians began to be confined to the pavements or 'sidewalks'.

In addition to street design, the street network was challenged. No longer was it sufficient to have a seemingly meandering network of lanes. 'The French architect H Descamps designed his *Cité moderne* (published 1927 and 1928) as a new town consisting of a network of 100m wide streets which were laid out in blocks of 500–1500m distance' (Hass-Klau, 1990). Le Corbusier's new town of Chandigarh was organised on a 800m x 1200m grid.

A system called *functional classification* was put in place in order to codify and streamline the building of roads (and ultimately streets). Roads were ordered hierarchically, dichotomously and mono-modally. They were viewed as vines, with cars as ants climbing up the arterial stalk onto a collector branch and ultimately a local leaf.

Policies on minimum standards were developed to guide road production. These were often based on tenuous grounds, even though they were listed as scientific. The classic example is the story of the dead dog. When attempting to determine how severe a vertical curve (aka: hill) could be, practitioners developed a standard called 'stopping sight distance'. The idea was that a driver should be able to see a dead dog in the road and stop in time. No matter that the history of crashes with dead dogs was practically non-existent or that a crash with a moose or cow would be much more damaging (Hauer, 1999). To build a safe highway is an admirable goal, and there is nothing to suggest that highways built in the 20th century were not as safe as they could be; nevertheless, issues arose when the standards were transferred to city streets.

RE-EMERGENCE OF STREET DESIGN

In the 1960s and 70s, communities and professionals began to question the way that streets were designed. A series of alternate approaches were developed, and the whole science of road building was questioned. The use of streets for people not driving emerged as a serious study. These approaches have continue to develop, and the following principles and practices could be called complete streets, context-sensitive solutions, traditional neighbourhood design, traffic calming, resilient streets, or sustainable design:

- 1. Clear policies and compliance.** There is so much decision-making in the design of a street, it is incumbent to have clear policies in the ultimate direction of the design. Compliance with those policies must be transparent.
- 2. Non-prescriptive street design guidance.** There are millions of variations in streets, from size to use, to length, to look. It is impossible to dictate all the various scenarios. The key is to provide guidance for deciding critical issues.
- 3. Three physical properties of safety: separation, protection, and reduction.**
 - If two objects are separated, either temporally or physically, there is little chance of conflict.
 - If two colliding objects are encased in padding (helmet, air bag), impact will be lessened.
 - If speed or weight is reduced, either absolutely or the differential thereof, the impact will be lessened.
- 4. Five measures of a street:** throughput, access, context, economy, and priorities. Streets serve many functions and all must be accommodated.
- 5. Street network and street design overlap.** Streets and their intersections can never be viewed in a vacuum. They are part of a web of interaction which must be respected.
- 6. Size does not equal traffic.** The size of a street is disassociated from the amount of traffic it can or should have. Narrow rights-of-way may process many vehicles, while wide boulevards may be prime locations for flowers and playgrounds. A wider right-of-way is never justification for more traffic.
- 7. Parking is a proxy for driving.** If one cannot park, one is less likely to drive. (TOD Standard, 2014)

- 1 Slow and fast lanes, Ahmedabad, India
- 2 A shared space, Abu Dhabi.
- 3 Repurposing an historic city gate for trucks, Aachen, Germany
- 4-5 Streets with a horse track in the median, Mexico City
- 6 A pedestrian street, St Louis, USA.
- 7 A monumental street for parades, Vientiane, Laos



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- 8. Embrace the politics.** In that a street is a public good, its design must occur in the public realm. As such, there is a political component to street design, for better or worse.

CONCLUSIONS

Designing streets is inherently not sexy. It involves drainage, traffic control, passive observation, and political chutzpah. There is little room for swooping illustrations and feats of technical brilliance. The public must be dealt with. There are typically no ribbons for politicians to cut. Starchitects need not apply. But, as we move away from the Fountainhead model, we find that a good street is a fundamental building block of a good city. It sets the stage for a higher quality of life, one which is safer, more productive, and longer lasting. ●

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