

## Space, property and the first urbanism

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### Abstract

The first urbanism in the Fertile Crescent 5000 years ago was based on a fundamental invention that assured the potential of urban places. The splitting of communal property into private and collective property not only clarified agency over public and private space, it also unconsciously reproduced the same structural properties called prospect and refuge, arranged typically in orthogonal relationships to each other. These simple structural properties occur today in almost all urban places. They were also recognized in the thinking of classically educated founding fathers as being essential to the economic life of the new republic. Because urban public spaces offer unimpeded opportunities to see what is there and who is coming and going, they function as information channels and collectively as communication networks, not languages. Considering urban space in terms of communication and property enlarges our understanding of how spatial patterns impact social and economic transaction costs.

### 1. Introduction: property and space: public and private

Except for habitat theory, little about how humans developed a specific kind of spatial behavior has gone into the thought of how we use and make space. In the continuum of human prehistory, the ability to use space, not in its mathematical form as it appears in geometry but the relative, existential, subjective space of everyday life, emerged as a context of our behavior long before urban places or even language.

Behavioral economics research has shown the contexts of our choices, rather than our rational objectives, often affect what we actually choose. The study of errors in human judgment has received considerable attention in the ‘heuristics and biases’ literature, a domain directly related to behavioral economics. Behavior in this context considers cognition, culture, emotion, ethics and morality and others (Altman 2005). Research in this domain recently manifest in Kahneman and Tversky’s (1979) prospect theory, has led to reassessing the assumption long dominant in economic thought that humans are consistently, fully and effectively rational. Rationality assumptions affect how we think about space and property.

Almost all the built environment produced by design professionals is an element of real property but acknowledging this is not common. In his foreword to Krier’s *Urban Space*, Rowe (1979, p11), says “...Krier (like Le Corbusier and many others) largely fails to understand the *res privata*...”

In contemporary industrial societies, we often contrast private property with what we call public property as though these were the same as private space and public space. But there are fundamental differences. Private space is typically materially circumscribed or enclosed and allows privacy. Thus, in everyday usage, spaces that have restricted access are conventionally considered private, even if they are public property. Spaces where access is not restricted are considered public, even if they are private property.

The area immediately surrounding the home, known as the curtilage, is protected under the Fourth Amendment from unreasonable government intrusions. If, however, there is an area within the curtilage that is implicitly open to the public, such as a walkway to the front door,

then it would not be considered a search if the police exercised the same freedom to walk on the curtilage as is implicitly granted to the public (Hendrie, 1998).

Curtilage illustrates a fundamental factual condition about the relationship between property and space: they do not map perfectly onto each other and they can overlap. Figure 1 illustrates this. This four cell box indicates not only that public and private property each can be distinct from both public and private space but also that the relationships or interfaces between what is public and what is private are not simply binary. For example, a public space that is public property (cell 4) can share the following potential interfaces: 1) with a private space that is public property (cell 3); 2) with a public space that is private property (cell 2); 3) with a private space that is private property (cell 1). For example, cell 2 would be a house's accessible curtilage; cell 1, the interior.

		SPACE	
		Private	Public
PROPERTY	Private	1	2
	Public	3	4

**Figure 1. Space and property: public and private**

These four cells are not static. Shifting real boundaries and barriers as well as shifting property rights induce extensions and changes. For example, club space (Webster 2007) would be a subset of cell 3. Shopping malls are usually privately owned but the common public area in an enclosed shopping mall is considered, and is called, the public area. Most privately owned parking lots are easily accessed public spaces. Similarly, a number of small parks and plazas open to the public in Manhattan are privately owned (Kayden 2000). At the same time, space in public property, such as a park, can be privatized, extra-legally, through the social actions of a group (Lofland 1973). In addition, in the context of First Amendment public forum law, there are legal distinctions indicating which of those spaces that are government or privately owned property may be considered public or private space.

## 2. Space before history

Prospect theory is believed to have foundations in evolutionary thought (McDermott, Fowler & Smirnov 2008). Many researchers studying reasoning, fallacies and biases now accept a dual systems account of thinking, called system 1 and system 2 (Carruthers 2008) and fast and slow (Kahnemann 2011). Most judgment errors are seen by many to be instances of fallacies from using what is called system 1, a collection of multiple fast and unconscious systems operating in parallel according to principles that are universal to the human species. These principles are not easily altered and are mostly heuristic. System 2, the more rational, is, in contrast, slow, serial, and conscious. It operates more according to principles that vary (within a culture and between individuals), and can involve the application of valid norms of reasoning. System 2 principles are malleable, influenced by verbal instruction, and often involve normative beliefs (about how one *should* reason). System 1 developed through the same evolutionary processes that affect our spatial choices.

Prospect-refuge theory (Appleton 1975) involves system 1. An instance of what came to be known as biologically or genetically prepared learning, the prospect-refuge hypothesis proposes the human visual system evolved to yield information about the utility of their spatial-material surroundings partly with respect to fight or flight conditions. The theory says this information specifically allowed early humans

to perceive and recognize friends, foes and potential mates in addition to significant landscape features that could be hazards or places of safety.

...at both human and sub-human level[s] the ability to see and the ability to hide are both important in calculating a creature's survival prospects. ...Where he has an unimpeded opportunity to see we can call it a prospect. Where he has an opportunity to hide, a refuge. ...To this ...aesthetic hypothesis we can apply the name prospect-refuge theory (Appleton 1975, p. 73).

It is important to realize, however, that the appearance of prospect or refuge in the landscape of early man did not necessarily guarantee it. Judgment errors were possible.

...aesthetic satisfaction ... stems from the spontaneous perception of landscape features which, in their shapes, colours, spatial arrangements and other visible attributes, act as sign-stimuli indicative of environmental conditions favourable to survival, whether they really are favourable or not (Appleton 1975, p. 69).

Recognition of and response to prospect and refuge conditions are more a matter of intuitive and immediate response rather than rational choice. Prospect-refuge theory says humans and many terrestrial animals have mental models enabling them to negotiate and test spatial/visual environments and that these models developed long before our language-conferred abilities. Certain animals became binocular for predation and jumping and our own visual acuity developed in jungle treetops where primate ancestors jumped from limb to limb. We have a visual field of about 90 to 180 degrees but within this, only a tiny fraction from a few inches just in front of us to several hundred feet away can actually ever be in focus at one instant and experimental work on visual habits shows that the eye, in a random examination of surroundings, tends to follow flat lines and vertical lines (Shepard 1967, pp. 5-7).

Pinker (1997) says we are adapted to two habitats. The African savanna, our first choice, is where most of our evolution occurred. The rest of the world has been our second choice. Considerable research indicates we find savannas innately beautiful. Hildebrand (1998) used prospect and refuge and related concepts in a qualitative analysis to show what makes Frank Lloyd Wright's architecture so attractive. We also like a landscape that is easy to explore and remember and that we have lived in long enough to know its ins and outs.

Prospect and refuge rely on frames of reference: landmarks, long paths or boundaries (trees, rocks, ponds, rivers and mountain ranges for example). Pinker says a vista lacking frames of reference, like a desert or tundra, is unsettling. Deserts and tundra lack the vertical barriers and boundaries that channel our vision and movement and thus induce uncertainty. Pinker also talks about what Kaplan and Kaplan (19xx) call mystery: paths bending around hills, gaps in foliage, undulating land, and partly blocked views grab our interest. Paths employ frames of reference and function as channels providing information about the things situated in, moving through and located along the edges of these channels. Prospect enables while refuge denies the visual acquisition of information. For humans, linked spatial channels would constitute the first information network.

The difference between humans and other animals is that we can reproduce what we experienced in the savanna as built spatial-material realities. Shepard and colleagues argue natural selection has shaped inference processes guiding perception and the ways our imagery system, our "mind's eye," imagines the world so they reflect properties of the physical world (Shepard 2001). Tversky (2005) says their work demonstrates there are second-order isomorphisms, similarity spaces for perceived and for imagined stimuli having the same structure.

### **3. Sedentary space**

Several millennia before the emergence of the authentically urban settlements in the Fertile Crescent, a transitional form appeared in Anatolia and the Levant. Archeologists date Haçilar and Çatal Huyuk to 7500 to 5700 BCE. They were sustained by obsidian trading and with a mix of agriculture, possibly alluvial, herding, hunting and gathering. With the possession of space as a by-product of sedentism, it would be possible to accumulate and store tools and other goods for later use or trading (Bogucki 1999, p. 154). But as figure 2 shows, Çatal Huyuk, though comparatively very dense with a population of 5,000 to 10,000 at that time, is not urban like Mohenjo-Daro and Ur 3000 years later. There were no public spaces as we understand them today. See figure 3. Nor do public buildings seem to be present. The mud brick dwellings were arranged into a closely packed clump of cells and accessed by holes in the ceiling, the roof reached by interior and exterior ladders and stairs. Streets, along the ground, even short narrow ones, are missing. Rooftops were shared, discontinuous paths of access to refuge, were probably communal property but were not streets.



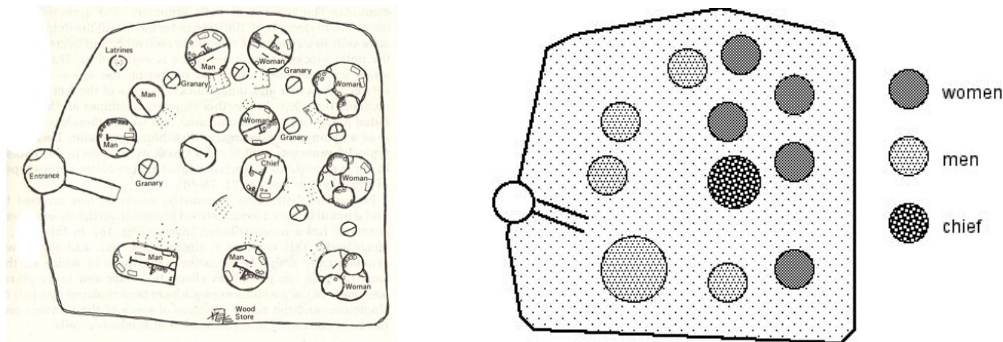
**Figure 2. Çatal Huyuk**



**Figure 3. left: model of reconstructed Mohenjo-daro; right: a street in excavated Ur.**

Authentically urban settlement patterns have not replaced all settlements of pre-historic and current pre-urban societies; these continued to be built. It is notable that the built structures of the majority of pre-historic and current non-urban societies typically have round shapes built of non-rectangular materials

and are less fixed to a place while arranged in loose clusters or compounds that rarely allow defined linear spaces of any length within them. Refuge is clustered and communal; within the commune, prospect is restricted and channels non-existent. Figure 4 right shows social/spatial organization with the larger huts, occupied by women, more distant from the gate. The absence of channels of prospect within pre-urban and nomadic settlements is likely due to a predominance of blood relationships in these societies.



**Figure 4. left: Moundang compound in West Africa; right social/spatial organization.**

#### 4. Channeling space

In the characteristically urban settlements that developed from the third millennium BCE, the edges of spatial channels are embellished so that the means of refuge, walls and similar barriers, not only conceal, they also display. For millennia before civilization, walls were the canvasses and pages recording what was considered important. Built walls also conceal the inside from those outside. Concealment and display are essential in human societies occupying permanent settlements (Wilson 1988). Through size, shape, sign and symbol, walls provide the means for attracting, distracting, diverting and variously modulating attention by displaying what is felt to be public as well as concealing what is private. Walls can enhance social differences and exercise forms of social control neither possible nor needed in nomadic and non-urban societies. Wilson says this is a way we domesticate ourselves.

The rising dominance of agriculture and the transactions it generated transformed property. Mann (1986) says alluvial agriculture resulting from irrigation that fixed property rights and that families and clans, not necessarily individuals, possessed these rights. As other forms of property would have originated through possession, private real property would have originated as a by-product of the possession of space. These places of refuge, walled spaces syncretically bound up with generations of occupants, would inevitably become private property. With the emergence of permanent human settlements, “for the first time the stranger was the rule, not the exception (Lofland 1973, p. 9).” Settlements like Ur would be filled with persons from different families and clans, in effect strangers, requiring social controls beyond what is possible through communal spaces on roofs and blood ties. It would be necessary to acquire information about these people visually in spaces of prospect before making an initial contact.

Particularly salient is a characteristic consistent from the earliest times of authentically urban settlements: one so obvious it seems never recognized. In small hamlets and in large cities since the beginnings of civilization 5000 years ago, the everyday space of settlements has been arranged into two primordial elements, open linear channels (prospect) and materially bounded cells (refuge), what we would now call public and private space. From the urban settlements that emerged in Mesopotamia and the Indus valley to now, we see mostly rectangular dwellings and other buildings placed adjacent and perpendicular to rectilinear and bent linear spaces we call streets.

Hildebrand (1999, p. 22) says prospect and refuge must occur contiguously for spatial pattern to function properly. In addition to their immediate proximity, spaces of refuge or enclosure are typically roughly orthogonal with the spaces of prospect or extension. Why rectangularity? One reason is that rectangles enable close packing of rooms and of buildings (Steadman 2006, p. 129). This is clearly the case with early settlements such as Çatal Huyuk and with Ur. Another is that a human is like a rectangle, a domino, standing on end. *Spatial framework theory* posits our mental spatial framework is an extension of the body's three axes – head/feet, front/back, and left/right.

During a time of fundamental change from medieval to renaissance ways of thinking, Alberti understood the importance of contiguity of built cells and spatial-visual channels. Borsi (1977, p. 3) quotes him:

Walking down them, one should gradually discover some new architectural feature with every step one takes. Equally important is the fact that the entrance and facade of each building should look directly onto the street ...

Hausmann addressed a similar problem at a larger scale. The medieval Paris street system consisted of “mazes of twisting, tiny streets, impasses, and courts: squares were small, and there were few broad vistas or buildings set back from the street; traffic was always clogged” (Aries 1993, p. 439).

### **5. Spatial morphology without property: a wrong turn**

Spatial morphology can be considered a subset of urban morphology. Moudon (1997, p. 11) provides a broadly accepted delineation of the objects of study in urban morphology. 1) Three fundamental physical elements define urban morphology: a) buildings and their related open spaces; b) plots or lots; c) streets. 2) Urban morphology has different levels of resolution and four are currently recognized: a) the building/lot; b) the street/block; c) the city; d) the region. 3) Urban morphology undergoes continuous transformation which means it must be understood historically. How the shape of and links between these various objects, are established and altered is one of the sources of morphogenesis. Ownership of real property constitutes the agency than can engage in transformations.

Recent influential critiques and theories of urban spatial form are fatally flawed because of their preoccupation with space and their avoidance of the pervasive role of property. Of medieval Paris, Sennett (1994, p. 193) says. “The space of the Parisian medieval street was no more and no less than the space which remained after buildings had been constructed.” Hillier and Hanson (1984) say the same about hamlets in the Vaucluse of southern France, today places for second homes and tourists but like so many rural settlements were earlier the domicile for farm service workers and farmers who worked the nearby land. Their theory that built space is syntactic is based on these settlements.

Their text says dwellings situated in clusters in what appears to be no particular order and swaths of open space wrapping around the clusters. The illustrations of layouts in *The Social Logic of Space* are taken from French cadastral maps. They claim these hamlets have spatial properties that include:

1. a major ring and several minor rings of space with clumps of buildings on the edge of these rings constituting an open space structure they call a beady ring;
2. mutual accessibility of buildings through the open space structure;
3. individual buildings fronting directly onto the open space structure without intervening boundaries.

They then say the beady ring structure is a genotype applying to all similar settlements and ask, “What restrictions on a random process of assigning objects to a surface would give rise to this observable pattern (pp. 57-8)? Their answer, elaborated in several following pages, is that spaces and buildings can be treated as discrete cells and when these cells are positioned together in a computer-generated combination that is random except for one adjacency requirement, the computer-generated pattern

matches the beady ring pattern. This is said to be evidence of an ideographic language, a language consisting of combinations of discrete spatial morphemes.

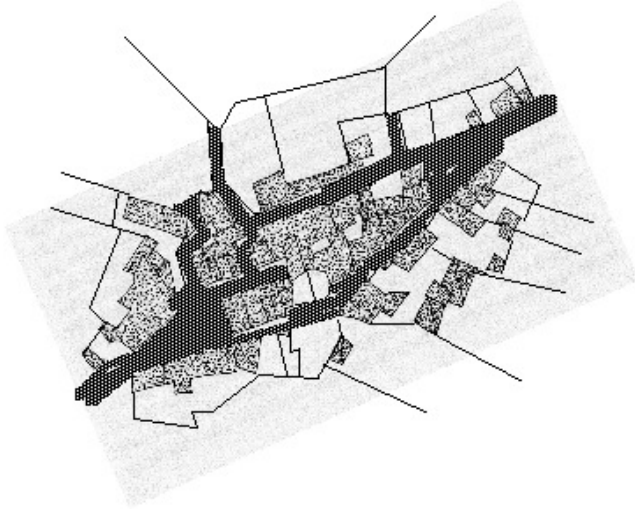
This idea and rationale of a spatial language has been embraced by groups of architectural and urban design researchers. But the language proposition and the evidence used to support space syntax are irreversibly flawed. . The human ability to use space is not only shared with many animals but developed millennia before human language capability. In addition to the error of assuming blended spatial patterns are discrete combinatorial phenomena like language, two errors involve real property. One involves an elementary concept of factuality. Following Searle (2006), it is clear the space syntax theory fails to distinguish brute facts from institutional facts. Institutional facts of spatial patterns formed through real property are assumed to be brute facts of a natural kind subject to the same natural laws that enable language. The space of a street is a brute fact but that it is known and functions as a street is an institutional fact. Dogs, squirrels and sometimes children, for example, recognize a street's space as a brute fact but a street can be dangerous for dogs, squirrels and children because they do not recognize a street as an institutional fact.

The other involves a misrepresentation of a key fact. An examination of French cadastral maps shows the layout of the hamlets in *The Social Logic of Space* taken from French cadastral maps have all property lines removed.. Figure 5 left is a plan the hamlet of Le Petits Clements in the early 19<sup>th</sup> century as it appears on page xx of *The Social Logic of Space*. Figure 5 right shows the same hamlet as it appears on a recent French cadastral map with the hamlet's political boundaries and property lines defining the boundaries of private property and streets (public property). Figure 5 right shows most of what Hillier and Hanson say is accessible space is actually private property, an institutional fact.



**Figure 5. left: Le Petits Clements as shown in *The Social Logic of Space*; right showing buildings, spaces and property lines from recent French cadastral records**

Figure 6 shows the hamlet using the Social Logic drawing but with streets (i.e., public or government property) darkened. Aside from these streets, there is no public property functioning as streets and as a result, with fences and walls built along property perimeters by new owners, many minor rings of space are gone.



**Figure 6. Le Petits Clements showing streets darkened**

The spatial properties claimed to exist are fictions.

1. There are no beady rings because the spaces with clumps of buildings are privately owned curtilage and both can be and have been enclosed.
2. The only mutual accessibility is through streets, not through the open space structure.
3. There are many intervening boundaries: property lines are boundaries.

What there is: a clear pattern of long and short streets (channels) of collective or public property abutted by parcels of private property (cells) with an orthogonal interface between cells and channels. This pattern enabled the occupants of the dwellings and others to have access through spatial channels of public, i.e., collective, property to components of private property containing productive resources such as farmlands, materials, supplies and equipment. Similar patterns appear in Les Redons and Perrotet, which, like many other hamlets described in *The Social Logic of Space*, are claimed to have beady ring structures. Beyond an overused and trite metaphor, there is authentic no language of space and space does not have syntax. The pattern of Le Petits Clements is a miniature and slightly deformed version of a pattern that has continued to appear in urban settlements for several thousand years.

Giddens (1984), one of the few major social thinkers to address everyday urban space, proposes two kinds of resources are used in the structuring of society: allocative and authoritative. Allocative resources are:

1. Material features of the environment (raw material, material power resources);
2. Means of material production/reproduction (instruments of production, technology);
3. Produced goods (artifacts created by the interaction of 1 and 2).

Authoritative resources include:

1. Organization of social time-space (temporal-spatial constitution of paths and regions);
2. Production/reproduction of the body (organization and relation of human beings in mutual association);
3. Organization of life chances (constitution of chances of self-development and self-expression).

The farmlands, materials, supplies and equipment on private property in the Vaucluse hamlets are allocative resources and the streets and paths and them connecting are authoritative resources.

## **6. The moral design of authoritative resources**

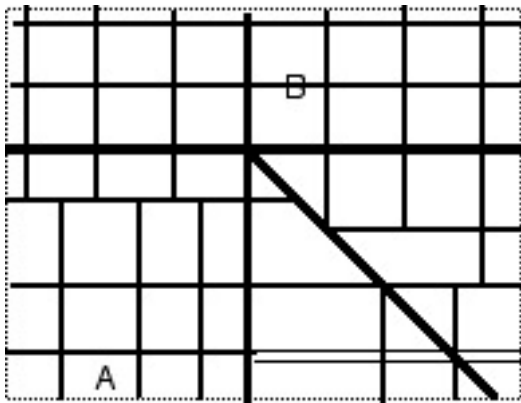
Present American urban street configurations can be seen as the result of several phases of moral design thought about how American society should be physically organized with each one developed as a



reaction to the one two generations earlier: the classic grid which is associated with Enlightenment philosophy and Greek Revival house forms; the curvilinear gridform which is associated with the romantic movement and Gothic Revival and Victorian house forms; the curvilinear dendriform (the anti-grid of suburban streets) associated with functional modernism and ranch houses.

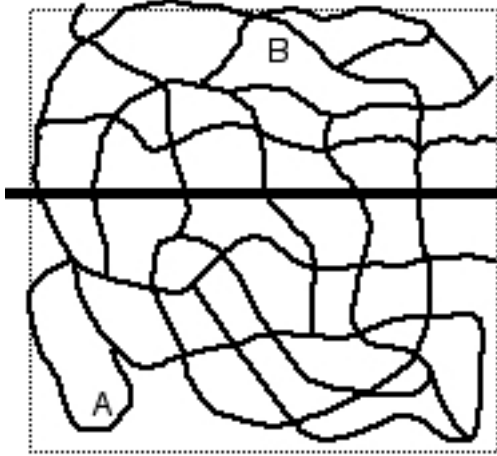
Figures 7, 8 and 9 are illustrations of each of these patterns: 1) the traditional grid pattern; 2) the curvilinear gridform pattern; 3) the curvilinear dendriform pattern. They are all taken from the street layouts of actual plans that are typical of hundreds of similar developments nationwide. Figure 7 is a composite of several midwestern towns. Figure 8 is Riverside, Illinois, a design by Olmstead. Figure 9 is from southeast Denver. The letters A and B indicate locations at identical coordinates in each of the plans and the relationship of these locations to each other will be discussed later.

Upton (2008) shows the grid was felt to be the best regulator of social behavior in the chaotically growing cities of the early 19<sup>th</sup> century. But the grid of American settlements in the early 19<sup>th</sup> century was as much a reaction to the meandering road patterns that accompanied English colonial settlement patterns that could not regulate social behavior, as it was a reflection of classically inspired Enlightenment sensibilities. Americans adopted the grid as quickly as they took to the detached, single-family house, another form without significant European precedent (Rybcinski 1995).



**Figure 7. 18th to Early 20th Century: Traditional Grid Pattern.**

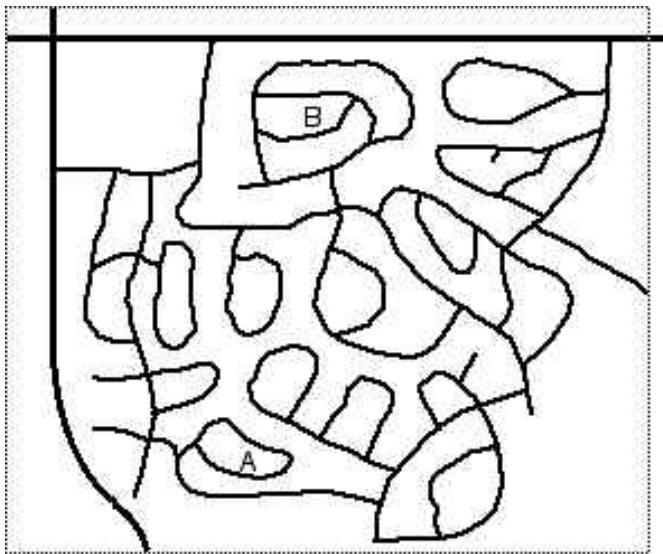
The American embrace of Enlightenment rationality weakened in the 19th century as American settlement expanded westward and confronted a nature more vast than its colonial beginnings had indicated was possible. In the years preceding the Civil War, Andrew Jackson Downing's writing questioned the validity of the neoclassical style. It was felt to be too formal and aristocratic: suitable for banks but not for a house for a normal family. Downing's proposals became popular and house design turned toward the romantic and focused on medieval and early renaissance models (Brown 2002). The Gothic revival began in the 1840s and resulted in what we now call Victorian.



**Figure 8. Late 19<sup>th</sup> to mid 20th Century: Curvilinear-gridform Pattern**

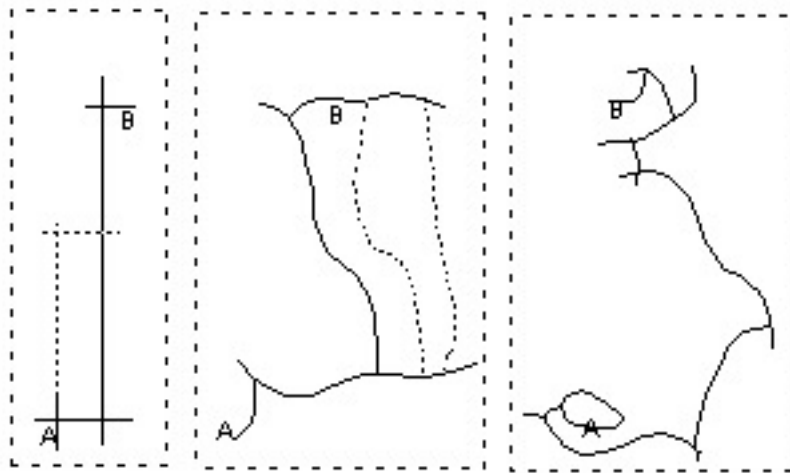
After the slowdown in building during the Depression and World War II, functionalist ideas revived in the late 40s and the 50s in connection with European modern design theories. As a result, the post World War II reconfiguration of American urban settlements was different from the earlier visions carried in Wright's Broadacre City and the writings and regional plan proposals of urban reformers like Lewis Mumford.

Into the 1950s, new housing was built on streets laid out in traditional and long curvilinear or 'natural' grids. House design got simpler as ranches and Cape Cods were built by the thousands after World War II. But into the 1960s, Suburban growth meant more houses and bigger houses. For over four decades from the 1960s, the average new house size in suburban areas swelled from about 1200 square feet to over 2200 square feet while the average number of occupants got smaller. To changed size was attached changed configuration. New ideas about street layout derived in part from ideas put forward by European designers, LeCorbusier and Ludwig Hilberseimer. But more influential were the anonymous influences coming through in American traffic design that were implemented on a vast scale.



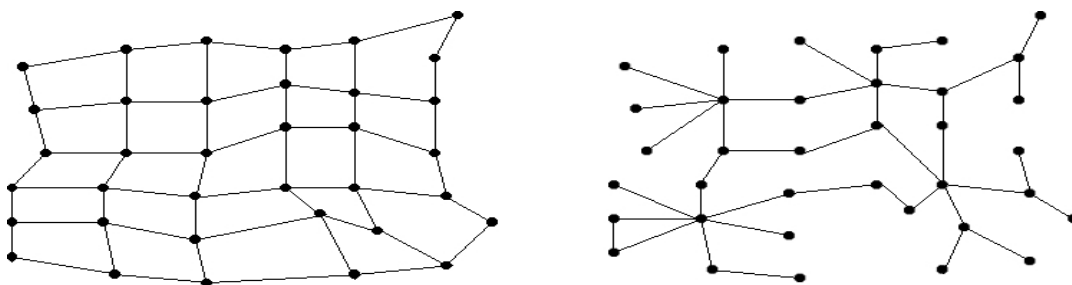
**Figure 9. Mid to Late 20th Century: Curvilinear-dendriform Pattern**

Grid and dendritic patterns differ in several ways. First, the grid usually gives more choice in getting from A to B. This is path redundancy. In information theory, redundancy is a measure of the percent of letters that can be removed from a message without making the message unintelligible. The more redundancy in a message's source, the more tolerance for noise and other imperfections (Rapaport 1955) Where there is high path redundancy in a street network, there will be more alternatives to get from an origin to a destination along with the ability of the network system to function when parts of it become clogged. The second important factor is number of turns. From inspection of the street layouts in figures 7, 8 and 9, it can be seen that to move from A to B requires a minimum of three (3.0), right-angle (90 degree) turns in the traditional grid and the curvilinear gridform patterns and seven (7.0) right-angle turns in the dendriform layout.



**Figure 10. Paths between A and B in figures 7, 8 and 9 and number of turns: 3; 3; 7.**

What emerged in post war decades are several latent phenomena. First we see the truncation of prospect to the extent that it has effectively been discarded and transformed into a quasi-communal form of refuge. Prospect and refuge are no longer contiguous and the orthogonality that has long been the social and economic framework of everyday life has fragmented. In addition, grid and dendritic patterns have dramatically different additive structures; they scale differently. Recent research on large-scale network structures has distinguished exponential networks from scale-free networks. An example of an exponential network is a road map with cities as nodes and roads as the links between them. Scale-free networks look more like airline route maps that show small nodes at the smaller airports served by a few carriers, and gigantic nodes, which are the hubs for dozens of carriers, like Chicago O'Hare or London Heathrow (Barabási 2002). Traditional urban streets have the form of exponential networks. Many suburban and some redeveloped urban streets after the 1960s have scale-free network patterns.



**Figure 11. Street networks: left – gridform = exponential; right – dendriform = scale-free.**

## **7. Conclusion: spatial morphology: it's the channel, not the content.**

By recognizing real urban space and real property as opposite sides of the same coin, the problem of rationality assumptions in human behavior with respect to settlement design can be better understood. The contiguously built orthogonal patterns of prospect and refuge enabled individual and collective real property to evolve from communal property and have been critical in establishing the basic elements of urban spatial form worldwide. Urban spatial morphology as reflected in the First Urbanism was, and still is, a way of regulating the nexus of human social and economic behavior and social and economic resources. Although not a cause, the emergence of this spatial form 5000 years ago with the invention of collective real property in The Fertile Crescent cannot be separated from the emergence of an innovation critical to the emergence of civilization: writing. It may be just as important today for the emergence of new and equally far-reaching innovations. There may be a variety of ways of what Giddens calls organizing the authoritative resource of social time-space, the built patterns of prospect and refuge, but understanding why this resource should be organized one way or another should be the first task of urban spatial morphology. In this task, syntactic theories of urban spatial morphology have failed. The semantic, syntactic and pragmatic conditions of language can exist not in the form of space but in its information content.

Contiguously built orthogonal patterns of prospect and refuge, which have been reflected in and extruded into the architectonic character of built environments, including those in Western classical oeuvre known by the founding fathers, were characteristic of most early post-colonial American settlement patterns. By the mid-19<sup>th</sup> century, the structure of these patterns began to change with a loosening and bending of orthogonal relationships of long spatial channels that afforded prospect. By the mid-20<sup>th</sup> century, a further change occurred in residential and commercial developments in suburban areas and many redeveloped urban areas with prospect separated from refuge, which would be linked to patterns reduced prospect and dendritic street arrangements. This coincided with a number of measures induced through traffic engineering with similar effects, many of which can be understood as increased transaction costs.

New Urbanism thought and design have arisen because of the perception that, although they may indeed have conferred and continue to confer benefits, post WWII settlement patterns have had a variety of unrecognized social costs, negative externalities resulting from their configurations. While externalities, impositions by an individual or collective party on another, exist usually because of inefficient pricing, not all social costs necessarily result in economic inefficiencies. Yet, to the extent post WWII settlement configurations engender costs, they can operate as latent defects awaiting a trigger point that makes their costs scale until they become more explicit. While fuel prices count, this trigger point may be increases in aggregate transaction costs resulting simply from the sheer growth of post WWII settlement patterns. As the broadly accepted Coase (1960) theorem says, externalities such as social and economic costs can be minimized by appropriately incorporating pricing in the transaction. Unfortunately, the relative fixity of settlement patterns, of urban spatial form in general, makes it difficult to alter spatial transaction costs thus ensuring the persistence of whatever social and economic costs they impose and taxing elementary cognitive spatial behavior. A rigid orthogonality in American settlement patterns is not required but it remains for New Urban settlement designers to grasp spatial economic behavior and minimize the practice of spatial authorship initiated in the 19<sup>th</sup> century so admired and excessively repeated in 20<sup>th</sup> that has helped create the patterns now recognized as perverse.

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