

EVOLVING PASSAGES: TECHNOLOGY AND URBAN STRUCTURE

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...space is black, teeming with possibilities, positions, intersections, passages, detours, U-turns, dead-ends, one-way streets...¹

An examination of the various meanings attached to the word **passage** found in the complete *Oxford English Dictionary* reveals a set of interrelated definitions that have direct relevance to an exploration of North American urban structure as determined by continuing technological evolution. According to the dictionary a passage is that “by which a person or thing passes or may pass; a way, road, path, route, channel; a mountain pass; an entrance or exit.”² This noun definition is admirably complemented by the verb form of the word which states that passage is the “action of passing; going or moving onward, across or past; movement from one place or point to another, or over or through a space or medium; transition, transit.”³ Therefore, the word passage unites both an action of movement with the constructed entity, the demarcated linear space through which people, goods and information may pass. Kevin Lynch has written that systems of urban movement and communication “perhaps constitute the most essential functions of a city...”⁴ In any city these definitions of passage most literally describe the functions of the street.

The street was the primary space for movement and communication in the traditional or premodern city, and as human technology has evolved so has the street and its uses. Joseph Rykwert has defined the street as “an essential carrier of communication” and “human movement institutionalised.”⁵ Prior to the Industrial Revolution, the passages or streets of a city, were constructed to accommodate pedestrians, animals and animal drawn vehicles. Marked out on the ground or defined by dense urban fabric, the premodern street was the principal means of moving goods and knowledge about, it was also the realm for encounter and dialogue as a system of public social spaces in the city. These qualities of the street, characteristic of most traditional urban cultures, emerged from vernacular craft practices where materiality and space were intertwined and scaled to the human figure; the fabric of the medieval European city with its “organic” structure fulfils this description. By the seventeenth century the great Baroque avenues emerged in part to accommodate the swift movement of horse drawn vehicles. Signalling an increased emphasis on the speed of movement, the straight, wide and perspectively ordered boulevard indicated that “the man on horseback had taken possession of the city.”⁶ The linear space of the street, within the overall urban structure, remained the principal space of communication until the Industrial Revolution.

In the Industrial era subsequent waves of mechanical technology transformed the nature and range of human move-

ment and urban form: the railway, the subway, the automobile and the aircraft have each shaped urban passage. The advent of the railway and mass transit in the early nineteenth century, in response to new modes of production, greatly enlarged the city and caused great upheaval in both urban and rural structure. The invention of the elevator by mid-century enabled the city to be extended vertically as well as horizontally. Each new mechanical technology opened up new passages in, over and under the city; parallel corridors of movement and communication that supplemented and transformed the traditional street, adding new layers of complexity to nineteenth and twentieth century cities.

The modern city emerged from cultures intent on invention, experimentation and discovery, cultures that produced both the Scientific and Industrial revolutions of the seventeenth and eighteenth centuries. Founded on a progressive drive towards a utopian condition, the primacy of mechanical technologies used to enlarge premodern cities ultimately led to many of the inhuman cities and urban models of the nineteenth and twentieth centuries. Lewis Mumford has suggested that the mechanization of the previously organic city, following the Industrial Revolution, was a form of “un-building” where “a more advanced form of life loses its complex character, bringing about an evolution downwards, toward simpler and less finely integrated organisms.”⁷

The automobile has probably done more to erode the traditional public role of the city street than any other technology. The automobile rendered the horse drawn vehicle obsolete, greatly expanded our movement (most notably into the countryside and the resulting suburbia) and enhanced our privacy.⁸ The overtly private nature of the car and the overblown scale of road and parking systems required to accommodate it severely altered the traditional street carefully scaled to the pedestrian and preindustrial forms of transportation. In Los Angeles, the glorification of the automobile has generated a wide open city whose most obvious form of passage is the freeway. The freeway transports goods, people and information, but is no longer a vital social institution as a place of unexpected encounters (shootings, traffic jams and accidents excluded). The social role provided by older forms of passage has since shifted to other urban locations, most notably the shopping mall.

Since the invention of the telegraph and the discovery of electricity in the nineteenth century information has been dematerialized, hence, its movement no longer relies on traditional spaces.⁹ We have witnessed, during the last few decades, transformations in both urban structure and spatial perception brought on by the rapid growth of “invisible” electronic technologies. The expansion of spatial perception brought on during the modern era has been replaced by an imploded condition, a

collapsing of the world reflected in Marshall McLuhan's use of the "village" as a metaphor.¹⁰ Through the use of new forms of communication, dialogue has been powerfully extended, complemented by world wide computer networks that create new communities, locally and globally, outside the traditional urban realm. A city, such as San José, California, the centre of the computer industry, is an unbounded low-density sprawl traversed by freeways, flight paths and communications networks connecting elsewhere in which the traditional street is virtually absent.

Thus, the electronic or postindustrial revolution, of the last few decades, has radically impacted on the nature of urban space and its use; McLuhan has suggested that electronic technology "bypasses" any previously understood idea of urban space.¹¹ This has escalated with each new generation of technology: the subsequent implementation of telegraph, radio, telephones, television and computers. In the postindustrial city, the passages are now the airwaves, cables and fibre optic systems that link together the inhabitants with each other and the world. The netscape, what M. Christine Boyer has described as a "free-floating membrane of connectivity and control,"¹² is an entity where most communication is not restricted to passages that are spatially defined or can be physically moved through; the basis for the virtual city or Cybercity. The information age generates what McLuhan describes as "a total field of inclusive awareness."¹³ Many have written about the chaotic and seemingly incoherent evolution of late twentieth century cities, the endless development and lack of order between structure, space and inhabitation. Premodern and modern perceptions of urban existence have been transformed by the postindustrial electronic revolution. Traditionally recognizable spaces, forms and elements have given way to a more complex and elusive interplay of structures and technologies. The animate organism of the premodern city was transformed into the mechanistic model of the modern city, only to be dramatically restructured into the electronic and informational form of the postindustrial city.

In the premodern city, formally and functionally, streets were distinct from the piazza or square, spaces intended for gathering and lingering. As the primary corridor of movement and communication, it was integral to the structure of the city. The intersection of the street was either with other streets, with defined public spaces such as the square, or as a threshold condition at the gate to the city or the doorway to a building. Despite the clarity of these junctions, the movement between these spatial systems did not require a dramatic technological transformation, it tended to be a phenomenological, symbolic or metaphorical transition.

The modern city, transformed by science and industry, saw the emergence of systems of movement that forged new territory both above and below the ground level movement typical of previous cities. Railway, subway and tramway systems carved their way into the fabric of the older city, dramatically increasing the speed and range of movement and communication in the city. Early "invisible" technologies, such as the telegraph and the telephone, added new layers of communication. In order to interconnect between these systems the station arose as a necessary urban institution: the railway station, the subway station and eventually the airport. As Deyan Sudjic has recently observed "it is these interchanges from one form of transport to another, and to buildings and public spaces, that are what really create the public life of a city."¹⁴ Kevin Lynch has

described these essential urban junctions as "nodes" in *The Image of the City*, one of a series of elements that make cities comprehensible. In the twentieth century the increased dependency on the airport, particularly in North America, has replaced both the railway station and the traditional gateway to the city and is now rapidly becoming a centre for shopping and entertainment, while continuing to assert its status as a station.¹⁵

McLuhan has called attention to the numerous technologies that shape the contemporary city noting that "where there are great discrepancies in speeds of movement, as between air and road travel or between telephone and typewriter, serious conflicts occur within organizations."¹⁶ The discrepancies between technologies that McLuhan warns of, can be the vital new order in the postindustrial city. Lynch has described the paths through the city as the most important and comprehensible urban system, however, in cities where there are complex layers of passages, it may be suggested that is the intersection points, stations, moments of encounter or interface, that are the new urban structure; they provide order in the matrix of systems that make up contemporary cities.

The mechanistic and linear structure of modern urban passages, has given way to a multi-directional network of linear systems that come together as a structure where the intersections are more vital than the passages. These fleeting moments of interface, transformation or translation between technologies are the postmodern equivalency of the railway or subway station.¹⁷ However, electric technology requires an instrument in order to render the invisible visible, the inaudible audible, the illegible legible. The electronic instrument or appliance, increasingly portable, is necessary to make the required interface or translation between technologies or media. The gateway and the station are being supplanted by the computer terminal, which allows its user to interface immediately with a world of possibilities, and instruments such as the cellular telephone that create moments of dialogue anywhere, anytime, anyplace. The points of interface are often material and spatial, however, they are also the intersections that enrich the narrative life of contemporary cities.

There are other related definitions of the word passage that begin to suggest strategies for practice in and inhabitation of the postmodern city. The first is a figural or metaphorical sense of the word that means the "transition from one state or condition to another (*spec.* from this life to the next, by death): the passing or lapse of time; the going on, course or progress of events, etc..."¹⁸ An archaic form of the word suggests that it may also mean something "that 'passes,' goes on, takes place, occurs, or is done; an occurrence, incident or event; an act transaction or proceeding."¹⁹ These meanings are related to "rites of passage" as moments of transition during a movement sequence, and also to narrative structures as suggested by reference to the "progress of events." These moments of transition, or events, extend the linear form of the passage into a comprehensive and multi-layered system which interconnects the systems that comprise any city.

The following quotation from Michel Butor suggests the complex nature of sites established in the framework of the city: "Space, as we experience it, is not at all the Euclidean space whose parts are mutually exclusive. Every site is the focal point of a horizon of other sites..."²⁰ Butor provides us with a description supporting the notion of the postindustrial city as a web, net, matrix or mosaic. Every site or potential site in a city arises

by virtue of its connection to a multiplicity of other sites; this narrative model holds for the postmodern condition. A location comes into being because it is the intersection of differing technologies, of humans and technology or solely between humans.

As artifacts of human production responding to cultural needs, cities have transformed from metaphorical representations of the entire human body (the organic city), through the machine city to a structure that is most akin to the nervous system, the informational city, where connectivity is the predominant order.²¹ “Whereas all previous technology (save speech, itself) had, in effect, extended some part of our bodies, electricity may be said to have outered the central nervous system, including the brain.”²² Marshall and Eric McLuhan suggest that the visual preoccupations of scientific and mechanical cultures has given way to a more tactile sense of structures. In the transfer from the modern to the postmodern the McLuhans argue that we have shifted from a visual definition of space to an acoustic one, from stability to discontinuity. They argue that the interface between all structures involves touch.

Touch, as the resonant interval or frontier of change and process, is indispensable in the study of structures. It involves also involves the idea of ‘play,’ as in the interval between wheel and axle, as the basis of human communication. Since electronic man lives in a world of simultaneous information, he finds himself increasingly excluded from his traditional (visual) world, in which space and reason seem to be uniform, connected and stable. Instead, Western (visual and left-hemisphere) man now finds himself habitually relating to information structures that are simultaneous, discontinuous, and dynamic.²³

If we reexamine the spaces of passage, we can observe that movement has become faster and more wide ranging, and it has taken on a multiplicity of forms that both complement and destroy traditional aspects of urban structure and existence. Fragmentation, decentralization and complexity have transformed older forms of order. However, technological evolution, while progressive, is not linear as we are constantly retrieving aspects of previously lost technologies. This provides for an accumulation of technologies superimposed one on top of another. Inevitably existing conditions are altered and new or parallel systems emerge. Despite the vestiges of the traditional street which still thrive in much of the world, its linearity and specificity are obsolete and its functions have been dispersed. What is of relevance to the urban designer are the points of intersection, the stations, nodes, intersections, events or moments of translation, between these various overlaid systems. The loss of urban space scaled to the human figure, means that specific locations in space play the vital role in providing the necessary structure (spatial and narrative) for our embodied inhabitation of contemporary cities.

A final relevant definition associated with the word passage refers to the “definite passing or travelling from one place to another, by sea, or formerly sometimes by land; a journey; a voyage across the sea from one port to another, a crossing.”²⁴ The reference to crossing suggests a motion with a defined origin and destination, the movements that every city comprises. The word “journey” extends the meaning of passage into the heuristic realm by giving this action an exploratory dimension. The craft and inventive productive paradigms of previous eras, have, in postmodern culture, given way to the figure of the *bricoleur*, “someone who plays around with fragments of meaning which

he himself has not created.”²⁵ Adrift in a fragmented world, the postmodern figure “wanders about in a labyrinth of commodified light and noise, endeavouring to piece together bits of dispersed narrative.”²⁶ The interpretative nature of postmodern existence is challenged by the fragmentary nature of many contemporary urban spaces. The stations and events that mark the intersections between technologies, both craft-based and “hi-tech,” are encountered as part of the daily journeying through the city. Butor has described these journeys as “trajectories,” and the city as “a sum of trajectories.”²⁷

The transformation of urban passage that began with industrial technology has been accelerated by postindustrial technologies. Contemporary cities are complex superimpositions of technologies. Once the street accommodated all movement and exchange in the city as information was material and had to be moved physically. The street was scaled to suit the walking or slow moving individual, who could socially exchange in the same space. Now, many overlaid mechanical and electronic systems perform the same functions with greater speed and complexity. There has been a zoning into parallel systems—subways, railways, freeways, airways, networks, etc.—which have tended to exclude the simple urban activities of the pedestrian. The intersections or moments of translation between this multiplicity of passages provides a structuring order. Cities can no longer be taken for granted, but must continually be challenged as part of an ongoing heuristic process.

NOTES

1. S. Sontag, *Under the Sign of Saturn* (New York: Farrar, Straus & Giroux, 1980), p. 117
2. “Passage.” *The Oxford English Dictionary, Volume XI* (Oxford: Clarendon Press, 1989), p. 301
3. *Ibid.*, p. 300
4. K. Lynch, “The Pattern of the Metropolis,” in L. Rodwin, ed., *The Future Metropolis* (New York: George Braziller, 1961), p. 104.
5. J. Rykwert, “Learning from the Street,” in *The Necessity of Artifice* (New York: Rizzoli, 1982), p. 105
6. L. Mumford, *The City in History* (New York: Harcourt, Brace & World, 1961), p. 371
7. *Ibid.*, p. 451
8. See M. McLuhan, *Understanding Media* (New York: McGraw-Hill, 1964), pp. 217-2
9. *Ibid.*, p. 89
10. *Ibid.*, p. 255
11. *Ibid.*, pp. 104-05
12. M. Christine Boyer, “The Imaginary Real World of Cybercities,” *Assemblage* 18 (1992), p. 117
13. McLuhan, *Understanding Media*, p. 104
14. See D. Sudjic, *The 100 Mile City* (London: Flamingo, 1992), p. 285
15. See P. Virilio, “The Overexposed City,” in P. Virilio, *The Lost Dimension* (New York: Semiotext(e), 1991)
16. McLuhan, *Understanding Media*, p. 91
17. Sudjic, *The 100 Mile City*, p. 285
18. “Passage,” *The Oxford English Dictionary, Volume XI*, p. 300
19. *Ibid.*, p. 301
20. M. Butor, “The Space of the Novel,” in R. Howard, ed., *Inventory: Essays by Michel Butor* (New York: Simon and Schuster, 1968), p. 37
21. See Boyer, “The Imaginary Real World of Cybercities.”
22. McLuhan, *Understanding Media*, p. 247
23. M. and E. McLuhan, *Laus of Media: The New Science* (Toronto: University of Toronto Press, 1988), p. 102
24. “Passage,” *The Oxford English Dictionary, Volume XI*, p. 301
25. R. Kearney, *The Wake of Imagination* (Minneapolis: U. of Minnesota Press, 1988), p. 13
26. *Ibid.*, p. 13
27. M. Butor, “The Space of the Novel,” p. 36